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PART 4.1

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**INVESTIGATION INTO DISASTER PREPAREDNESS IN THE NYANGU
COMMUNITY OF CHIMANIMANI FOLLOWING CYCLONE IDAI**

RELEASE FORM

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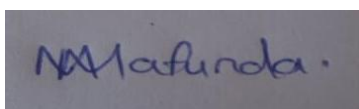
DECLARATION

I hereby declare that the research project entitled “**INVESTIGATION INTO DISASTER PREPAREDNESS IN THE NYANGU COMMUNITY OF CHIMANIMANI FOLLOWING CYCLONE IDAI**” submitted to Bindura University of Science Education, Department of Sustainable Development is a record of an original work done by me under the guidance and supervision of **DR MAKAMBANGE** and this work is submitted in partial fulfilment of the requirements for the award of a Bachelor Of Science Honor’s Degree in Development Studies. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree or diploma.

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DEDICATION

I would like to dedicate this project to my parents and family. Because of their wavering support, I managed to sail through my education journey with ease.

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I owe sincere gratitude to so many people who have contributed immensely towards my studies and most importantly, to the production of this research project. I humbly appreciate the great work of my supervisor of this project DR Makambanga for his sheer hard work and the guidance she gave me throughout this research. Your motherly guidance and support, you were never too busy to lend an ear. Under your wings I was nursed to be an academically mature student. Your support is greatly appreciated. I would also like to thank the Chimanimani rural council particularly councillor for Ngangu community for providing information which made the research a success. I would also like to thank my parents for their unwavering support they made this research possible by helping me with financial support. I thank my colleagues, Sibongile Maiba, Vincent Ferendende, Rutendo Madzinga and Tinashe Mberi for guidance, insightful comments and helpful discussions in terms of conceptualizing this paper. Thanks to the Bindura University staff made my academic journey a success.

ABSTRACT

This study investigates disaster preparedness in the Nyangu Community of Chimanimani District, Zimbabwe, following the devastating impact of Cyclone Idai in 2019. The cyclone exposed critical gaps in community preparedness and response systems, prompting the need to assess current efforts and enhance future resilience. The main objective of the study was to examine the effectiveness of current disaster preparedness activities in Nyangu. The specific objectives included: (1) valuating the effectiveness of existing disaster preparedness measures; (2) identifying the socio-economic and demographic factors influencing disaster preparedness and resilience; and (3) exploring strategies to improve community preparedness and resilience. The study adopted a descriptive survey research design and employed both quantitative and qualitative methods. Data was collected from 74 participants, including household heads and key informants such as local leaders and disaster response personnel. Semi-structured interviews and questionnaires were the main data collection instruments. Data analysis included descriptive statistics and multiple linear regression analysis to determine the relationship between socio-economic factors and levels of preparedness and resilience. Key findings revealed that community disaster awareness campaigns were rated the most effective preparedness activity with a mean score of 3.8 (SD = 0.94), followed by access to information (mean = 3.7) and disaster training and capacity building (mean = 3.6). Household-level preparedness was rated least effective with a mean score of 2.5. Regression analysis showed that years of education ($p = 0.001$), income ($p = 0.04$), farming experience ($p = 0.001$), and land size ($p = 0.004$) had a statistically significant positive influence on preparedness. However, household size had a negative effect (coefficient = -0.75). Based on these findings, the study recommends strengthening community-based education and training, improving early warning systems, and integrating disaster preparedness into school curricula. The study concludes that enhancing disaster preparedness in Nyangu requires a multi-stakeholder approach that addresses both institutional and socio-economic barriers. Further research is recommended on gender-specific preparedness dynamics and long-term community recovery strategies.

Keywords: *disaster preparedness, community resilience, regression analysis, effectiveness, socio economic factors, cyclone Idai*

LIST OF ACRONYMS AND ABBREVIATIONS

CBDRM	Community-Based Disaster Risk Management
DCP	Department of Civil Protection
DRR	Disaster Risk Reduction
EMS	Emergency Management System
EWS	Early Warning System
FAO	Food and Agriculture Organisation
IDP	Internally Displaced Persons
NGO	Non-Governmental Organization
SDG	Sustainable Development Goals
SLF	Sustainable Livelihoods Framework
UNDRR	United Nations Office for Disaster Risk Reduction
WHO	World Health Organisation
ZIMVAC	Zimbabwe Vulnerability Assessment Committee

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

This research aims to give an insight into the upcoming research report with the title, to investigate disaster preparedness in the Nyangu community of Chimanimani, focusing on the impacts of Cyclone Idai, which struck in March 2019. The primary objectives are to assess the current state of disaster preparedness, identify gaps in existing strategies, and propose actionable recommendations for enhancing community resilience against future disasters. This study is particularly relevant as it addresses the urgent need for effective disaster management strategies in vulnerable communities, especially given the increasing risks associated with climate change. This first chapter of the research contains the background of the study, the justification and the statement of the problem. It also contains the section on the aims and the objectives of the study. In addition, research questions are also imbedded in the section together with the definition of key terms and the organization of the study. The chapter concludes with a summary, which is a summation of all the discussion within the section.

1.2 Background to the Study

Disasters, both natural and human-made, have posed significant threats to communities worldwide, highlighting the critical need for effective disaster preparedness. Natural disasters such as hurricanes, earthquakes, floods, and wildfires continue to increase in frequency and intensity, driven in part by climate change, urbanization, and environmental degradation. Human-made disasters, including industrial accidents, armed conflicts, and public health emergencies, further compound global vulnerabilities. Internationally, organizations such as the United Nations Office for Disaster Risk Reduction (UNDRR) and the International Federation of Red Cross and Red Crescent Societies (IFRC) emphasize the importance of proactive preparedness measures. These include risk assessments, community education, early warning systems, and robust response frameworks to reduce loss of life and property. While high-income countries often have better infrastructure and resources to prepare for and respond to disasters, low- and middle-income countries face significant challenges, including inadequate funding and weak governance. Global case studies reveal that effective disaster preparedness requires integrating local knowledge, fostering community engagement, and leveraging technology to build resilience across diverse contexts.

In March 2019, Cyclone Idai struck southeastern Africa, inflicting extensive damage across the region, particularly in Zimbabwe. The cyclone resulted in severe flooding, widespread

destruction of infrastructure, and a tragic loss of life (Mavhura et al., 2021). Within Zimbabwe's Chimanimani and Chipinge districts, the disaster affected around 270,000 individuals, leading to more than 340 fatalities and displacing countless others (Mavhura et al., 2021). This event starkly revealed the vulnerabilities of communities like Nyangu, which are in areas prone to such disasters.

The Nyangu community is particularly vulnerable due to its geographical location, which predisposes it to various natural disasters, such as cyclones and floods. Historical records indicate that the area has experienced multiple disaster events, yet it has consistently demonstrated a lack of adequate preparedness and insufficient allocation of resources (Mavhura et al., 2021). Additionally, socio-economic factors such as widespread poverty and limited access to education further impede the implementation of effective disaster risk reduction strategies.

Assessments conducted after Cyclone Idai have identified significant deficiencies in the community's existing disaster preparedness strategies. Many community members remain unaware of essential disaster response protocols, and local leadership often lacks the necessary training to manage disaster situations effectively (Mavhura et al., 2021). Moreover, recovery initiatives have predominantly focused on restoring conditions to what they were before the disaster, rather than adopting resilient and sustainable practices that would better prepare the community for future events (Manyena et al., 2020).

Disaster preparedness is a critical issue for communities vulnerable to natural hazards, particularly in the context of climate change and its associated risks. The Nyangu community of Chimanimani, Zimbabwe, has faced significant challenges in this regard, particularly following the devastation wrought by Cyclone Idai in March 2019. This cyclone was one of the deadliest tropical storms to impact the region, resulting in substantial loss of life, widespread destruction of property, and long-term socio-economic repercussions. Understanding the community's disaster preparedness and response mechanisms is essential for developing effective strategies to mitigate the impacts of future disasters.

The Nyangu community is situated in a geographically vulnerable area, prone to cyclones, floods, and other natural disasters. Historical records indicate a persistent lack of adequate preparedness measures, further exacerbating the effects of such catastrophic events. While previous studies have addressed general disaster preparedness strategies in Zimbabwe, there remains a significant gap in localized research that focuses specifically on community-level

responses and adaptations. This lack of targeted research limits the ability of policymakers and community leaders to implement effective measures tailored to the unique needs and circumstances of the Nyangu community.

This research proposal seeks to give an insight of the investigation of the current state of disaster preparedness in Nyangu, identify existing gaps in strategies, and offer actionable recommendations to enhance community resilience. By employing a mixed-methods approach that includes literature reviews, surveys, interviews, and focus groups, the study will aim to generate a comprehensive understanding of the community's preparedness levels and areas for improvement. The findings will not only contribute to the academic discourse on disaster management but could also serve as a valuable resource for local policymakers and stakeholders committed to safeguarding the community against future disasters.

1.3 Justification of the study

The study on disaster preparedness in the Nyangu community is justified by the urgent need to enhance resilience in rural areas that are disproportionately affected by natural disasters. Cyclone Idai revealed critical vulnerabilities, particularly in under-resourced and marginalized communities, where the lack of preparedness leads to severe humanitarian, economic, and environmental consequences. As climate change increases the frequency and intensity of extreme weather events, understanding and addressing these vulnerabilities becomes essential. This research will contribute valuable insights into the specific challenges faced by the Nyangu community, enabling policymakers, development organizations, and local leaders to design context-sensitive strategies to mitigate future disaster impacts. Moreover, this study is critical for informing broader disaster risk management efforts in Zimbabwe and other similarly vulnerable regions. Rural communities often lack access to adequate resources, early warning systems, and disaster education programs, which exacerbates their susceptibility to disasters. By investigating the gaps in preparedness and resilience in Nyangu, the study will provide evidence-based recommendations that can be replicated or adapted to other high-risk areas. This aligns with national and global disaster risk reduction goals, including the Sendai Framework for Disaster Risk Reduction, which emphasizes the importance of local-level preparedness to reduce the impact of disasters.

1.4 Statement of the Problem

The Nyangu community of Chimanimani was severely affected by Cyclone Idai in 2019, which exposed significant vulnerabilities in disaster preparedness and response. The cyclone caused widespread destruction of homes, infrastructure, and livelihoods, resulting in loss of life and long-term socio-economic challenges. Despite being in a region prone to extreme weather events, the community demonstrated limited readiness to cope with the disaster, including inadequate early warning systems, insufficient disaster risk awareness, and a lack of coordinated response mechanisms. These challenges underscore the need to assess the current state of disaster preparedness in the Nyangu community to understand the gaps that contributed to the extensive impacts of Cyclone Idai. Efforts to rebuild and enhance disaster resilience in Nyangu must be informed by an evidence-based understanding of the community's preparedness status. However, there remains limited research on the specific factors affecting disaster preparedness in this rural setting, particularly in the context of recurring climate-induced hazards. Addressing this knowledge gap is critical to designing targeted interventions that empower the community to mitigate future risks. This study seeks to investigate the current state of disaster preparedness in Nyangu, identify existing gaps, and propose strategies to strengthen the community's resilience to disasters like Cyclone Idai.

1.5 General objectives

The main objective of the study is to investigate disaster preparedness in the Nyangu community of Chimanimani following Cyclone Idai.

1.5.1 Specific objectives

1. To evaluate the effectiveness of existing disaster preparedness measures in the Nyangu community.
2. To identify factors contributing to disaster vulnerability and resilience in the Nyangu community.
3. To develop context-specific strategies for enhancing disaster preparedness and resilience in the Nyangu community

1.6 Research Questions/Hypotheses

1. What is the effectiveness of the existing disaster preparedness measures in the Nyangu community
2. What are the factors contributing to disaster vulnerability and resilience in the Nyangu community

3. What are the context-specific strategies for enhancing disaster preparedness and resilience in Nyangu community

1.7 Definition of Terms

Disaster Preparedness

This depicts how communities are aware and ready to tackle disasters when they do come. It also includes the various strategies and measures put in place to respond, anticipate and recover from the effects of disasters within a given time and community. This requires resources, planning, capacity building as well as establishment of strong systems to enhance resilience to the disasters.

Cyclone Idai

Is defined as a Tropical cyclone that causes a lot of destruction in Zimbabwe, Mozambique and Malawi in 2019 setting itself up as one of the deadliest disasters in the region in years. This was characterised by strong winds, heavy rainfall, and widespread flooding.

Resilience

The capacity of individuals or communities to absorb, adapt and recover from shocks and stresses such as disasters whilst maintaining the core essential functions and structure. This is also the ability of communities to bounce back after a disaster has affected their community.

Early Warning Systems

Mechanisms designed to detect and predict hazards, providing timely and accurate information to communities and authorities to enable informed decision-making and early action to reduce disaster impacts.

Vulnerability

The degree of susceptibility of a community or individual to harm, from disasters. It also a measure of the degree to which to which a community, individual, or system cannot recover normal functions and structures if a disaster strikes.

1.8 Organization of study

The study is organised into five chapters. The first chapter is the introductory chapter which contains the background, the problem statement, the justification and significance of the study as well as the definition of key terms. Chapter two of the study contains the literature review

which is contains the theoretical, conceptual and empirical foundations for the study. In addition, chapter three follows chapter two which contains the research methodology. It contains the research design, the population, sampling and sampling frame and data collection. It also contains the reliability and validity section as well as the data analysis and presentation. Chapter four of the study contains the analysis, discussion and presentation of the study. Chapter five contains the summary of the study, the conclusion and the recommendations.

1.9 Chapter Summary

This chapter contains the background information of the research. It contains the objectives of the study which includes, the evaluate the effectiveness of existing disaster preparedness measures, the identification of factors contributing to disaster vulnerability and resilience and the development of context-specific strategies for enhancing disaster preparedness and resilience in the Nyangu community. The chapter also contains the significance of the study to various stakeholders such as policy makers, the academic institution and the Nyangu community. The limitations and delimitations of the study are also included together with the organization of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the review of past literature on the topic of disaster preparedness. It contains the theoretical and conceptual as well as empirical framework for the study. It also contains empirical literature on the objectives of the study which include the effectiveness of disaster preparedness measures, factors that contribute to disaster vulnerability and resilience and context specific strategies for enhancing disaster preparedness and resilience. Furthermore, the chapter closes with a chapter summary which concludes the literature review section.

2.2 Theoretical Framework

This section contains the theoretical foundation of the study. The theories presented which are relevant to the study includes the Protective Action Decision Model and the Theory of planned behaviour

2.2.1 Protective Action Decision Model (PADM)

The PADM theory was postulated by Ronald W. Perry and Michael K. Lindell in 1985. This theory identifies the reasons why communities make decisions to act in response to disasters and hazards. It focuses mainly on how the perceptions of the individuals in a community shape their decisions as well as situational factors. Under hazard perception which is one of the tenants of the theory, the preparedness of the community and their push to act is influenced by their perception of the likelihood of occurrence of the hazard in the case of the study it will be the occurrence of the disaster (Mutizwa, 2021). For Nyangu, perceptions of risk from cyclones like Idai shape preparedness behaviours.

The other important tenant of the theory is threat appraisal, which explains how individuals and communities makes an assessment on whether they are at high risk or not at risk at all. This then influences their decision to respond as well as the urgency in which they do so for example to evacuation or to preparedness measure (infrastructure improvements). According to Gwimbi, (2021) resource availability plays a huge role in necessitating proactive response to the hazard. This includes access to resources, including information, funding, and skills, determines the ability of communities to prepare effectively (Samutereko, 2021).

According to the theory, the influence of the society also plays a huge role in the decision of the individual to act or not to act in accordance with the information they receive of the hazard.

This means that, community leaders, organisations in the locality as well as social networks within the community has a critical role to play in making sure the perceptions and approaches to information on disasters is taken with the urgency they deserve. The theory also puts emphasis on the feedback loop which explains how disasters always come back in a more similar fashion, hence there is critical need to pick lessons and continuously improve the weaknesses that increased vulnerability previously. According to Mavhura, (2016) lessons from past cyclones (Idai) should be carefully considered and the critical insights they provide for improving the future should also be taken aboard to enhance preparedness through addressing gaps and challenges.

2.2.2 Theory of Planned Behaviour (TPB)

The theory of Planed Behaviour was introduced by Icek Ajzen in 1985, and it explains how the attitudes of the communities and individuals together with norms, perceptions are important in deciphering disaster preparedness. The theory highlights that positive attitude towards preparedness especially by taking precautionary measures (stocking emergencies, solidifying infrastructure and attending training) increases preparedness and resilience (Nazli et al., 2015).

The theory also notes subjective norms as one of the critical factors that influences behaviour. Expectations from community leaders, family and the society at large can either be motivation to and motivation not to adopt precautionary and preparatory measure against disasters (Hashim et al., 2021). This means that prioritization of an individual or community for example Nyangu to invest in disaster preparedness that is against cyclones is also determined by the norms in that area as exemplified by headmen, chiefs and other disaster related clubs if there are present. According to the theory, there is also another tenant of perceived behavioural control which emphasizes that, if a community or an individual believes that they have the capacity and stamina to prepare for a disaster such as building resilient infrastructure, there are more likely to take action when the hazard comes (Kohn et al., 2012).

The theory also highlights a key interesting factor of that, strong intentions amongst a community or an individual to prepare often channels into actions which are concrete. If one is intentional about doing something, the likelihood that they will do it is very high (Mavhura et al., 2022). The theory also identifies a number of barriers to action which factors in lack of key resources such as funding, knowledge and skill as well as government and institutional support which are important in making sure the various communities implement preparedness measures effectively (Titko & Ristvej, 2020). This theory therefore provides a foundation for

understanding disaster preparedness in the Nyangu community, combining insights on perceptions, resilience, and behavioural intent.

2.3 Empirical review

2.3.1 Effectiveness of existing disaster preparedness measures

Effectiveness of disaster preparedness measure is affected by several factors which includes chief amongst them issues of resource availability. The section below analyses the effectiveness of some of the existing disaster preparedness measure.

2.3.1 Early Warning Systems

Early warning systems are critical in disaster management as they provide advance notice on the severity of the disaster making it easy for communities to evacuate and strengthen their survival systems. The effectiveness of the early warning systems depends on a number of factors which includes, timeliness, accessibility and accuracy according to Runga, (2023). Effective systems are those which provided notice allowing time for communities to act. Titko & Ristvej, (2020) also added that, the information generated from the early warning system should be able to reach the most remote and vulnerable populations and should also be communicated through diverse channels (SMS, WhatsApp and radio). In addition Wang & Tsai, (2022) the information generated should also be accurate which means the provision of reliable forecasting which minimizes public panic and false alarms leading to increased community trust. According to Mavhura, (2016) lack of localized systems in the rural communities affects timely action and responsiveness hence affecting adversely disaster preparedness.

2.3.2 Community Training and Awareness Programs

Programs which are meant to educate communities about disaster response and risk boost the effectiveness of preparedness (Titko & Ristvej, 2020). Community training and awareness programs are also important in boosting the effectiveness of community preparedness. Knowledge dissemination is critical in fostering the effectiveness of community disaster preparedness. Community engagement is also critical since active participation fosters a sense of ownership and preparedness. Training and awareness which centres on behavioural change is also critical in boosting the effectiveness of disaster preparedness since it instils a permanent culture of readiness and encouraging the community to be proactive and responsive when there is a disaster looming. One of the critical limitations to the effectiveness of training and

awareness programs in influencing preparedness is limitations of training and awareness resources. According to Samutereko, (2021) trainings and awareness of the communities require a lot of resource, monetary, transportation, and other amenities which is usually limited in the face of disaster where resources might be kept for other priority areas.

2.3.3 Infrastructure Development

Infrastructure is one of the critical factor in the development of a strong effective community disaster preparedness strategy. Mavhura, (2016) indicated that the reason why there is loss of life and damage during disasters is because of lack of resilient infrastructure especially, housing. Mutizwa, (2021) also identified that, there is also need for good drainage systems which can be able to mitigate a lot of damage during flooding, this is critical for flood management. In addition, Wang & Tsai, (2022) also highlighted the need for emergency shelter in the event there is a disaster, these should be in designated safe spaces which are not susceptible to disasters to accommodate the displaced population. This also adds to the effectiveness of community disaster preparedness. Titko & Ristvej, (2020) however argues that one of the most detrimental factors to the effectiveness of community preparedness is poor maintained and upgrade of the infrastructure that is the roads, drainage, shelter and emergency spaces. This can also further exacerbate the risk of the disaster and will lead to more damage.

2.3.4 Disaster Response Teams

Gwimbi, (2021) noted that, poor coordination amongst response teams leads to poor rescue as well as the preparedness of the team. Rangarirai et al., (2023) noted that, the effectiveness during the Cyclone Idai was limited because of the capacitation of the response teams which had inadequate equipment and training. Community disaster preparedness is greatly affected by disaster response teams' effectiveness. The capacity of the response team determines the efficiency of rescue and the timeliness of the response. In addition, the capacitation of the team with essentials is also critical in ascertaining the effectiveness of the community preparedness. Teams which come with water, food and medical aid are more likely to foster reduction of further atrocities of the disaster.

2.3.5 Policy and Legislative Frameworks

According to Mavhura, (2016) there is great need to ensure that disaster preparedness is part of the development plans from grassroot level to the national scale. In addition, Wang & Tsai, (2022) also noted that proper land use regulations and infrastructure development legislations

are key in ensuring that in case of looming disasters proper accurate preparedness is done by the communities. Gwimbi, (2021) also highlighted the need for policy which encourages participation from broader stakeholders which in turn leads to collective involvement in disaster preparedness. However, Titko & Ristvej, (2020) noted one critical challenge which affects disaster preparedness which is weak enforcement of policies. This emanates from poor infrastructure being built as well as poor land planning with illegal settlements mushrooming everywhere. This makes it difficult to come up with metrics in the event of a looming disaster of populations in an area and the state of the infrastructure which also affects proper decision making.

2.3.6 Integration of Technology in Preparedness

According to Rangarirai et al., (2023) the coming in of GIS mapping has been an important stride in the identification of high risk zones in times of looming disaster leading to the channelling of resources and urgency to those areas. The coming in of mobile technologies also means that there is quick spread of information because of its real-time communication characteristics meaning that information is quickly spread on the disaster and the preparedness strategies. Furthermore, Wang & Tsai, (2022) highlights remote sensing as one of the key technology in the community disaster preparedness since it enables tracking of hazards such as floods, typhoons and cyclones which also enhances forecasting. Gwimbi, (2021), however indicated high cost and limited technical expertise as one of the barriers to the adoption of technologies in community which then weakens disaster preparedness especially in underdeveloped and rural areas.

2.4 Factors contributing to disaster vulnerability and resilience

This section contains the factors that contribute to disaster resilience. These factors are categorized as institutional, economic and social and cultural factors.

2.4.1 Institutional Factors

Wang & Tsai, (2022) notes that, policy frameworks are critical in enhancing disaster preparedness especially having a proper disaster management policy in place. Barca & O'brien, (2017) also emphasises the fundamental contribution of effective land planning policies and availability of building codes which reduces vulnerability since there is proper land use. Moreso, policy frameworks which allow for coordination amongst local stakeholders and

international, public and private actors as well as the community are influence a strong and sustainable disaster preparedness and response framework.

Rivera, (2021) emphasises that for disaster preparedness to be effective, there is need for availability of trained personnel at the community up to the national level on disaster risk and its mitigation and adaptation. This according to Ma et al., (2021) requires adequate financing for operational and logistical support which however if lacking leads to damages since preparedness is not done adequately. Green et al., (2021) also highlights that, there is also need to capacitate institutions involved in community disaster preparedness with adequate tools of work and also technology which enables them to do their work seamlessly as well as remove the bureaucratic processes to facilitate timely disaster preparedness actions (Kim & Kim, 2022).

According to Runga, (2023) an educated community is very responsive in times of disasters and this saves a lot of lives and property from damage. According to Mavhura et al., (2022) there is great need for the institutional to be strongly capacitated with the dynamics of the area and targeting the most vulnerable and the most susceptible members of the community which includes the elderly, women and children (Himes-Cornell et al., 2018). In order to attain the highest effectiveness of community disaster preparedness, instructions should have a very deliberate communication strategy which has an assortment of communications channels both the modern and the traditional which makes it easy for widespread information during times where disaster is approaching (Titko & Ristvej, 2020).

2.4.2 Economic Factors

Kohn et al., (2012) however notes the opposite with low-income households who are more vulnerable because of lack of money to invest in preparedness measure for the disasters. Economic factors also have a bearing on disaster preparedness and resilience of the communities. Incomes with higher incomes are able to invest in resilient infrastructure which can withstand a disaster shocks as well as equip themselves with adequate emergency supplies Green et al., (2021) cites that, economic disparities make it difficult to ascertain the overall disaster readiness of the community and there is need for rescue teams to have knowledge of these disparities and to prioritise areas in the community which are more vulnerable.

Disaster readiness and resilience also centres around resource availability. Availability of resources such as shelter funding for community awareness and emergency kits as well as resources for information dissemination is important for ensuring community disaster

readiness. Runga, (2023) identifies rural areas where there are limitations in resources as epicentres for disaster risk and indicates that lack of basic resources affecting disaster resilience building efforts. Rivera, (2021) recommends partnerships and collaborations across the board that is from NGOs and government and private actors which can pool in funds and resources for effective disaster readiness as well as build resilience.

Ma et al., (2021) highlights that, communities which are dependent on climate for their livelihoods face challenges preparing for climate related hazards such as floods and cyclones. This is because it is difficult to move them from their source of livelihoods that is evacuating them from their land and sometimes suggesting that they live their livestock. This also increases the community's susceptibility to disasters (Kim & Kim, 2022). Communities with diversified livelihoods which are not only climate- dependent have better chances at standing against disaster induced shock and stress since they can turn to other wares for their survival. Mavhura & Aryal, (2024) in support cited that, communities with a better economic stature, quickly respond and recover to from present as well as prepare for future disasters than those who are poor emphasising the need for sustainable economic development of communities.

2.4.3 Social and Cultural Factors

Hashim et al., (2021) in the study on disaster preparedness indicated that the strength of community engagement and social networks is one of the critical factors in disaster preparedness. Strong networks guarantee cohesions of actions which enables collectiveness during emergencies. In addition there is need for a lot of trust in local leaders and institutions which influences communities to respond when they receive information of the emergency. Titko & Ristvej, (2020) also highlighted that, the participatory approach which includes the whole community is important in strengthening preparedness initiatives.

One of the social factors which is also important is traditional beliefs and practices. There is need for external factors to respect indigenous knowledge systems which can offer important information into community acceptable and relevant disaster management strategies. Wang & Tsai, (2022) noted that, it is very important to note that cultural beliefs can either support or impede disaster preparedness efforts. This is because those with strong cultural beliefs might be very ignorant of communications might hesitate to move from their cultural grounds. Green et al., (2021) notes that respecting cultural grounds of the communities is very important since disapproval from on the cultural basis can have a huge bearing into preparedness planning and execution.

Education and literacy levels of the communities also affects preparedness efforts. Those communities with higher literacy rates understand more the importance and implementation of preparedness measures hence it leads to effective preparedness and resilience. Himes-Cornell et al., (2018) highlights that capacitation of the communities through educational outreaches to marginalised groups also leads to the promotion of the inclusive disaster readiness. Rangarirai et al., (2023) in support also indicated that, access to education leads to the empowerment of the communities to comprehend better the communications which also ensures sound decisions during disasters.

2.5 Strategies for Enhancing Disaster Preparedness and Resilience

2.5.1 Community capacity building

Rangarirai et al., (2023) highlighted that simulations and drills which were held during community gatherings were important since they educated the communities on evacuations and survivals during common disasters in the area. One of the critical strategies for building the community disaster preparedness and resilience is through capacity building. This includes awareness campaigns which includes workshops, outreaches school which educates the communities on disaster, its implications and the various strategies to prepare and mitigate risks. Furthermore, trainings are also needed which are embedded in indigenous knowledge systems of the communities for greater acceptance. Moreso, Barca & O'brien, (2017)also highlights the need for local volunteers and also community leaders to be trained and capacitated with communication tools which enables them to be the first response line during disaster emergencies. This lessens the impact whilst at the same time making sure a lot of lives are saved during the disaster. (Hashim et al., 2021) highlights that community capacitation is a more sustainable way of mitigating disaster risk since the knowledge stays in the communities.

2.5.2 Strengthening Early Warning Systems

Wang & Tsai, (2022) notes that multiple sources of communication are necessary for alerts for example the use of SMS, radio, social media and other traditional methods like bells and drums, which also increases the reach of alerts fostering quickened response. Another key strategy involves development of localized early warning systems through the development of localized alerts where community adaptable modes of communications are used for greater reach and

comprehension. In addition, Gwimbi, (2021) explains the usefulness of investing in technologies such as the reliable weather forecasting and GIS and remote sensing to monitor and decipher information that shows the accurate risk which is importance for informed response. Barca & O'brien, (2017) noted that there is also need for community involvement in designing and implementation of the early warning systems which involve training the members to understand and act accordingly to the early warnings.

2.5.3 Infrastructure Development and Risk Reduction

(Hashim et al., 2021) notes that there is need to strengthen infrastructure, which is critical which includes schools, hospitals and emergency shelter s and make sure that they are disaster proof and that they can also be used as emergency shelters. In addition, one of the key actions under the infrastructure development strategy is promotion of construction and upgrade to resilient housing. This involves the use of disaster, shock- resistant materials which can be able to withstand disasters. There is also need for a proper flood management system which starts with upgrades of evacuation routes, levees and also establishment of proper drainage systems. Wang & Tsai, (2022) adds that land use is also important and there is need for government authorities to enforce zoning regulations which prevents settlement in high-risk areas.

2.5.4 Policy Development and Institutional Strengthening

According to Rangarirai et al., (2023) effective disaster plans should align from the grassroot and feed into the regional as well as the national strategy an integral step in fostering cohesive collaborative actions. In addition, (Hashim et al., 2021) adds that there is need to also come up with legislation which ensures compliance with building codes and also established environmental regulations. In addition there is need for regulations which creates space for funding enforcements which ensures that budgets are allocated for disaster preparedness and resilient infrastructure which requires a lot of financial resources. Gwimbi, (2021), also adds that there is need for regular monitoring and evaluation to assess the effectiveness of the preparedness strategies as well as the progress of their implementation in the community.

2.5.5 Promoting Social Capital and Partnerships

(Hashim et al., 2021) points out to Public-Private Collaborations which includes the involvement of businesses for provision of resources and also expertise. Barca & O'brien, (2017) in addition highlighted that, strengthening local organisations is also important as a way to foster collective and cohesion in terms of action and also resource sharing. Gwimbi, (2021),

highlighted in their findings that NGOs play a critical part in disaster related issues and should be included since they also come in with a lot of resources which are critical for pre and post disasters. There is also great need for knowledge sharing amongst the various stakeholders which is also accompanied by experience sharing which leads to a formulation of a cohesive disaster preparedness and resilience framework leading to reduction of risk and losses when disaster strikes.

2.6 Chapter Summary

This chapter contained the review of literature for the research. It started with the theoretical framework delving into two major theories that is the Theory of Planned behaviour and the theory of protective action decision. This is followed by literature review on the effectiveness of available preparedness measure and factors affecting disaster preparedness, which is categorized into institutional, economic and social and cultural. In addition, the chapter also contains the various strategies to improve disaster preparedness and resilience in communities.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the research methodology of the study which starts with the explanation of the research design utilised. It also contains the materials utilised which includes the data collection instruments used to collect data from the respondents. In addition to this, the data collection procedure is explicitly laid out explaining the steps taken to collect data from the respondents. Further to this, the chapter also contains the methods of observation and interpretation and lastly data processing and analysis.

3.2 Research Design

The study adopted a descriptive survey research design which systematically collects information from participants with the purposes of describing the current situation under study. A descriptive survey research design is a methodological approach used to collect detailed and information about a population, phenomenon, or situation as it exists at a specific point in time. In the instance of the study, it aims to accurately understand the current state of disaster preparedness in the Nyangu community post cyclone Idai (Huntington-Klein, 2021). This design also links with the mixed methods approach which included the consideration of qualitative and quantitative methods to gather information through which inference was made (Adeoye-Olatunde & Olenik, 2021). Qualitative data involved subjective perceptions, experiences and insights which best described the state of disaster preparedness from the respondents. Quantitatively the study focused on capturing numeric and measurable statistically sound information from the respondents such as how frequently they attended disaster preparedness or related trainings.

3.3 Materials

The study utilised two main data collection tools which included structured questionnaires and semi structured interview guides.

3.3.1 Questionnaires

A questionnaire was used as the primary data collection tool in the study. It is defined by (Taherdoost, 2021) as a tool with structured questions meant to systematically collect data mainly quantitative from the respondents in a study. The study deployed a total of 78 questionnaires and a total of 75 were completed and returned. The high response rate is attributed to efficiency in data collection. The questionnaires contained open ended and closed

ended questions (Flick, 2022). The open-ended questions captured the subjective perceptions of disaster preparedness and the experiences of respondents which cemented the qualitative data collection. Closed ended questions captured more quantitative metrics of disaster preparedness such as the number of trainings attended, the number of preparedness measures in place in the event of another cyclone. The major advantage of using a questionnaire is that it captures a lot of information in a short space of time and also because it is standardised, it is easy to collate and analyse data and deduce inference from the respondents (Apuke, 2017).

3.3.2 Interviews

The study planned to carry out 15 interviews but managed to carry out 13 due to the unavailability of two of the intended participants who were not available at work during the data collection period. Semi structured interviews were also used in the study to facilitate collection of in-depth information from key informants. A semi-structured interview is a qualitative data collection method that combines predetermined questions with the flexibility to explore additional topics that emerge during the conversation (Adeoye-Olatunde & Olenik, 2021). It involved capturing of data from community leaders, local authorities as well as technical experts from the government and from the NGO sector. Semi structured interviews mainly captured qualitative insights which included perceptions, perspectives as well as experiences (Taherdoost, 2021). This approach enables the researcher to capture rich, qualitative data, including personal perceptions, cultural nuances, and contextual factors that structured questionnaires may overlook. Conversations that occur during the interviews creates rapport with the respondents which encourages them to share deep stories and insights which are very important for understanding the level of preparedness, the challenges as well as the various strategies in place.

3.4 Procedure

A representative of the community members was selected using purposive sampling. This is where a sample is selected from the population because of its ability to contribute meaningfully to the study objective (Taherdoost, 2021). Respondents with knowledge on disaster preparedness and on Cyclone Idai and the challenges affecting preparedness were selected in this study. This also involved sampling of key informants for the interviews who had technical and specialist information on the subject matter. A total of 78 respondents were selected from a total of 565 households which is over 5% of the population which was described by (Flick, 2022) as sufficient to constitute a sample for a survey.

This was done to ensure the study captures diverse perspectives this is using the Yamane's formula below.

$$n = \frac{N}{1 + Ne^2}$$

Where n= sample size; N= Population, e= margin of error

In addition, a total of 7 key informants were also selected which constituted community leaders, NGO workers, government workers, representatives from the civil protection unit and industry experts in disaster preparedness.

After sampling, data collection was then done. First the questionnaires and interviews were drafted with the assistance of technical experts on the issues of disaster preparedness. The data collection tools were piloted to non-study participants to identify key areas for improvement on the tools (Taherdoost, 2021). After that adjustments were made to finalise the tools for the actual data collection. This was done through field visits and the administration of these was done through face to face and was done over a period of 1 week. The collection of data was done following ethical standards and ethics. Authority was sought from the academic institution as well as from the Rural District Council and the District Development Coordinator's office to carry out the study and consent was also sought from the respondents before resuming data collection. The collected data was securely stored and locked up with the questionnaires given codes for anonymity as well as the recordings of interviews transcribed to maintain data integrity (Flick, 2022).

3.5 Methods of Observation and Interpretation

The study used direct observation as method of observation. Infrastructure such as emergency shelter, evacuation routes was also observed to ascertain their adequacy and preparedness to harbour the community in case of disaster. In addition, secondary documentation especially pictures of before and post the cyclone Idai were also observed to ascertain the damage and the state of infrastructure before. In terms of interpretation, the data collected was interpreted using thematic analysis. Qualitative data from interviews was categorised into common themes identifying common patterns, beliefs, attitudes towards disaster readiness in the community (Flick, 2022). Quantitative data was statistically interpreted to determine the prevalence of readiness as well and statistical inference between variables.

3.6 Data Processing and Analysis

3.6.1 Data analysis Matrix

Table 3. 1 Data analysis matrix

Objective	Data Analysis Method
1. To assess the effectiveness of current disaster preparedness activities in the Nyangu community.	Descriptive statistics (mean, standard deviation) were used to evaluate the perceived effectiveness of various preparedness activities based on a Likert scale.
2. To identify the socio-economic factors affecting disaster preparedness and resilience in the Nyangu community.	Multilinear regression analysis was applied to identify significant socio-economic predictors (e.g., education, income, land size) influencing preparedness levels.
3. To examine strategies for enhancing disaster preparedness and resilience in the Nyangu community.	Thematic analyses were used to evaluate the most recommended strategies by respondents to improve preparedness and resilience.

The collected data was entered into Microsoft Excel for processing and cleaning and then entered SPSS version 22 for analysis. This was to ensure that the data was accurately entered for accurate results. Qualitative results were coded with verbatim from interviews categorised into common themes to facilitated meaningful interpretation of the context of disaster readiness in the community. Findings from both quantitative and qualitative analyses are integrated to provide a holistic understanding of the disaster preparedness landscape in the Nyangu Community, highlighting strengths and areas for improvement. These findings were then translated into graphs, tables and charts as part of data presentation. Verbatim was also presented as direct quotes.

Model Specification for factors affecting disaster preparedness

The study aimed to estimate the effect of selected socio-economic variables on the level of disaster preparedness and resilience. The model assumes that the preparedness and resilience score (dependent variable) is a function of several independent socio-economic factors.

Let:

- Y = Disaster Preparedness and Resilience Score
- X_1 = Years of formal education
- X_2 = Household income
- X_3 = Household size
- X_4 = Years of farming experience
- X_5 = Size of land
- X_6 = Access to early warning systems (binary variable: 1 = Yes, 0 = No)
- X_7 = Participation in disaster training (binary variable)
- X_8 = Access to information (binary variable)

Regression Equation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \epsilon$$

Where:

- β_0 = Intercept
- $\beta_1 \dots \beta_8$ = Coefficients of the explanatory variables
- ϵ = Error term

3.7 Chapter Summary

This chapter contained the research methodology of the study which starts with the explanation of the descriptive survey research design utilised. It also contains the materials utilised which includes the questionnaires and interviews used to collect data from the respondents. In addition to this, the data collection procedure is explicitly laid out explaining piloting of the interviews and questionnaires as well as purposive sampling and face to face data collection used. Further to this, the chapter also contains the methods of observation and interpretation and lastly data processing and analysis which included thematic analysis and descriptive statistics analysis.

CHAPTER FOUR: RESULTS PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter contains the presentation and discussion of the results collected and analysed from the study. The section opens with the description of the response rate followed by the demographic section. The following section contains results on the effectiveness of existing disaster preparedness measures and the factors contributing to disaster resilience as well as the context specific strategies for enhancing disaster preparedness. The chapter closes with the summary of chapter which contains the summary of the chapter's contents.

4.1.1 Data instruments Response Rate

Table 4.1 show the response rate for the data collection tools in the study. The response rate for the questionnaires was high (94.9%) together with the response rate for the interviews which was 100%. This shows efficiency in the data collection conducted in the study as highlighted by Rangarirai et al.(2023) who indicated that response rates of over 80% where sufficient for effective deduction of conclusions on a population.

Table 4. 1: Data collection tools response rate

Data Collection Tool	Total Number	Questionnaire Completed	Response Rate (%)
Questionnaires	78	74	94.9
Interviews	7	7	100

4.2 Demographic Characteristics

The following section contains the demographic characteristics of the respondents

4.2.1 Age

According to the table 4.2 below, majority of the respondents (32.4%) were in the 36–45-year age range followed by 23% which were in the 46–65-year age range. The least of the respondents were in the 65+ age range which is preceded by those in the 18-25 years age range (14.9%)

Table 4. 2: Age of respondents

Age	Frequency	Percentage
18-25	11	14.9
26-35	14	18.9
36-45	24	32.4
46-65	17	23.0
65+	8	10.8

4.2.2 Gender

The gender disaggregation for the research according to figure 4.1 shows that most of the respondents were male accounting for 58.1% whilst females consisted of 41.9% of the respondents.

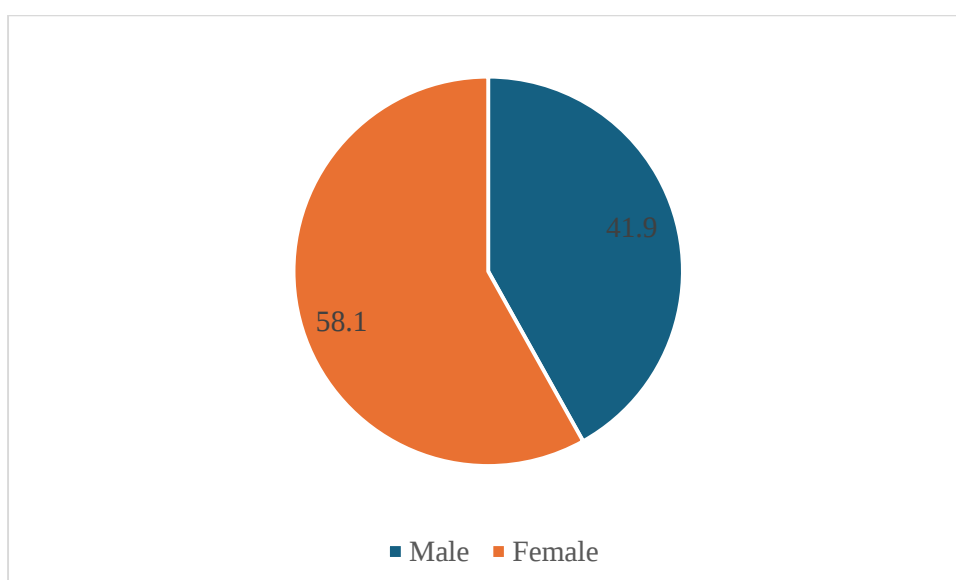


Figure 4. 1 Gender of respondents

4.2.3 Educational Qualifications

Figure 4.2 shows that most of the respondents (48.6%) attained secondary as their highest educational qualification, followed by 31.1% which indicated primary education. This was followed by 12.2% who indicated that they had non-formal education whilst the least of the respondents (8.1%) had tertiary educational qualifications.

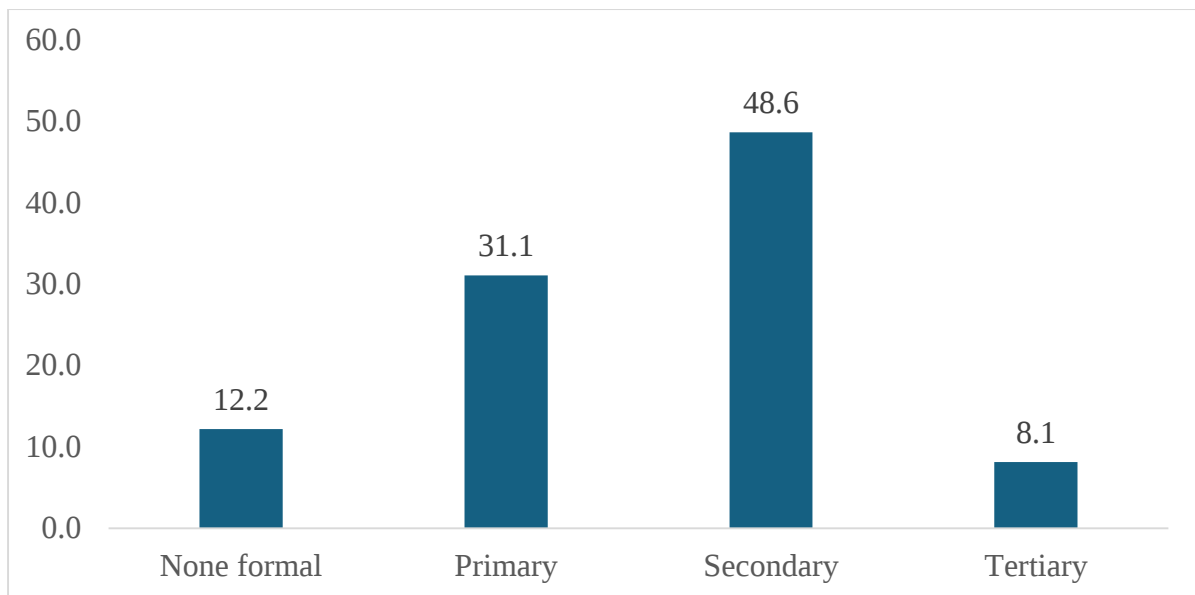


Figure 4. 2 Educational qualifications of respondents

4.2.4 Membership of community club

According to figure 4.3, most of the respondents (73%) were members of community clubs which included farmer clubs, health clubs and disaster management clubs. The rest of the respondents (27%) were not members of any community clubs.

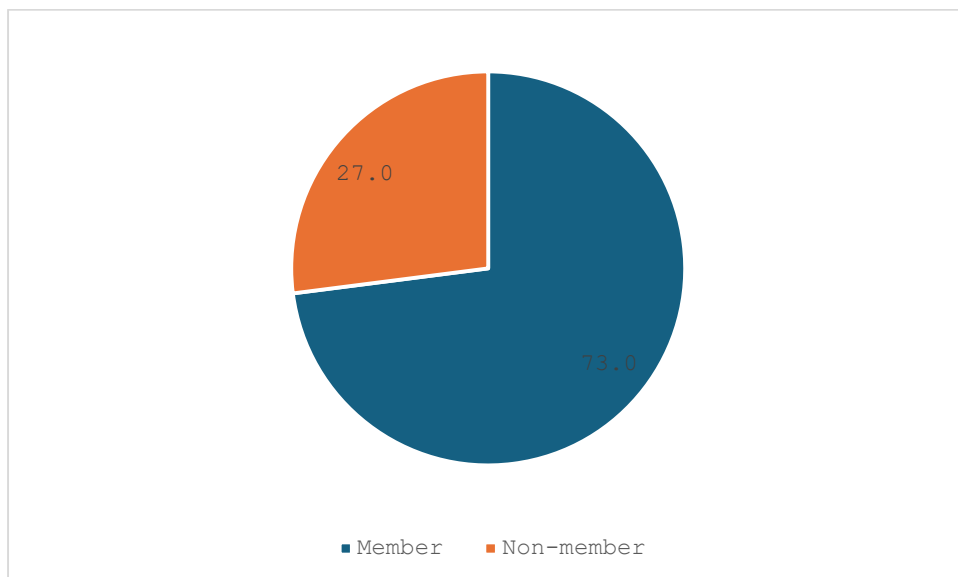


Figure 4. 3 Membership of community clubs

4.2.5 Quantitative Demographic factors

According to table 4.3, the average household size for the respondents in the study was 5 members with the minimum being 2 and the maximum being 9. There is less variability on the

household size with the St. deviation being 4.21. In addition, the average monthly household income for the respondents in the study was \$37.12 whilst the maximum was \$325, and the minimum was \$5. The average land size for the respondents was 0.73 ha with the largest in the study being 5ha and the lowest being 0.5ha. The average years of experience for the respondents in the study was 6.29 years with the maximum being 25 years and the minimum being 2 years.

Table 4. 3 Quantitative demographic variable characterisation

Demographic Variable	Min	Max	Mean	St. Deviation
Household size	2	9	5.23	4.21
Average monthly income	\$5	\$325	\$37.12	7.84
Land size	0.5	5	0.73	2.19
Years of farming experience	2	25	6.29	6.21

4.3 Effectiveness of existing disaster preparedness measures

According to table 4.4, the most effective disaster preparedness activity current being implemented in the community is community disaster awareness campaigns with an effective rating of 3.8 and a standard deviation of 0.94. This is also followed by information access on disaster preparedness which had a rating of 3.7 and a standard deviation of 0.9. This is followed by disaster trainings and capacity building which has an effective rating of 3.6. Coordination between local leadership and disaster agencies and early warning systems both have an effective rating of 3.3 as well as community risk assessment and planning with rating of 3.1 according to the table above. Access to emergency shelters and household level preparedness were highlighted as the least effective current preparedness activities with a rating of 2.9 and 2.5 respectively

Table 4. 4 Effectiveness of disaster preparedness practices

Disaster Preparedness Activity	Min	Max	Mean	Standard Deviation
Community disaster awareness campaigns	1	5	3.8	0.94
Early warning systems	1	5	3.3	1.1
Access to emergency shelters	1	5	2.9	1.35

Household-level disaster preparedness	1	5	2.5	1.2
Disaster training and capacity building	2	5	3.6	0.85
Community-based risk assessments and planning	1	5	3.1	1.02
Coordination between local leadership and disaster agencies	1	5	3.3	0.97
Information dissemination on disaster preparedness	1	5	3.7	0.9

4.4 Factors contributing to disaster preparedness and resilience

From table 4.5 below, several factors were statistically significant which included years of formal education ($p < 0.05 = 0.001$) which implies that an increased in the years of education also leads to the increase in disaster preparedness and resilience. Also, Income ($p < 0.05 = 0.04$) was statistically significant together with, household size ($p < 0.05 = 0.001$), years of farming experience ($p < 0.05 = 0.001$) and size of land ($p < 0.05 = 0.004$). This implies that these factors had positive influence on the disaster preparedness and resilience score calculated for the participants of the study. The co-efficient values for the factors were positive which implies that an increase in one unit of the variable led to the increase in the disaster preparedness and resilience of the participant. Only household size had a negative co-efficiency of 0.75 which implies that an increase in one member of the household decreased the preparedness and resilience score by 0.75.

Table 4. 5 Regression output for factors affecting disaster preparedness and resilience

Variables in the Equation	B	S.E.	Wald	Exp(B)	Sig.
Age	-.750	1.245	.363	2.118	.547
sex(1)	-.093	.521	.032	.911	.858
Education			2.543		.042
Yearsofeducation	2.120	1.256	3.325	1.298	.001*
Memberofclub(1)	2.325	1.176	.651	6.026	.075
Averagedistancefrom essentialservice	0.000	0.152	.544	3.766	.053
Accesstocredit(1)	1.480	1.050	5.578	0.840	.718
Income	2.123	.120	.702	1.000	.040*

Householdsize	-0.750	.194	15.029	2.110	.001*
Yearsofexperience	0.395	.120	10.943	1.485	.001*
Sizeofland	.323	.112	8.280	0.720	.004*
Constant	0.899	10671.957	.000	.000	.998

*0.05 Significance Level

4.5 Strategies for enhancing disaster preparedness and resilience

According to the table 4.6 below, most of the respondents indicated that community training and education on disaster preparedness was one of the chief strategies to enhance preparedness and resilience. This is followed by developing community-based disaster risk management plans (85.1%) and strengthening of early warning systems (81.1%). In addition, substantial respondents mentioned provision of emergency response kits at household level (78.4%) investment in resilient infrastructure (74.3%) and establishment and maintenance of emergency shelters (70.3%) as some of the strategies to enhance preparedness. The least mentioned strategies include improved coordination between local government and community leaders (66.2%), and integration of disaster preparedness in school curricula (60.8%)

Table 4. 6 Strategies to enhance disaster preparedness and resilience

Strategies to Enhance Preparedness and Resilience	Frequency	Percentage
Strengthening early warning systems	60	81.1
Community training and education on disaster preparedness	67	90.5
Establishment and maintenance of emergency shelters	52	70.3
Improved coordination between local government and community leaders	49	66.2
Provision of emergency response kits at household level	58	78.4
Integration of disaster preparedness in school curricula	45	60.8
Development of community-based disaster risk management plans	63	85.1
Investment in resilient infrastructure	55	74.3

4.6 Discussions of results

This section contains the discussion of the results presented on the research objective in the previous section.

4.6.1 Effectiveness of practices being implemented by communities

The findings from Table 4.4 reveal that community disaster awareness campaigns are perceived as the most effective disaster preparedness activity in the study. This is closely followed by information access on disaster preparedness and disaster training and capacity building. These results indicate that the community highly values communication, education, and engagement when it comes to disaster risk. This aligns with Rangarirai et al. (2023), who emphasized the success of community-based approaches in Chimanimani District, highlighting that public awareness campaigns, when localized and consistent, can significantly enhance readiness and responsiveness. Additionally, Ma et al. (2021) found that public motivation to participate in disaster preparedness increases when communities receive clear, accessible, and consistent disaster-related information, supporting the high effectiveness ratings seen here.

The relatively moderate scores for coordination between local leadership and disaster agencies, early warning systems, and community-based risk assessment and planning suggest that while some institutional mechanisms are in place, there may be gaps in operational integration and responsiveness. The standard deviation values around these activities also hint at varied experiences and access across the community. According to Rivera (2021), the trust in local institutions and the perceived reliability of early warning messages significantly influence how people prepare for disasters. In cases where communication between agencies and communities is inconsistent or where warning systems are not well-maintained, their effectiveness diminishes. Similarly, Nazli et al. (2015) note that even when training exists, without proper follow-up and organizational coordination, the application of such training can fall short in real-life scenarios.

Conversely, the least effective preparedness activities, according to the community, are household-level preparedness and access to emergency shelters. These low ratings may be attributed to economic constraints, limited infrastructure, and the absence of consistent support to sustain household-level efforts. As Ma et al. (2021) and Rangarirai et al. (2023) both point out, grassroots-level preparedness is often hindered by poverty, inadequate housing, and lack of access to basic services. Many rural communities like Nyangu rely heavily on external aid and have minimal resources to independently build or maintain emergency supplies, shelters, or safe homes. This reflects a gap between institutional preparedness initiatives and their

translation into individual household readiness, indicating a pressing need for targeted investment and support mechanisms that directly empower households.

4.6.2 Factors affecting disaster preparedness and resilience

The regression results presented in Table 5.5 show that years of formal education was one of the most statistically significant factors influencing disaster preparedness and resilience. This indicates a strong positive relationship, where increased education levels among community members correspond with improved levels of preparedness. This finding is consistent with Nazli et al. (2015), who argue that formal education enhances individuals' ability to process, understand, and act upon disaster-related information. Educated individuals are more likely to attend training, respond to early warnings, and engage in community risk-reduction initiatives. Education also increases access to employment and communication networks, which indirectly supports preparedness through income generation and awareness.

Another critical factor that showed statistical significance was income level ($p = 0.04$), confirming that better financial standing enables individuals and households to invest in preparedness measures such as emergency supplies, durable housing, and access to transportation during evacuations. The positive relationship observed here echoes findings by Ma et al. (2021), who noted that income is a key enabler of volunteerism and disaster readiness, especially in rural communities. Furthermore, years of farming experience and land size were also significant, suggesting that more experienced farmers and those with larger landholdings tend to be better prepared. This could be due to their heightened awareness of environmental risks and stronger ties to agricultural extension services, as also highlighted in Rangarirai et al. (2023), who emphasize the role of local livelihoods in shaping disaster risk perception and coping strategies.

Interestingly, while household size was statistically significant, it had a negative coefficient, meaning that as the number of household members increased, the disaster preparedness and resilience score decreased. This may be due to the resource strain larger households often face, making it difficult to allocate sufficient provisions or develop unified emergency plans. Larger families might also experience challenges in coordination and mobility during emergencies. Rivera (2021) notes that decision-making complexity tends to increase with household size, which may hinder timely disaster response. This finding underscores the need for targeted support to larger households, including tailored awareness campaigns and aid packages that reflect their unique vulnerabilities.

4.6.3 Strategies for enhancing disaster preparedness and resilience

The results from Table 4.6 reveal that community training and education on disaster preparedness emerged as the most widely supported strategy among respondents. This aligns with findings by Nazli et al. (2015), who emphasize that capacity building through structured training significantly improves individuals' ability to apply knowledge during crises. Training enhances awareness of local hazards, appropriate response behaviours, and available resources. The high level of support for developing community-based disaster risk management (CBDRM) plans reflects the growing recognition of grassroots participation in managing risk, as supported by Rangarirai et al. (2023), who highlighted the effectiveness of community-led initiatives in the Chimanimani district. Similarly, strengthening early warning systems (81.1%) was also highly prioritized, indicating a community desire for timely and accessible disaster alerts, which is crucial for early action and risk reduction.

Further analysis shows that strategies such as the provision of emergency response kits at household level, investment in resilient infrastructure, and establishment of emergency shelters were also seen as essential by the community. These strategies reflect a need for both preparedness at the individual level and supportive physical infrastructure at the community level. This is consistent with Ma et al. (2021), who assert that material preparedness and physical safety measures are critical enablers of community resilience. Provision of emergency kits empowers households to act independently in the early hours of a disaster, while resilient infrastructure and shelters ensure physical protection, especially for vulnerable groups such as children, the elderly, and people with disabilities.

Interestingly, the least mentioned strategies were improved coordination between local government and community leaders and integration of disaster preparedness into school curricula. The relatively lower emphasis on these strategies may indicate a gap in perceived relevance or trust in institutional mechanisms. Rivera (2021) points out that weak coordination among institutions often undermines community confidence in disaster governance systems. Additionally, the low recognition of schools as preparedness platforms may stem from limited prior engagement between education systems and disaster management initiatives in the community. However, these strategies should not be overlooked, as both institutional coordination and disaster education in schools are vital for building long-term community resilience across generations.

4.7 Chapter summary

This chapter presented and interpreted data on the effectiveness of current preparedness activities, the factors influencing disaster resilience, and the community's preferred strategies for enhancing preparedness. The results revealed that community awareness campaigns, access to disaster information, and training were the most effective current activities, while household-level preparedness remained weak. Regression analysis showed that variables such as education level, income, farming experience, and land size significantly influenced preparedness and resilience. Furthermore, strategies such as community training, development of disaster risk management plans, and strengthening early warning systems were identified as the most promising for enhancing resilience. The discussion of findings was supported by relevant literature, highlighting both the strengths and gaps in the community's disaster preparedness efforts and forming a basis for the recommendations presented in the next chapter.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter contains the conclusion and recommendations derived from the findings of the study from the previous chapter. It begins by summarizing the key findings drawn from data analysis and discussion, highlighting the most effective preparedness activities, significant socio-economic factors influencing resilience, and the strategies identified to enhance future disaster readiness. The chapter then offers conclusions based on the research objectives and findings, followed by practical and policy-oriented recommendations aimed at strengthening disaster preparedness and resilience within the community. The aim is to inform stakeholders, including policymakers, NGOs, and local leaders, on actionable measures to reduce vulnerability and enhance community capacity in the face of future disasters.

5.2 Summary of results

The study found that while a range of disaster preparedness activities are being implemented in the Nyangu community, their effectiveness varies significantly. The most effective activity was community disaster awareness campaigns, with a high mean rating of 3.8, followed closely by information access on disaster preparedness (mean = 3.7) and disaster training and capacity building (mean = 3.6). These activities are well-received due to their accessibility and the active involvement of community members and local facilitators. On the other hand, activities such as access to emergency shelters (mean = 2.9) and household-level preparedness (mean = 2.5) were rated as least effective, indicating gaps in infrastructural and individual-level preparedness. This suggests a need for more targeted interventions that address these weaker areas, particularly those that involve material resources and household engagement.

The regression analysis revealed that several socio-economic variables significantly influence the community's level of disaster preparedness and resilience. Years of formal education ($p = 0.001$), income level ($p = 0.04$), farming experience ($p = 0.001$), and land size ($p = 0.004$) were found to positively contribute to preparedness and resilience, suggesting that individuals with more education, income, experience, and assets are more likely to take proactive disaster preparedness measures. Interestingly, household size was also statistically significant ($p = 0.001$) but had a negative coefficient, implying that larger households may face greater challenges in preparing for disasters, possibly due to resource constraints and coordination difficulties. These findings underscore the importance of tailoring preparedness interventions based on household demographics and socio-economic status.

The findings indicated strong community support for several key strategies aimed at improving preparedness and resilience. Chief among them were community training and education (endorsed by over 85% of respondents), development of community-based disaster risk management plans (85.1%), and strengthening of early warning systems (81.1%). Other notable strategies included provision of emergency response kits at the household level, investment in resilient infrastructure, and the establishment of emergency shelters. However, strategies like improved coordination between local government and community leaders (66.2%) and integrating disaster preparedness into school curricula (60.8%) were less prioritized, suggesting limited recognition or awareness of their long-term importance. These findings indicate a clear community preference for practical, action-oriented strategies, while also highlighting the need to strengthen institutional and educational preparedness measures.

5.3 Conclusion

Based on the findings of this study, it can be concluded that while the Nyangu community of Chimanimani has made notable strides in implementing disaster preparedness activities, there are still significant gaps that need to be addressed. Community disaster awareness campaigns, information dissemination, and capacity building have proven to be the most effective, largely due to their participatory and educational nature. However, areas such as access to emergency shelters and household-level preparedness remain weak, indicating a lack of infrastructure and individual readiness. This suggests that while community-level initiatives are relatively strong, there is a need for more resource-oriented and household-targeted interventions to ensure comprehensive preparedness.

Furthermore, the study concludes that socio-economic factors play a critical role in shaping disaster preparedness and resilience. Higher levels of education, income, farming experience, and land ownership positively influence preparedness levels, while larger household sizes may hinder readiness. These insights point to the importance of integrating socio-economic considerations into disaster risk reduction planning. Additionally, the community has shown a strong preference for practical strategies such as training, risk management planning, and early warning systems. However, more effort is needed to build institutional coordination and promote disaster education in schools. Overall, enhancing disaster preparedness in Nyangu requires a multi-pronged approach that combines education, infrastructure development, community engagement, and policy support.

5.4 Recommendations

- It is recommended that there be enhancement of household-level preparedness by distributing emergency kits and providing practical training on how families can respond to different disaster scenarios. This can be coordinated by local authorities and NGOs.
- There is need to improve access to emergency shelters through the construction or refurbishment of community shelters and public awareness on their location and usage. Community drills should be included to familiarize residents with shelter protocols.
- Incorporate disaster education into adult literacy and continuing education programs, targeting individuals with low formal education to build basic knowledge on preparedness and resilience strategies.
- Support income-generating projects and farming extension services to improve household economic resilience. These can empower residents to invest in preparedness tools and activities independently.
- Institutionalize community-based disaster risk management plans by involving local leaders, government representatives, and disaster response agencies to ensure sustainability and integration into local development plans.
- Invest in strengthening early warning systems, including the use of mobile alerts, radio communication, and trained community focal persons, to ensure timely and clear dissemination of disaster risk information.

5.5 Recommendations for future studies

Future research should explore the role of indigenous knowledge and traditional coping mechanisms in disaster preparedness and resilience, particularly in rural communities like Nyangu. Understanding how local beliefs, customs, and historical experiences influence disaster response could offer valuable insights for culturally appropriate and sustainable preparedness strategies.

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Appendix

Appendices 1 Research Questionnaire

My name is Giyani Barnabas Siwela, and I am currently studying for an Honours in Development Studies. As part of my academic research, I am conducting a study titled **"Investigation into Disaster Preparedness in the Nyangu Community of Chimanimani following Cyclone Idai."** The purpose of this study is to identify the various disaster preparedness practices amongst the community as well as to ascertain the various factors affecting disaster preparedness and resilience. The findings will contribute to a better understanding of the challenges faced by rural communities and inform policy recommendations for more effective climate adaptation interventions. Your participation in this study is voluntary, and all responses will be treated with strict confidentiality. The information you provide will be used solely for academic purposes, and your identity will remain anonymous in all reports and publications. You are free to withdraw from the study at any time without any consequences.

SECTION A: DEMOGRAPHIC INFORMATION

Please tick [✓] or fill in the appropriate response.

1. Gender:
☐ Male
☐ Female
☐ Other
2. Age: _____
3. Education level:
☐ No formal education
☐ Primary
☐ Secondary
☐ Tertiary
4. Household size: _____ people
5. Monthly household income:
☐ Less than USD 50
☐ USD 50–100
☐ USD 101–200
☐ Above USD 200

6. Years of farming experience: _____ years

7. Size of land cultivated: _____ hectares

SECTION B: EFFECTIVENESS OF DISASTER PREPAREDNESS ACTIVITIES

1. On a scale of 1 to 5 (1 = Not Effective, 5 = Very Effective), rate the following disaster preparedness activities in your community.

Preparedness Activity	1	2	3	4	5
Community disaster awareness campaigns	☐	☐	☐	☐	☐
Access to disaster information	☐	☐	☐	☐	☐
Disaster trainings and capacity building	☐	☐	☐	☐	☐
Coordination between local leadership and disaster agencies	☐	☐	☐	☐	☐
Community risk assessment and planning	☐	☐	☐	☐	☐
Early warning systems	☐	☐	☐	☐	☐
Access to emergency shelters	☐	☐	☐	☐	☐
Household level preparedness (e.g., emergency kits, plans)	☐	☐	☐	☐	☐

Other.....
.....
.....
.....

SECTION C: FACTORS INFLUENCING PREPAREDNESS AND RESILIENCE

1. Please indicate your level of agreement with the following statements.
(1 = Strongly Disagree, 5 = Strongly Agree)

Statement	1	2	3	4	5
Higher education helps me understand how to prepare for disasters	☐	☐	☐	☐	☐
My income level affects my ability to prepare for disasters	☐	☐	☐	☐	☐
Large household size makes disaster preparedness more difficult	☐	☐	☐	☐	☐
Farming experience improves my ability to deal with disasters	☐	☐	☐	☐	☐
Having more land means I need to plan more for disaster risks	☐	☐	☐	☐	☐

Other.....

.....

.....

.....

.....

.....

SECTION D: STRATEGIES TO ENHANCE PREPAREDNESS AND RESILIENCE

1. Which of the following strategies do you believe will help improve disaster preparedness and resilience in your community?

.....

.....

.....

.....

.....

.....

Thank you very much for your participation

Appendices 2 Interview Guide

My name is Mavis Mafunda, and I am a part 4.2 student currently studying for an Honours in Development Studies. As part of my academic research, I am conducting a study titled **"Investigation into Disaster Preparedness in the Nyangu Community of Chimanimani following Cyclone Idai."** The purpose of this study is to identify the various disaster preparedness practices amongst the community as well as to ascertain the various factors affecting disaster preparedness and resilience. The findings will contribute to a better understanding of the challenges faced by rural communities and inform policy recommendations for more effective climate adaptation interventions. Your participation in this study is voluntary, and all responses will be treated with strict confidentiality. The information you provide will be used solely for academic purposes, and your identity will remain anonymous in all reports and publications. You are free to withdraw from the study at any time without any consequences.

SECTION A: INTRODUCTORY INFORMATION

1. Can you briefly introduce yourself and your role in the community?
 2. How has your community been affected by past disasters, particularly Cyclone Idai?
-

SECTION B: EFFECTIVENESS OF CURRENT DISASTER PREPAREDNESS ACTIVITIES

1. What disaster preparedness activities are currently being implemented in your community?
 2. In your opinion, which of these activities have been most effective, and why?
 3. Which activities do you think have been least effective? What challenges have contributed to their ineffectiveness?
 4. How do people in the community receive information about disaster risks and preparedness?
 5. How involved is the local leadership and community in disaster preparedness planning?
-

SECTION C: FACTORS INFLUENCING DISASTER PREPAREDNESS AND RESILIENCE

1. What personal or household factors influence how well families prepare for disasters?
2. Do you think education plays a role in how people respond to disaster warnings? Please explain.
3. How does income level affect a household's ability to prepare for emergencies?

4. What role does land size or farming experience play in disaster preparedness for rural households?
 5. Are larger households better or worse prepared for disasters? Why?
-

SECTION D: STRATEGIES TO ENHANCE PREPAREDNESS AND RESILIENCE

1. What strategies do you think can improve disaster preparedness in this community?
 2. What role can education and awareness campaigns play in improving resilience?
 3. Are early warning systems effective in your area? If not, how can they be strengthened?
 4. What infrastructure or institutional improvements are most urgently needed?
 5. How can schools or children be better included in disaster preparedness efforts?
-

SECTION E: CLOSING QUESTIONS

1. What support would you like to see from government or NGOs to improve disaster preparedness?
2. Is there anything else you'd like to share regarding disaster preparedness in your community?

Appendices 3: Research letter from Bindura University



Appendices 4: Approval letter from Chimanimani Rural District Council

THE COUNCILLOR
WARD 21
CHIMANIMANI DISTRICT
9TH MAY 2025

THE CHAIRPERSON
GEOSCIENCE DEPARTMENT
SOUTHERN UNIVERSITY OF SCIENCE

SEARCHER/MAJAN

RE: RESEARCH ON CYCLONE ISAH BY MAJAN
MAJAN'S REGISTRATION NO. B212015 B 4TH TO 9TH MAY 2025

ABOVE MATTER LETS. THIS NOTE SERVES
TO CONFIRM THAT THE ABOVEMENTIONED
STUDENT AT YOUR UNIVERSITY
WAS IN OUR AREA CARRYING OUT
A RESEARCH ON THE INCIDENT
OF CYCLONE ISAH WHICH AFFECTED
OUR AREA OVERNIGHT ON 15TH/16TH
MARCH 2019 WITH DEVASTATING EFFECTS
TO LIFE BUILDINGS AND LAND. I
HEREBY CONFIRM THAT MAJAN COLLECTED
A LOT OF DATA ON THE DEVASTATION
SAID CYCLONE LEFT BEHIND.

YOURS FAITHFULLY,
C. M. M.

CHIMANIMANI INCHUMU

CHIMANIMANI RURAL DISTRICT COUNCIL

WARD No. XXI.

DATE 08.05.2025

Appendices 5: Plagiarism Report

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