ASSESMENT OF DISASTER RISK MANAGEMENT SYSTEM ON DISASTER RESILIENCE OF KENYAN COUNTIES: A CASE OF BARINGO COUNTY

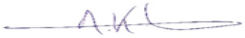
ABDUSHAKUR KHATIB LENDAPANA

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT AND LEADERSHIP IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTERS OF ARTS IN DEVELOPMENT STUDIES OF THE MANAGEMENT UNIVERSITY OF AFRICA

OCTOBER, 2024

DECLARATION

This project is my original work and has not been presented for a degree in any other University.

Signature  Date 27/10/2024

Abdushakur Khatib Lendapana

MDS/4/00016/2/18

This project has been submitted for examination with my approval as a University supervisor.

Supervisor's Signature…… Date ……

Dr. Patricia Chemutai,

The Management University of Africa

DEDICATION

My dedication for this thesis goes to my wife Karie, Bungei my Son and Daughters Naikena and Afroza for their unending support and love throughout my Master Degree journey. Addionally, I dedicate it to My Parents Mr. and Mrs. Abdulrahman Lendapana for ensuring that I had the best educational foundation which propelled me to this far.

ACKNOWLEDGMENT

I take this opportunity to sincerely thank the Management University of Africa firstly for offering a very practical and functional programme in distance learning that reduces the physical and spatial barriers in access to education and also allowing its student with an opportunity for self-paced learning.Also and most importantly for the support that the University and its entire staffs offered myself and all its students to ensure seamless access to academic resources and guidance.

Thirdly I want to pass my sincere appreciation to my supervisor Dr. Patricia Chemutai for the professional counsel in my master degree academic journey. I also want to thank my employer and colleagues at Baringo County Government for allowing humble time and support during my studies and my colleagues for agreeing to provide important input as respondent during data collections.

ABSTRACT

Despite all the disaster risk management measures that are in place, disasters have continued to rock Baringo County. This research aimed at assessing effect of disaster risk management systems on disaster risk resilience of Kenyan counties, using Baringo County as case. Specifically, the study aimed at; to determine the effects of disaster risk awareness on disaster risk resilience in Baringo County, to examine the effects of disaster risk governance on disaster risk resilience in Baringo County, to assess the effects of risk reduction measures on disaster risk resilience in Baringo County and to examine the effect of disaster preparedness measures on disaster risk resilience in Baringo County. System Theory, Institutional Theory and Stakeholder Theory was used as the theoretical framework underpinning the study, and employed a cross sectional case study method. A total of 405 officers were targeted who work in sectors with responsibility in disaster risk management within Baringo County comprising of Directorate of DRM, department of Agriculture and Livestock, Water, Health and Nutrition, Fire, Security and peace building and NGOs/Development partners implementing Disaster Risk Reduction initiatives at the county level. A stratified random sampling was used to get the research subjects. Data collection was done using structured questionnaire. The quantitative data collected was analyzed quantitatively by use of descriptive and inferential statistics with the aid of SPSS software version 27. A multiple regression model was applied to demonstrate the association between the independent variables and the dependent variable of disaster risk resilience and the results was presented in tables, charts and bars. Overall, the study findings showed that there exists a strong positive relation between the independent and the dependent variables as shown by $R = 0.799$ and $R^2 = 0.638$ this means that 64% of variation in disaster risk resilience is explained by changes in all the independent variables. The level of significance was <0.000 thus the overall regression model significantly predicted the dependent variables. the findings also showed that disaster preparedness measures were the predictor that most affects disaster risk resilience in Baringo County with *Unstandardized coefficient (β)* value of .479 followed by disaster risk reduction measure with β of .205. Disaster risk awareness was the least significant determinant of disaster risk resilience in Baringo County with *Unstandardized coefficient β of* .047. This study recommends that Baringo County government and its partners needs to continue strengthening investment in all four independent variables as evident has shown they play complimentary role in addressing disaster risk resilience.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

ADB: Asian Development Bank

ARC: Africa Risk Capacity

BCG: Baringo County Government

CoK: Constitution of Kenya

CRED Centre for Research on the Epidemiology of Disasters

CCRIF: Caribbean Catastrophic Risk Insurance Facility

DRM: Disaster Risk Management

DRR: Disaster Risk Reduction

EIA: Environmental Impact Assesment

FEMA: Federal Emergency Management Authority

GFDRR: Global Facility for Disaster Risk Reduction

GoK: Government of Kenya

HDI: Human Development Index

HGMP: Hazard Mitigation Grant Programme

IFRC: International Federation for Red Cross and Red Crescent

IGRTC: Intergovernmental Relation Technical Committee

KMET: Kenya Meteorological Department

KRCS: Kenya Red Cross Society

NDMA: National Drought Management Authority

NDMU: National Disaster Management Unit

NDOC: National Disaster Operation Center

NGO: Non-Governmental Organization

RoK: Republic of Kenya

SFDRR: Sendai Framework for Disaster Risk Reduction

SIA: Social Impact Assesment

SOPs: Standard Operating Procedures

UN: United Nations

UNDP: United Nation Development Programme

UNDRR: United Nation office for Disaster Risk Reduction

UNISDR: United Nation International Strategy for Disaster Reduction

WARMA: water Resource Management Authority

OPERATIONAL DEFINITIONS OF TERMS

Disaster: An emergency event that occurs with little or no warning and that causes more destruction or disruption of operations than the community can correct by application of its own resources. Disasters result into loss of lives, destructions of infrastructures like roads and water facilities, bodily injury to people, loss of assets, and business.

Disaster Risk Resilience: The capability of an organization, community and people that are exposed to hazards to be able to resist, absorb, adapt and be able to recover from the hazard effect in an efficient and timely way and be able to preserve and or restore its essential structures and functions

Disaster Risk Governance refers to ways in which public agencies, public servants, private sectors, media and civil society at grass roots, local, national and regional level collaborate for purposing of management and reduction of disasters and climate linked risks. it involves institutions, legal and policy frameworks and mechanisms to guide, organize and oversee disaster risk reduction and related policy areas.

Disaster Risk Management: refers to the organizations of administrative bureaucracies, systems, operations and human resources capabilities to plan, strategies and implement approaches aimed at lessening the negative effects of disasters and hazards.

Disaster Preparedness: refers to capacity developed for effective anticipation, responding, and recovering from the impacts of hazards events.

Disaster Risk Reduction: is defined as a concept as well as method of lowering disaster risk through organized initiatives for assesment and management of factors causing disasters, through

mechanism that lessens hazards exposure, lessening the vulnerability levels of people and their assets or livelihoods, sustainable managements of environments and lands, and improving preparedness capacity for disaster events.

Disaster Risk Reduction Measures: Refers to a coordinated and structured government and private led investment on disaster risk reduction and prevention through application of physical and non-physical interventions.

Early warning system: A system for collection, analyzing and dissemination of warning information's of probable hazards and disaster events to enable organizations, communities and individuals to prepare to prevent or mitigate and act appropriately in order to avert or reduce chances of incurring loss as a result of hazard or disaster event.

Hazard: refers to dangerous occurrence, events, object, condition or human activity that might cause injury, loss of life, property damage, loss of livelihoods, and economic ,social or environmental disruptions.

Understanding Disaster Risk: The level of knowledge of disaster risks, its causes and possible interventions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This section provides the study background and discusses the problem statement underpinning the study, the study objectives and research questions that the study sought to answer, further the chapter discussed the justification and the rational for the study.

1.1 Background to the Study

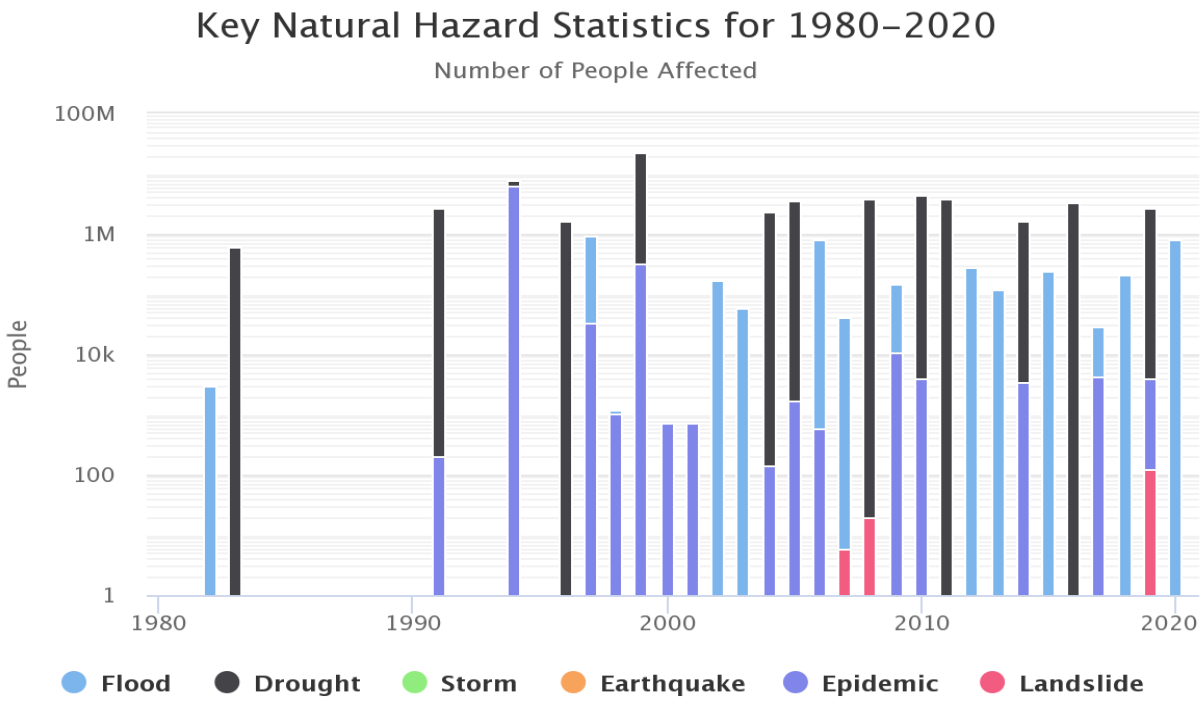
Disasters are a universal phenomenon that yearly affects billions of people across the world, however there has been increasing trends in the scale and magnitude of this disasters over the recent years. Worldwide disasters continue to claim lives, livelihoods and critical infrastructures. In 2023, highest disaster mortality was recorded totaling 86,473 surpassing the 20-year average of 64,148 deaths. This was mainly due to catastrophic earthquakes in Turkey and Syria(The International Disaster Database, 2024).

In 2023, there was a considerable increase of disaster events where 399 disasters were recorded in total. This catastrophic events resulted in 86,473 deaths and affected population of 93.1 million with an economic loss amounting to US dollars 202.67 billion(CRED et al., 2023). Turkey and Syria was the most affected countries with 56,683 deaths reported and an economic loss of over 42.9 US dollars (Mavrouli et al., 2023). The event affected a total of 18billion population across the two countries(Ahmed et al., 2023). Further in 2021, there was a considerable increase of disaster events which jumped to 432 as compared to 357 average catastrophic events recorded annually between 2001 and 2020 (Ritchie &Rosado 2022) (CRED, 2021). This catastrophic events resulted in 10,492 deaths, and affected 101.8 million populations, with an economic loss of approximately 252.1 billion US$(African Risk Capacity, 2024). Asia was the most severely affected continent with 40% of all events reported and 49% of the total deaths contributing 66% of the total population affected. Flood related disasters was the dominant disasters in 2021 with a reported 223 flood occurrences. Majority of this deadly floods were experienced in India, China and Afghanistan claiming 1,282, 352, and 260 lives respectively (Tin et al., 2024) (CRED, 2021).

In Africa, catastrophic disaster events were recorded in 2023 with a number of Countries bearing immense loss, Earthquake in Morocco resulted in 2,946 deaths with an US dollar 7billion estimated economic loss, Storm Daniel resulted in 12,352 deaths in Libya with an economic loss of 6.2million dollars, Floods in Democratic republic of Congo resulted in 2970 deaths, In Malawi Tropical Storm Freddy resulted to 1209 deaths (CRED, 2023).In the Same Year Flood affected 2.9million and 2.5million population in Tanzania and Somalia respectively (CRED, 2023).

A 20-year data review from 2009 to 2020 by CRED ranked Kenya as number one country in Africa with the most (60) disasters events reported, followed by Mozambique and South Africa with 55 and 54 disasters occurrence respectively. Other countries included Nigeria 49, Ethiopia 43 and Democratic Republic of Congo with 41 occurrences. However, with regards to deaths relating from Disasters, Somali ranked as the first country followed by Algeria . Among the drivers of Disasters in Kenya includes; Floods, Drought, Landslides, Epidemics, Conflicts, Traffic Accidents, Fire Incidents and Terrorism (ARC, 2024). Over the last 40 years, Floods, Droughts, Epidemic and Landslides have been the biggest Natural hazards affecting majority of populations in kenya (See figure 1.1). historical trend of natural hazards as seen in figure 1.1 also shows there have been increasing trends and magnitude of Epidemics, floods, Droughts and Landslides over the last 20 years.

Figure 1.1: Key Natural Hazard Statistics for Kenya 1980-2020



Source: World Bank: Climate Knowledge Portal 2021

These disasters have caused serious disruptions on people's lives and livelihoods including serious damage in critical infrastructures like roads, transport systems causing economic disruptions. Responses to this disaster events have meant diversion of planned use of resources, and interrupt economic activities and retard development (Igobwa, Gachanja, Muriithi, Olukuru, Wairegi & Rutenberg, 2022). Floods and its resultant emerging trends of swelling of lakes has added to disaster toll in Kenya (Kemboi, 2014, as cited in Muia, 2021). Lakes in the rift valley region of Kenya like Baringo and L. Bogoria experienced a surge in their water levels, resulting in ruinous flooding that drowned entire villages (Muia, et al., 2021). In 2020 flooding was reported in over three quarters of Kenya's counties with the trend expected to worsen in intensity and severity in the coming future due to climate change (Osunga & Kingori, 2021). For instance, in March-April-May (2020) season over 252,384 people were directly impacted by floods (Kenya Red Cross Society (KRCS), 2020).

The increasing of frequency and magnitude of disaster has been attributed to a number of factors, (Nojavan,Salehi & Omidvar, 2018) noted the following factors; more frequent extreme weather

events associated with increasing climate variability and change; agricultural production systems that increase risk (e.g. heavy reliance on irrigated crops resulting in aquifer depletion and salinization, or unsustainable pasture/ livestock or bio-fuel production on land that was formerly and more appropriately covered in forest); population growth combined with demographic change and movements leading, for instance, to unplanned urbanization, growing demand for food, industrial goods and services.

The emerging trends on disaster occurrences, calls for the need to see disasters more from the perspective of reducing the risks associated with a particular disaster occurrences and to also put much more efforts in building the communities, environments and economic systems and infrastructures resilience to disaster shocks. Risk reductions, risk management and building capacity are part of the mechanism to building resilience to disaster shocks. According to (Johnson et al., 2021), the risk management options should acknowledge resilience building as a process that is innately contextual. Disaster Resilient building is about preventing the creation of new disaster risks, lessening of prevailing risks and enhancing the socio economic and environmental resilience by adopting and implementing international, National and sub national risk reduction policies and plans.

1.1.1 Disaster Risk Management System

Disaster risk management system refers to the overall process of application of disaster risk reductions plans and strategies to avert emerging risks, lessen present risks and manage residual threats thus contributing to strengthening risk reduction measures and building resilience. Disaster risk management system establishes the goal for risk reduction with strategic actions or interventions to accomplish them(Cho & Choi, 2024). The risk management system provides for a mechanism for risk assessments, Risk reduction interventions and the identifications and strengthening of local capacities to cope with hazards, identifications of root causes of vulnerabilities (Wisner,Gaillard &Kelman, 2012). Additionally, it ensures that emergency response efforts do not do more harm.

The purpose of Disaster Risk Management (DRM) system is to reduce the underlying factors of risk and to prepare for and initiate an immediate response should disaster hit (Solinska-Nowak et al., 2018). Conceptually, Disaster Risk Management system sees DRM as a continuers process of actions and interventions that is being rolled out before a disaster event, during a disaster event

and post disaster occurrence. The ideological shift to conceptualize DRM as continuers process was based on the reality that, there is a seamless transition between pre disaster event, during and post disaster, most especially in Nations that are routinely exposed to disasters (Etinay et al., 2018) and the DRM interventions essentially follows this. For example, World Health Organization (2019) content that during emergency response, the focus of the communities and agencies responsible for humanitarian support is on saving lives and property, while the focus shift during post disasters event is to implement recovery and rehabilitation to get communities and systems back to operation normalcy(Cho & Choi, 2024).

Risk management system involves; Strengthening the Disaster Risk Management institutional framework. This involves the integration and coordination of all aspects that are critical for building, sustaining and increasing capability to prepare, prevent, respond and recover from natural and human induced disasters. thus to successfully develop a disaster risk resilient society, there is need for a comprehensive disaster risk management institutional framework (Ashu & Van Niekerk, 2019). This includes rallying public commitment and address institutional gaps including strengthening organizational capacities, through policy and legislative enactments and implementations and community action, developing mechanism for environmental management, land-use, and urban planning, and protection of critical facilities (Etinay et al., 2018).

Building understanding of disaster risk is another critical factor in disaster risk management system, (Ardalan, Linkov, Shubnikov & LaPorte, 2018) advances that awareness creation on DRM should be roll out to all without consideration of level of education, social status in the community. Awareness creation empowers vulnerable communities to take lead in their own disaster risk reduction interventions including mobilizing community resources. The system Integrates households and communities' traditional coping strategies, and recognizes the importance of communities and individual's ownership of DRM process as opposed to them being passive beneficiary and dependent on others actions (Shah et al., 2020).

The Sendai Framework for Disaster Risk Reduction 2015-2030 is the global framework to guide the combating of disasters and its resultant impacts on lives, livelihoods and the environment. The framework had primary goal of Preventing new and reducing existing disaster risk through the implementation of integrated and inclusive set of measures spanning political, economic, legislative, social and environmental (UNISDR, 2015b).The above framework whose

development and adoption was a culmination of extensive research on the subject matter and lesson learned, Identified four key priority areas to be pursued in order to achieve the goal of preventing new, reducing existing disasters through implementation of multifaceted interventions across all the sectors thus strengthening disaster resilience of states, organizations , institutions and communities.(UNISDR, 2015b).

These four area of priority are: Building and expanding disaster risk understanding; enhancing governance and management of disaster risk; Investing more in disaster risk reduction to enhance resilience building; and lastly: strengthening disaster preparedness to ensure response and recovery is effective, rehabilitation and reconstruction. Further, the Sendai framework for Disaster Risk Reduction 2015-2030 provides a guide to the Disaster risk management system which is mainstreamed and coordinated by the relevant development plans and programme activities (Lee & Chen, 2019). Plans at the National-levels should be specific to each administrative level mandates and should takes consideration of each administrative levels differing geographical and social context. The system should provide clear time frames and responsible offices or individuals for implementation demarcating clear sources of funds. The systems also need to establish linkages with other relevant plans systems i.e. sustainable development and climate change adaptation (Sakurai & Murayama, 2019).

1.1.2 Disaster Risk Awareness

Building disaster risk understanding was identified as a number one priority area of focus within and across sectors by Countries at both decentralized units and nationally in order to archive the goal of strengthening disaster resilience (UNISDR, 2015b).This risk knowledge is useful especially before risk assessment, actual risk assesment, during mitigation and prevention and most importantly for crafting and implementing suitable preparedness and effective response to disasters. For disaster risk management policies to be effective, the development of this policies should be based on the full understanding of disaster risk, encompassing characteristics of hazards, understanding vulnerabilities, existing capacity and exposure of human and livelihoods.

The Sendai Framework for Disaster Risk Reduction (SFDRR) identified the following actions to help build the understanding of disaster risk; periodical disaster risk assessments which includes hazard, vulnerability and capacity assessments; development, periodic updates and dissemination of location based disaster risk information: regular evaluation dissemination of disaster impacts

and losses specific to a particular disaster event; dissemination of hazard exposure and non-sensitive vulnerability and disaggregated disaster loss data; making relevant disaster risk reduction data available; capacity build governments, private sectors and non-governmental staff, communities and volunteers; strengthen collaboration between scientific and technical communities on Disaster Risk Reduction (DRR); integrate traditional, indigenous knowledge in disaster risk assessment; invest in innovation and technology development in the management of risks ; incorporate risk information in both informal and formal education both i.e public sensitization; enhance awareness building and civic education risk reduction; application of risk information to develop and implement disaster risk reduction policies; collaboration with non-governmental and community organizations in the dissemination of disaster risk (UNISDR, 2015b).

1.1.3 Disaster risk Governance

Disaster risk is defined as the potential loss of life, injury, or destruction of properties that can occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity(United Nation, 2016;UNISDR, 2015a).On the other hand, governance is defined the way governments ministries and agencies, institutions, private partners and individuals organize themselves to accomplish their shared affairs. The concept of governance includes formal and explicit mechanisms such as legislation, policies, mandatory standards and administrative procedures through which societies are organized as well as the wide range of informal and implicit arrangements that mediate social, economic and political relationships and the management of territory and resources (Galperin & Wilkinson, 2015).

Specifically (UNISDR, 2015a) defines disaster risk governance as the specific arrangements that societies put in place to manage their disaster risk. In further elaboration to this definition, the United National Development Programme (UNDP) defines risk governance to mean the way government institutions, public servants, private segment, media, community and civil societies at all levels collaborate to manage and lessen climate and disaster related risks. This means ensuring that sufficient levels of capacity and resources are made available to prevent, prepare for, manage and recover from disasters (Galperin & Wilkinson, 2015). Also (UN 2016) defines disaster risk governance as a system of institutions, mechanisms, policy and legal frameworks and other

arrangements to guide, coordinate and oversee disaster risk reduction and related areas of policy. The foundation for a strong DRM system is disaster risk governance, which means, the ensemble of laws, policies, plans and institutional arrangements pertaining to DRM(Dar & Alam, 2020).

According to Tierney (2012) as cited in (Gall, Cutter and Nguyen 2014), "disaster governance consists of the interrelated sets of norms, organizational and institutional actors, and practices (spanning pre-disaster, trans-disaster, and post-disaster periods) that are designed to reduce the impacts and losses associated with disasters arising from natural and technological agents and from intentional acts of terrorism.". For instance, rather than only addressing disasters by strengthening emergency response actors or building preventive measures such as dikes, disaster risk governance means arranging, coordination and organizing activities, priorities and strategies across all sectors and domains of society with the intent of reducing and managing disaster risks (Lauta, Albris, Zuccaro & Grandjean, 2018).

SFDRR 2015-2030 identified the need to strengthen risk governance as a mechanisms of managing risk as one of the global priority that nations need to implement in order to prevent new and reduction of existing disasters so as to strengthen the disaster resilience of states, organizations, institutions and communities. Disaster governance goes beyond governmental settings, powers, processes and tools by encouraging stakeholder participation operating at all scales—from local to global.(UNISDR, 2015b) and (Gall et al., 2014).further its spans risk governance across the different disaster risk management phases of prevention, mitigation, preparedness, response, recovery and rehabilitation.

Regionally, the government of Ethiopia in 2013 enacted a policy which provides for a comprehensive framework of Disaster Risk Management (DRM) measures (Melaku & Mulugeta, 2021). The policy provided a policy strategic shift, including a delocalized DRM system, risk assesment, capacity building, early warning systems, and mainstreaming of risks reduction interventions into development plans. The policy overall objective was to reduce disaster risk and related damages as a result of disaster events through setting up an all-inclusive and coordinated disaster risk management system; to reduce and prevent disaster risk that pose a challenge to sustainable development by enhancing a culture of mainstreaming risk reduction into long term development plans; Reduce reliance on relief aid through inculcating attitude change and building resilience of vulnerable communities (Waganew & Azazh, 2021).

1.1.4 Disaster Risk Reduction Measures

Investment in risk reduction as a mechanism to strengthen risk resilience was identified as a number three priority area of in SFDRR in order to archive prevention of new and reduction of prevailing disasters so as to strengthen disaster resilience of states. The SFDRR 2015-2030 noted that investments both Public and private, in disaster risk prevention and reduction via structural and non-structural actions were essential to improve the socio-economic and environmental resilience of communities, states and their properties, (UNISDR, 2015b).

This investments can include; Formulating and implementing of policies, strategies or even legislations aimed at reducing risks in all sectors; investing in risk transfer mechanisms like insurance for both public and private investment; strengthening the resilience of private and public investments by enforcing structural and non-structural risk prevention and reduction actions ;adapting appropriate design and using of standard materials from the beginning that can withstand hazards; regular maintenance and readjustments of public and private infrastructures; institute environmental impact assessment and social impact assessments in both government investments and private projects; implementation of structural and nonstructural actions at workplaces to strengthen its risk resilience; mainstream risk assessments in land-use planning and policies; mainstreaming of disaster risk reduction in rural planning; enforcement of appropriate building codes and standards; integrating DRR in health system to strengthen its resilience; enhance formulation and investments in both productive and humanitarian safety net programs that is inclusive; implement environment and conservation and natural resources management projects that is takes into consideration risk reduction issues.

In Pakistan, Disasters have contributed to colossal losses in the recent history; in 2005 an Earthquake of 7.6 magnitudes shook the northern areas of Pakistan resulting in the loss of over 73,000 lives and left 3.5 million people homeless (Shafi, 2019). this led to the establishments of the National Disaster Management Authority (NDMA), this authority has a key mandate to implement, coordinate and monitor disaster management interventions (Shah et al., 2020). Further the rate of occurrence and scale of disasters events made the government of Pakistan, to shift focus into investing in pre-emptive investments in Disaster Risk Management. Pakistan government developed a Disaster Risk Management Fund to provide a consolidated resources and invested in

disaster risk reduction strategy as a mechanism to proactively lessen the disaster impacts (Shah, Elahi, Alam, Dawar & Dogar, 2020).

1.1.5 Disaster Preparedness

Due to the steady growth of disaster risk across the world, Enhancing disaster preparedness for response and better recovery has been identified as a number four priority area of focus within and across sectors by states in order to prevent new and reduce existing disaster risks so as to strengthen their disaster resilience(UNISDR, 2015b).SFDRR noted that lesson learned from combating disasters globally has pointed on an urgent need to strengthening disaster preparedness for response and integrating disaster risk reduction in response preparedness and also putting requisite capacities in place for effective response and recovery.

The global frameworks governing DRR, identified the following actions to strengthen disaster preparedness; development and periodic updates of disaster preparedness and contingency policies and plans(UNISDR, 2015b); strengthen multi-hazard, multisector early warning systems; strengthen the resilience of critical economic and social infrastructure; strengthening of coordination and funding mechanisms and procedures for relief assistance; training staff in DRR related sectors, and community volunteers in preparedness and response mechanisms to enhance their preparedness when an emergency occurs; promote multisector cooperation; ensure rehabilitation and recovery interventions takes into consideration disaster risk management issues; consider relocation of critical infrastructures and social amenities to risk free zone where possible during reconstruction process; strengthen capacity to evacuate persons in at risk areas; setting up systems for registration of affected persons; setting up mechanisms for psychological support of the population affected by disasters.

In the Middle East, the government of Jordan invested in disaster preparedness and prevention which has formed a building block of the Jordan national security and economic development (Shamout, Boarin & Wilkinson, 2021). the hazard profile for Jordan's is characterized by multiple exposure to various hazards e.g floods, locust invasions, earthquakes, and other manmade hazards like dam failures, toxic wastes, and chemical spills. Climate change is expected to compound the frequency and severity of climatic based hazards like drought, flash floods leading to more significant socio-economic and environmental losses (Momani & Alzaghal, 2018). However, in the past decade both central and local government in Jordan have gained better understanding of

disaster risks and have implemented a number of interventions to strengthen its preparedness and response capabilities albeit their still remain a challenge in awareness creation especially across the general population.

1.1.6 Disaster Risk Resilience

Disaster risk resilience has been described by Sarker, Peng, Yiran and Shouse (2020) as both an outcome and a process. Disaster resilience According to Sarker et al (2020) is defined as the capability of the states, organizations, communities' groups and individuals to be able to adapt to a hazard event and be able to recover from hazards or shocks without it compromising their long-term development aspirations.

United Nations identified key requirements for being a disaster resilient society, namely; ability to anticipate, understand and assess risk; ability to prepare to adjust using tools to support decision-making when faced with the unpredictability of future risks; ability to Learn and share knowledge to enable people improve their adaptability to various challenges through making them better informed by exposing them to different approaches thus strengthening their understanding of risks and supporting flexibility (United Nation 2020). In contributing to this debate, Hosseini and Izadkhah (2020), observed that to enhance disaster risk resilience there is need for a proper disaster risk management system in place.

Measuring resilience at the community level is advantageous (Alcayna et al 2016). Communities tends to have a way of understanding elements that enhances their capacity to resist, absorb or recover from disaster shocks as well as understanding risk that they interact with. The social norms, social capital and social networks in which individuals are embedded will determine disaster behavior and the outcomes of a disaster

In a study to establish what remain unanswered on the connection between Disaster Risk Management and Resilience, Ahangama and Prassana (2015) found out that academic so far has paid little attention on how resilience can be embedded into the disaster risk management cycle. Bhamra et al. (2011) cited in Ahangama and Prassana (2015) noted that there appears to be a strong focus on building theories and definitions of resilience but very little empirical research to understand how organizations can attain resilience in the face of disasters. Further Sudmeier Rieux et al. (2013) as cited in (Ahangama and Prassana 2015) support this view by acknowledging the presence of empirical gaps in practical guidance approaches for assessing resilience.

1.1.7 Baringo County Disaster Risk Profile

Baringo County, one of the devolved units in Kenya is predisposed to a number of hazards which has resulted to frequent disaster events leading to loss of lives and livelihoods and destruction of environment (Kenya Red Cross Society, 2020). A hazard assessment conducted in the county in 2016 jointly supported by National Drought Management Authority and United Nations Development Programs revealed that the county is exposed to at least eleven hazards and ranked them in order of priority based on frequency of occurrence, magnitude and prevalence as shown in table 1.

Table 1: Hazards in Baringo County

Hazard	Ranking
Drought hazard	1
Natural resource-based conflict	2
Human diseases hazard	3
Livestock diseases hazard	4
Crop diseases	5
Flood	6
Wildlife conflict	7
Land degradation	8
Fire	9
Accidents	10
Landslides	11

Source: Baringo County Drought Contingency Plan. 2021 (NDMA 2021)

The priority ranking of this hazard varies from year to year in Baringo County based on the frequency of occurrence, magnitude and prevalence. Among this hazards floods, droughts and landslides are mostly recurrent and occur on an annual basis, whereas other hazards such as urban and forest fires are rare events but potentially highly destructive (NDMA 2016). This multiplicity of hazards exposure in Baringo has been blamed on the county's varied geographical and climatic conditions, and high degree of exposure and vulnerability. For example, in Lake Baringo area under flooding increased from 143.6 km2 in January 2010 to 219.8 km2 in December 2014, an increase of 76.2 km2 (53.1% increase by area) (Muriuki, 2021). Water levels rising in Baringo since 2014 have led to submerging of many homesteads, public utilities, business premises and other infrastructure. It has also affected farms , pasture fields and tourism sites (Muia, 2021).

The swelling of L. Baringo has displaced more than 5000 people and caused destruction to critical infrastructures like health facilities, education institutions, hotels and roads (Muia, Gicheru, Mutiso, Mwangi, Kavinda & Kairu, 2021). According to (Baringo County Government (BCG), 2018) 716 households. 9 human lives. 688 livestock's have been affected and submergence of about 734 hectares of land. Flooding and expansion of L. Baringo have adversely impacted household's livelihoods. This includes displacement of thousands of people; interfered with economic activities and critical infrastructure; the floods have also eroded farms and thus affecting food production and marketing value chains (Muia, et al., 2021).

1.2 Statement of the Problem

Baringo County is predisposed to a number of hazards which has resulted to frequent disaster events that have resulted to destruction of lives, livelihoods and economic and social infrastructures and environment. From the onset of devolution, Baringo County Government with support from National government agencies and other development agencies have embarked in an effort of establishing and strengthening its disaster risk management system, despite this, the county has continued to find itself under incessant disasters which has resultantly lead to loss of lives and property, curtailing county development projections. This study thus sought to assess the effects of disaster risk management systems on disaster risk resilience of Kenyan counties with a focus on Baringo County.

In a study aimed at assessing Disaster risk governance at district level landslide management in Bangladesh Alam and Ray-Bennett (2021), The study found out that Participation, collaborations, accountability, and leadership were functioning satisfactorily during disaster response, evacuation, rescue and relief phases as compared with the other principles. However, while the study extensively covered on the aspects of risk governance and the extent of alignment with the provision of SFDRR which Dar and Alam (2020) noted as a foundation for a strong DRM system, a notable gap still exist since effective disaster risk governance does not happen in isolation but rather in consonance with the other three components of understanding risk, disaster risk reduction investments and disaster preparedness for effective response. In another study, Mwangi et al., (2021) evaluated the kenya's experience with mainstreaming of forecast based intervention in the country's disaster risk management systems and found that the existing disaster early warning systems in Kenya is unconducive to produce suitable information for use, this is due to poor

institutional management and inadequate funding for pro-active response. Given the focus of the above study, which focused solely on mainstreaming of forecast based intervention in the country's disaster risk management system a knowledge gap still remains unanswered on the effect of disaster risk management system on disaster resilience. And lastly in a study to examine the impact of disasters and disaster risk management in Malaysia. Chan (2015) established that the management of disasters in Malaysia has for a long term been based to a larger extent on top down government focused approach, and mostly focused on one hazard of floods.

This study sought to assess the effects of disaster risk management systems on disaster risk resilience of Kenyan counties with a focus on Baringo County. The proposed study is unique in the sense that as opposed to number of previous studies that have been done on disaster risk management which focused on specific minute sub components of disaster risk management. This study aims at addressing the existing gaps by focusing on the whole of the DRM system approach and not a part component of DRM as is the case of the above mentioned studies study. Additionally, the current study is contextually and methodologically different from the above study given that this study was based on Kenyan devolved system of governance which is structured differently from other countries.

1.3 Objectives of the Study

General Objective

This study's general objective was to conduct an assesment of disaster risk management systems on risk resilience of Kenyan counties using Baringo county as a case study.

Specific Objectives

i. To determine the effect of disaster risk awareness on risk resilience in Baringo County.
ii. To examine the effect of disaster risk governance on risk resilience in Baringo County.
iii. To assess the effect of disaster risk reduction measures on risk resilience in Baringo County.
iv. To examine the effect of disaster preparedness measures on risk resilience in Baringo County.

1.4 Research question

i. How does disaster risk awareness affect risk resilience in Baringo County?

ii. What is the effect of disaster risk governance on risk resilience in Baringo County?
iii. Do disaster risk reduction measures affect risk resilience in Baringo County?
iv. What is the effect of disaster preparedness measures on risk resilience in Baringo County?

1.5 Significance of the Study

This provide an operational insight on DRM system in Baringo County thus enhancing literature in the field and provides practical DRM recommendations to the national government, county governments, government agencies and authorities, and disaster risk managers. The findings of this study may provide valuable insight on a number of stakeholders in development and disaster risk reductions sector in particular.

Firstly, the findings are expected to add and expand on the knowledge in disaster risk management fields of study as it provides a real case study in the context of devolution in Kenya.

Secondly the study contributes invaluable reference material to policy makers and practioners of disaster risk management not only in Baringo County but also the other 23 arid and semi-arid counties in Kenya that experiences similar disaster challenges and the whole of the remaining counties that grapples with disaster risk management in their respective counties on the best practices that can be enhanced and the existing challenges that can be improved to strengthen their disaster risk management system for enhancing disaster risk resilience.

Thirdly the national government of Kenya which shares a constitutional mandate with county governments on Disaster Risk Management will benefit from the findings as it will be able to appreciate and better understand the challenges in the management of disasters at the devolved levels and can identify the opportunities that exist for them to enhance management of disasters. The identified gaps can be used by the national government to draw up interventions for system strengthening at the national levels but also for adoption by the other county governments

1.6 Scope of the Study

The study focused on four variables namely Disaster Risk Awareness, Risk Governance, Risk Reduction measures and Risk Preparedness measures as determinants of disaster risk resilience. The study area was Baringo County, and the target respondent was drawn from officers working in sectors with responsibility in disaster risk management namely, Directorate of DRM, department of Agriculture and Livestock, Water, Health and Nutrition, Fire, Security and peace

building and NGOs/Development partners implementing Disaster Risk Reduction initiatives at the county level. This study was conducted between August 2024 and September 2024 where a structured questionnaire was administered to 105 sampled Respondent.

1.7 Chapter Summary

This Chapter provided a discussion of the background on disaster risk management systems and disaster risk resilience as well as an introduction of study variables which includes disaster understanding, governance, risk reduction measures and disaster preparedness measures. The chapter also highlights the following; statement of problem, overall and the specific objective of this study, research questions, justification of the study as well as scope of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter analyzed the literature related to the assessment of disaster risk management system and risk resilience from published materials. It starts with an overview of theoretical frameworks underpinning the study followed by empirical review of published materials related to the study independent and dependent variables and provide a critique of the reviewed materials to establish the research gaps. the chapter also provide the conceptual framework of the study and the operationalization of the study variables.

2.1 Theoretical Literature Review

The theoretical literature review enabled the identification of current theories, their connections, the extent to which existing theories have been examined, and the development of new hypotheses to be tested (Ketokivi & Choi, 2014). This section discussed the theoretical basis of the study variables. In order to create an academic context for the study, the researcher identifies a theoretical framework that analyses the study. The framework used for the purpose of this study are the system theory, stakeholder theory and Institutional theory.

2.1.1 System Theory

A systems theory refers to a theoretical perspective first advanced in 1940s by Ludwig von Bertanlanffy, Ashby (1956), in this theory phenomenon is analyzed in its entirety and not simply as a sum of its elementary part. The focus of the theory is on the interactions and on the relationships between parts in order to understand an entity's organization, functioning and outcomes (Mele, Pels & Polese, 2010). The systemic perspective argues that we are not able to fully comprehend a phenomenon simply by breaking it up into elementary parts and then reforming it , rather we need to apply a global vision to underline its functioning (Mele et al., 2010). Lai and Lin (2017) observed that in general, the theory focuses on three levels of observations: the environment, the social organization as a system, and human participants within the organization. Further (Lai & Lin, 2017) noted that each system components are interdependent and that they structured in a hierarchical ordering, one component of a system cannot function without the support of other components.

System theory was an important framework for analyzing a Country's Disaster risk management system and disaster risk resilience building process as disaster risk management is not a linear path but an interconnected, interrelated systems and process, requiring a multi-stakeholder's collaboration spanning prevention, preparedness, mitigation, response and recovery efforts each with its unique plans, procedures and stakeholder(Awah et al., 2024). Each of the DRM system phase/stage is interconnected to the other and a weakness in one area can affect the entire system's effectiveness, for example information from response and recovery efforts should inform future preparedness and mitigation strategies and the interventions and investments set out at the preventions, preparedness and mitigations phases affects response and recovery from a disaster events (Simonovic, 2015).

When conducting an assesment of Disaster Risk Management system. The System theory comes in handy by assisting the researcher in identifying critical components of the system by breaking the DRM into its core parts for example its policy and legislative frameworks, institutions and coordination's mechanisms, basic requisite capacities and infrastructures and the different stakeholders involved for example communities and communities' structures, government agencies and their specific mandates and the non-governmental actors (Awah et al., 2024). The theory helps to analyze how this different parts interact collaborate and share information, coordination gaps and challenges inherent between this different stakeholders, System theory lens will enable the researcher evaluate the interrelatedness between different DRM phases, for example how does the post disaster analysis lessons informs future planning(Simonovic, 2015).

Among the critiques of system theory, Schneider and Somers (2006) as cited in Lai and Lin (2017) raised a concern about the theory environmentally deterministic orientation. Schneider and Somers, (2006) noted that Organizations are treated as biological organisms undergoing the life cycle of growth, maturity, and death; thus, chances for adaptations may be frowned upon or ignored. however, Despite the theory potential limitations, its key aspects have a potential to building risk management system understanding.

2.1.2 Institutional theory

This theory was first proposed and argued by Meyer and Rowan (1977). according to the two, institutional theory examines how social structures and norms influences organizations and individuals. The theory is based on the idea that organizations are not only shaped by their own

internal processes and strategies, but also by external forces such as the broader institutional environment, cultural norms, and social expectations. They argued that organizations conform to institutionalized norms and practices in order to gain legitimacy and achieve stability in their environments. The theory considers the processes by which structures, including schemes, rules, norms, and routines, become established as authoritative guidelines for social behavior (Scott, 2004). the theory emphasizes on organizational isomorphism regarding the institutional norms. Organizations that conform to these institutional norms become "optimal, if not efficient, and they prolong their survival by making use of these norms" therefore, it minimizes the risk of organizational death, (Baum and Olivier, 1991 as cited in Mohamed, 2017).

In relation to disaster risk management system in devolved system of government, this theory helps to build the understanding on how the devolved units respond and prepare to disaster. Memon, Jabeen and Aziz (2021) used Institutional theory to Analyze the Factors that influence disaster risk management practices in local authority in Pakistan and observed that institutional pressures such as legal and regulatory frameworks, play a significant role in shaping local authorities' disaster risk management strategies. Institutional theory helps to understand how organizations are influenced by their institutional environment and the institutional pressures they face. (DiMaggio and Powell 1993) noted that organizations are embedded in social and cultural contexts that shape their behaviors and decision making process.

The theory has been criticized for focusing on institutionalization at macro-levels while ignoring institutionalization at micro levels Zilber (2008) cited in (Mohamed, 2017). According to Mohamed (2017) Researchers believe that on micro levels, institutionalization occurs at three phases; externalization, objectivities, and internalization, he further noted that during externalization stage, individuals believe that institutions are external entities in the sense that they exist independently of any particular individual.at objectivities phase, the existence of institutions no longer in question as they become part and parcel of social realities. While during stage three the individuals begun to accept their existence as essential part of society.

2.1.3 Stakeholder theory

Stake holder theory was first proposed in 1984 by R.E Freeman and argues that an Organization should take into consideration the interest of all groups both internal and external that are likely to be affected by its decisions, policies and actions. The following assumptions underpins

Stakeholder theory; Freeman (1984) posit that the theory assumes that Stakeholders have interconnected interest and thus by meeting the interest of one stakeholders other can benefit from it while others may suffer. Further the theory assumes that organizations or institutions have a social contract with society and that their success is dependent on their relations with surrounding society and environment(Sharma et al., 2024) (Phillips, 2003)

This theory was relevant in this study as Disaster Risk Management which is the core of this study main objective is to reduce or prevent the resultant impacts of disasters on human, their livelihoods and their environment. An effective disaster risk management system and resilience building can only succeed through multi stake holder collaborations amongst the agencies that have various mandates within government and non-stake actors and most importantly the communities who are at risk of disasters and who in most cases are the first respondent in a disaster event(Sharma et al., 2024). The theory put emphasis on creating value for all stakeholders, which disaster risk management system addresses by taking into account the needs of various groups in the community and the organizations that has a role in the management of risks and resilience building(Shafique & Gabriel, 2022). At community levels their exist different groupings with various levels of vulnerabilities and capacity to respond and adjust to disaster shocks, similarly different agencies have different mandates and specialization which they have built over time, thus an effective disaster risk management system must be able to take note of this diversity at the community levels, organizational and institutional levels. Through the understanding of the diverse needs of the stakeholders, the disaster risk managers are able to bring and involve all the stakeholders in the planning and implementations of interventions

2.2 Empirical Literature Review

An empirical literature review, more often referred to as a systematic literature review, analyses prior empirical studies in order to provide an answer to a specific research topic (Bukhsh, Bukhsh, & Daneva, 2020). The study reviewed different previous studies on the study's variables.

2.2.1 Disaster Risk Awareness and Disaster Risk Resilience

Understanding disaster risk was among the four key priority area for interventions in order to prevent new, manage existing risk and ultimately strengthen disaster resilience of communities, organizations and states.(UNISDR, 2015b).In order to build understanding of disaster risks, the

following measures needed to be implemented namely; Periodic risk assessments; Regular review and dissemination of disaster risk information (Hargono et al., 2023): Assessments and sharing of information of impact of specific disaster events (Onuma et al., 2017); Provision of accurate real time data of disaster risk reduction (Hargono et al., 2023); Capacity building and training of staff of both governments, non-governmental organizations, private sectors, volunteers and communities on disaster risk reduction (UNISDR, 2015b). in contributing to this, Pavlova, Makarigakis, Depret and Jomelli (2017) established that government institutions and emergency response agencies and organizations, local communities and individuals with adequate knowledge and capacity to anticipate, effectively respond and bounce back from disaster event have helped in reducing their risk and their chances of survival; Incorporation of indigenous traditional knowledge and practices to complement the technical practices and knowledge in disaster risk assessment (Bol & Niekerk, 2024); Integrating innovations and use of technology in disaster risk management (Izumi et al.,2019); inclusion of disaster risk education in the education curriculum as well civic education programme; carry out public sensitization in disaster risk reduction; Partnerships with grass roots community organizations for dissemination of risk information.

Disaster risk assessments involves carrying out hazards, vulnerability and capacity assessments. Understanding of disaster risk includes understanding vulnerabilities, existing capacity, exposure of human and livelihoods, characteristics of hazard and environment. Risk assessments is the foundation of Disaster Risk management (The World Bank, 2014) by quantifying the risks and anticipating the potential impacts of hazards, governments, communities, and individuals can make informed prevention decisions.

In a study to review the importance of education on disaster risk reduction and preparedness in vulnerable people Nifa, Lin, Wan,Rani and Wei (2018) reviewed 128 articles published in prestigious journals and websites during 1990–2017. The finding established existence of a direct link between education, and increase in student's perception of risk and their risk reduction measures. They further revealed that children understanding of importance of preparedness and preventive activities can help them to start implementing preventions and preparedness plans at personal level (Nifa et al, 2018). In another similar study, Hargono et al, (2023) showed that there is a significant relationship between current awareness level of the community towards disaster and community preparedness, particularly their study shows that disaster awareness translates into

disaster preparedness. Hargono et al (2023) thus observed that in order to support community understanding of disasters, it is important to disseminate disaster-related information that is easily accessible, comprehensive, and tailored to the needs of the community. In yet another study, (Rogayan & Dollete, 2020) in a study on *Disaster Awareness and Preparedness of Barrio Community in Zambales, Philippines noted that* that there is a significant link between awareness and disaster preparedness among local communities.

In a study dubbed Resilience into Disaster Risk Management. Which focused on financial disaster risk management in Turkey. Ozbaba, 2022 observed that, to achieve resilience then People need to expand their vision about management of risks in terms of preparedness, knowledge and prevention. They noted that Turkey should adopt socio-economic, and educational interventions to increase disaster preparedness and risk consciousness. By implication, everyone should be aware of the natural hazard risks (Ozbaba, 2022), sums up, the study by observing that resilience could only be archived if people have awareness about financial disaster risk management.

On building capacities of government and other organizations staff for Disaster Risk Reduction, Pavlova et al (2017) established that government institutions and emergency response agencies and organizations, local communities and individuals with adequate knowledge and capacity to anticipate, effectively respond and bounce back from disaster event have helped in reducing their risk and their chances of survival. They also added awareness rising as an important activity for risk reductions. Etinay, Egbu and Murray (2018) in a study aimed at investigating historical emergence of Disaster Risk management before and after the year 2015 with an aim of identifying lessons learned, gaps and challenges, they established among other findings that, public education and awareness of disaster risks prevention, preparedness and mitigation mechanisms are one of the ways to build resilience to disasters and reductions of damages and loss as a result of disaster event. Thus they conclude that awareness concerning various options for disaster preventions is required.

In a study to identify the effect of students sociodemographic and the disaster preparedness indicator on their awareness of the dangers of disasters and ability to adopt to changes brought about by disasters, Patel, Pamidimukkala, Kermanshachi and Etminani-Ghasrodashti (2023) found out that university curriculum affects the students disaster awareness. This finding enabled

the university to develop disaster preparedness indicator important to students so as to review their programs and develop a practical course on disaster risk reductions.

2.2.2 Disaster Risk Governance and Disaster Risk Resilience

According to Tierney (2012) as cited in Gall et al, (2014),disaster governance consists of the interrelated sets of norms, organizations and practices across all the disaster risk management phases of preventions, preparedness, mitigation, response and recovery that are intended to reduce the impacts and losses arising from both natural and man-made disasters. It involves the use of governance processes to support disaster risk management and risk reduction interventions, For example, disaster risk governance involves setting up coordination and mainstreaming of DRR in policies and plans in all sectors and community practices with the intent of reducing and managing disaster risks instead of only investing on preventive measures and strengthening capacity for emergency response (Lauta, Albris, Zuccaro & Grandjean, 2018). Disaster governance goes beyond governmental functioning but also transcends to all stakeholders up to the local community (Gall et al., 2014).

Indeed, SFDRR 2015-2030 identified the need to strengthen risk governance as a priority area for preventing emergence of new risks and lessening of existing disasters thus strengthening disaster resilience. It identifies a number of measures that needs to be implemented in order to strengthen disaster risk governance by (UNISDR, 2015b) and other researchers. this includes; Firstly, Mainstreaming of disaster risk reduction across all sectors of the national or devolved unit legal, policies, regulations frameworks, plans, programs and project (UNDP, 2010), Alam and Ray-Bennett (2021) recommended that disaster risk reduction should not be seen as an independent activity of the National Disaster Management Council, rather it should be intrinsically integrated into the development policies, plans and programs at national level; secondly is the need to establish organizational structures for responsible management and administration of disaster risk reductions, further to this Lauta, Albris, Zuccaro and Grandjean (2018) recommend the need to carry out periodic institutional capacity assesment of the technical, financial and administrative disaster risk management capacities at the local and national levels. On this, Alam and Ray-Bennett, 2021) observed that the lack of workforce, lack of equipment, lack of skills and knowledge, lack of funds, and lack of all year-round preparedness are major weaknesses of disaster risk governance; Thirdly Kato and Shaw (2024) note that establishing coordination including

coordination forums composed of relevant stakeholders at the national and local levels (Alam % Ray-Bennett, 2021; Kapucu and Garayev, 2011; McNamara, 2012; Lauta et al., 2018). further, Alam and Ray-Bennett (2021) recommend that the authorities should closely work with the other partners to establish collaborations agenda and coordination; Fourthly is the adoption of national and devolved unit disaster risk reductions policies, plans and strategies McNamara (2012) including for addressing relocation and prevention of future settlements areas of high risk (Kato & Shaw, 2024); Fifth is the need to institute and enforce adherence with the current sectoral legislations and regulations for enhancing safety ; Ensuring regular feedback on the implementations of disaster risk reductions policies and plans in line with this (Kapucu, 2012 as cited in Alam & Ray-Bennett, 2021) note that this will enhance public examination on progress made in the implementation of DRR plans and strategies; Additional intervention include assigning clear roles to community agents on disaster risk management through relevant legal frameworks; Support devolved units to coordinate risk management's efforts at local level through providing them with financial support and also enacting laws to empower them.

In a study to assess whether district disaster risk governance at the local level is effective enough to mitigate the impact of landslide disasters Alam and Ray-Bennett (2021) carried out an extensive literature review and selected the following good characteristics of disaster risk governance namely collaboration, participation accountability, transparency, shared decision making , information, communication, shared resources and leadership. Which they used in their assesment. The study found out that Participation, collaboration, leadership and accountability were satisfactorily functioning during response and rescue missions compared to other characteristics it was also notable that their existed a collaboration challenges between the government and non-governmental agencies. Further it established that the policy and regulatory framework established and the institutions that were put in place were conducive enough to promote local disaster risk governance. The study utilized a qualitative research method, and literature review, of the policy documents.

In a study on Disaster Risk Management and Preparedness level of Kenyatta National Hospital. which utilized a descriptive study approach with an emergency management lens. Muriithi (2021) found out that, the presence of a disaster response approach like policies and guidelines is crucial in the prevention of catastrophes because it provides disaster managers with the required strategies.

The study also pointed out the need for requisite staffing skills, regular capacity building and proper equipping and infrastructure as an important determinant for proper response and building readiness.in another study aimed at analyzing strategic environmental assessments effects on disaster management in national government ministries Kenya, Boit et al (2019) found out among other things that, adoption of contingency planning greatly helps in prevention and mitigation of disaster effects in an organization. they thus conclude environmental analysis significantly impact disaster management in Kenya.

In a study to explore Bangladesh DRM institutional and policy challenges with the objectives of analyzing the Disaster risk management institutional framework's capacity, governance challenges, community participation, and the reasons for not implementing Disaster management policy. Uddin, Al-Amin and Akter (2022) revealed that Bangladesh DRM institutional framework was faced with a number of issues ranging from Governance and administrative issues like unskilled staff, inadequate equipment. Among the study limitations was that it solely utilized desk top methodology which is prone to researcher personal opinion further to this the researcher opted for a critical literature review which is not as intensive as systematic review.

2.2.3 Disaster Risk Reduction Measures and Disaster Risk Resilience

The Sendai framework for disaster risk reduction 2015-2030 noted that Public and private investment in disaster risk prevention and reduction through the implementation of structural and non-structural interventions are important to strengthen social, economic, and environmental resilience, (UNISDR, 2015b). it went further to identify some key risk reductions interventions which include; implementation of policies and plans relevant to risk reduction across the sectors(Paudel et al, 2024), adopting risk transfer approaches like insurance, improving resilience of public and private infrastructures, enforce the requirements for environmental and social assesment for both private and public projects, development and enforcement of building codes, strengthen work place disaster risk resilience, enhancing health system resilience, implementation of social safety-net policies and programs, sustainable use and management of ecosystems (Paudel et al., 2024).

In a study dubbed ‘Resilience into Disaster Risk Management’ which aimed at evaluating whether the resilience programing can be adopted and implemented in Turkey as a mechanism of addressing the effects of disasters and climate change. (Özbaba, 2022) evaluated resilience

programming in Africa, Europe and Asia with analysis on pros and cons, comparisons between the different programs implemented in the different continents, and constraints. The study found out that indeed resilience programming can be adopted to help increase resilience of Turkey to the effects of disasters and also lessen the losses and damages as result of disaster events. The study recommended for intentional investments by both governments, private sectors and local communities in risk reduction measures as a mechanism to build resilience's. Further the study recommends that for turkey to archive resilience to disaster risks it must put mechanisms for minimizing emergence of new hazards risk.

In a study on disaster risk reduction, community resilience, and policy effectiveness Ji and Lee (2021) while taking Hazard Mitigation Grant Program (HMGP) in the United States as a case study, found out that the counties that got HMGP funds were likely to experience less property losses owing to future natural hazards a pointer to effects of risk reduction measures on community resilience.

In a study to assess how risk transfer tools like insurance can be used to manage loss and damage related with the impacts of climate change including slow-onset disaster events, Kehinde (2014) carried out case studies to analyze current innovative tools and approaches, specifically the study analyses the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and Africa Risk Capacity (ARC) the findings observed that long term insurance contracts that is based on specified products like weather derivatives, catastrophe bonds and food security index can facilitate access to reinsurance markets on a competitive term by pooling country specific risk into a single well designed product to manage impacts of extreme event such as cyclones or hurricanes. Further (Kehinde, 2014) noted that design of risk transfer instruments such as the index insurances used in ARC initiative can contribute to sustainable development and lessen the impact of slow onset event on vulnerable groups. Additionally, Warner, et al. (2009) as cited in Kehinde (2014) noted that including risk transfer tools and contingency plans in the institutional structure of countries to buffer pending risks provides security against loss and damage to assets and livelihoods and the vulnerable poor are safe from resorting to coping strategies such as forced migration, sales of assets, money lending and reduction of food consumption. Further, Linnerooth-Bayer and Mechler (2006) as cited in Kehinde (2014) added that formulating risk transfer tools with risk reduction

and or loss and damage activities, have great potential to mitigate the human and economic disaster loss and damage.

In Kenya, Oseno and Atieno (2022) conducted a research study on strengthening institutions to enhance resilience by looking into disaster risk financing mechanisms for vulnerable people in Kenya. The study aimed at evaluating how effective was the cash transfer program during the times of covid-19 pandemic devastating socio-economic effect on especially the most vulnerable groups. Descriptive research method was used in the study with its target being social safety net beneficiaries, 163 sampled respondents from a cluster of County Commissioners 35, Social Protection department 5 and a total of 123 beneficiaries sampled from across 41 counties each providing 3 benefactors. The study established that a due to insufficient funding a number of eligible people were not targeted, further it noted that the administrative mechanism for the programme was inadequate which made a critical number of respondents to choose alternative measures for example creation of cooperatives for groups with special interest, micro insurance packages of micro insurance, and National Vulnerability Insurance Fund.

In a study on health system resilience, Thomas, Sagan, Larkin, Cylus,Figueros and Karanikolos, (2020) came up with a policy brief for health system resilience.In their findings, they argued that resilience of Health system is crucial to coping disasters like Corona Virus diseases, they further identified from a number of literature reviews, strategies that can be adopted to improve health system resilience, this includes; putting in place an effective participatory leadership, effective coordination within government and across the stakeholders, mechanisms for using lessons learnt to make health organization responsive to future crises, ensuring information systems flows, strengthening surveillance system for timely detection of health risks and their impact, adequate financing of health system and flexibility of funds reallocation during emergencies, roll out of comprehensive health insurance coverage across all the community members, proper resourcing with human and other physical resource, improving health workers package and remunerations and working conditions and lastly use of innovations to devise alternative health delivery channels(Thomas et al., 2020)

2.2.4 Disaster Preparedness Measures and Disaster Risk Resilience

The steady growth of disaster risk across the world, have necessitated the need to priorities disaster preparedness as a means to enhance better response and recovery efforts (UNISDR, 2015b) . The

Sendai Framework for Disaster Risk Reduction identified strengthening of disaster preparedness, periodic updates of disaster preparedness and contingency plans, strengthening multi-hazard, multisector early warning systems, strengthening the resilience of existing and new infrastructures, improving humanitarian assistance financing and coordination, training disaster response workforces and volunteers on disaster response, carry out regular preparedness exercise like simulations to sharpen response capacities, develop framework for relocations of people and infrastructures located at high risk areas to areas outside the risk range especially during recovery and reconstruction, strengthening systems for accountability of the affected populations and establishing psychosocial support and mental health services for the people affected by disasters (UNISDR, 2015b).

In a study to identify the effect of students sociodemographic and the disaster preparedness indicator on their awareness of the dangers of disasters and ability to adopt to changes brought about by disasters, Patel, Pamidimukkala, Kermanshachi and Etminani-Ghasrodashti (2023) found out that the establishing of university emergency procedures impacts the disaster preparedness of students. Further, their analysis of the literature strongly indicates that obtaining knowledge and skills on disaster risk management enables students to be better prepared for disasters thus an urgent need for universities to build awareness of their students on how disasters can affect them and built their response and mitigation skills. however, a downside to this study is that its findings cannot be generalized due a small sample size of the student who participated and the fact that students were only from one faculty. Moreover, this study was developed using a self-reported questionnaire and the results are based on perceptions of disaster preparedness and not the actual disaster preparedness of students

In Japan, Onuma, et al (2017) assessed preparedness for disasters at household level focusing on impact of natural disaster experience and its implications on future disaster risks. The study used data that covered over 20,000 households across all parts of Japan including areas with recent disaster experiences and also low disaster risk areas. The study generated measurement indicators for Basic preparedness or (BP), Evacuation Preparedness abbreviated as (EP) , and Energy/Heat Preparedness abbreviated as (EHP) by using household preparation data of nine emergency items. Through the use of regression analyses the study found out that that experience with disaster losses increases preparedness, however the magnitude of the impact varies depending on the categories

of items. Further, evacuation experience recorded a positive effect on the preparation of items from Basic Preparedness and Energy/Heat preparedness.

In a study to evaluate disaster resilience and preparedness level of Yangon House hold in Myanmar, Heinkel, Thiebes, Than, Aung, Kyi, Mar and Kraas (2022) findings revealed that disaster preparedness can be improved through strengthening public capacity for emergency response and building community readiness, enhancing the capacity for communications facilities to be used during emergency operations; collaboration with and participation of faith based organizations and other public institutions for use of their infrastructures like building during response for disasters; ensuring better preparedness of urban set up through stockpiling of basic food and nonfood commodities. Further, Rono-Bett (2018) observed that lack of specific legal frameworks to guide disaster preparedness makes the coordination of preparedness efforts to be weak in Kenya. Rono-Bett 2018 concluded that effective government decision is critical in saving lives and livelihoods during a disaster events however the decision making process happens in a political environment and thus affecting the effectiveness of government decisions. Further, Pavlova *et al*. (2017) observed that investment in early warning systems, emergency stock piling of critical commodities both food and non-foods, and mapping and setting up of evacuation facilities well in advance of a disaster event are important in building disaster resilience.

2.3 Summary and Research Gaps

The table below summarizes the empirical literature review analyzed above and put out the inherent gaps in the literature that warrants this study.

Table 2: Summary of research gaps

Researcher	Focus Area of Study	Methodology	Key Findings	Knowledge Gaps	Contribution of Current Study
Alam & Ray-Bennett (2021)	Assesment of Disaster risk governance for district-level landslide risk management in Bangladesh	Literature review	Principles of accountability, participation, collaboration, and leadership function satisfactorily during the response, evacuation, rescue and relief phases	focused on one aspects of DRR system namely governance	Asses the whole components of disaster risk management system on disaster resilience in Kenya
Patel et al (2023)	the effect of students sociodemographic and the disaster preparedness indicator on their risk awareness and coping ability	Literature review and comprehensive survey	obtaining knowledge and skills on disaster risk management enables students to be better prepared for disasters	Small sample size, limited generalizability	Asses the whole components of disaster risk management system on disaster resilience in Kenya
Hargono et al., 2023)	Relationship between disaster awareness and disaster preparedness: online survey of the community in Indonesia	cross-sectional study using a self-administered online survey	Increasing public awareness about disaster preparedness is very important	Focused on relation between disaster risk awareness and disaster preparedness thus there is still a gap in the assesment of the Disaster Risk Management system as whole	Assess effects of disaster risk management system as whole on disaster resilience
Nifa et al 2018	The importance of education on	Literature review and online	disaster education is a functional, operational, and	This study focusses on the level of knowledge on	Assess effects of disaster risk management system

Researcher	Focus Area of Study	Methodology	Key Findings	Knowledge Gaps	Contribution of Current Study
	disasters and emergencies	questionnaire survey	cost-effective tool for risk management.	Disaster Risk Reduction (DRR) among PETRONAS students this makes it limited generalizability	as whole on disaster resilience
Rogayan & Dollete, 2020	determines the extent of disaster awareness and preparedness of the barrio or barangay community from the five southern municipalities of Zambales, Philippines	cross-sectional descriptive survey research	that there is a significant link between awareness and disaster preparedness among local communities	study focus only on one sub element of disaster risk management system namely Disaster awareness on disaster preparedness	Assess effects of disaster risk management system as whole on disaster resilience
Ozbaba 2022	Investigating the concept of resilience and its application in Turkey	Literature Review and Meta Analysis	resilience programming can be adopted to help increase resilience of Turkey to the effects of disasters and also lessen the losses and damages as result of disaster events	The Study was conducted in Turkey a different context to Kenya	The current study will be conducted in Kenyan context and linear regression model will be used
Etinay et al 2018	Building urban resilience to enhance disaster risk management	systematic literature review of DRM and DRR across the history of UN General	public education and awareness of disaster risks, prevention Preparedness and mitigation mechanisms was found	The focus of the study is global context of urban Resilience.	The current study will be conducted in Kenya and will use multiple independent variables

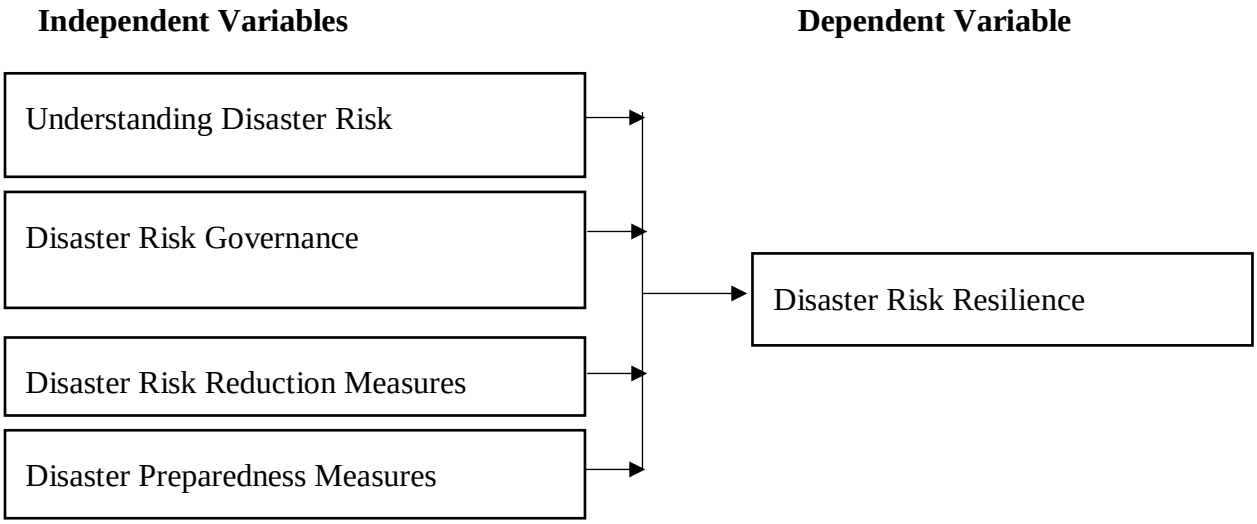
Researcher	Focus Area of Study	Methodology	Key Findings	Knowledge Gaps	Contribution of Current Study
		Assembly frameworks	as one of the ways to build resilience to disasters and reductions of damages and loss as a result of disaster event		
Muriithi 2021	Disaster Management Systems and Level of Preparedness at Kenyatta National Hospital. Kenya	Descriptive Survey Research	Presence of a disaster response approach like policies and guidelines is crucial in the prevention of catastrophes because it provides disaster deployers with the required strategies	the study was based on disaster risk management in Kenyatta Hospital which contextually and philosophically different from the Focus of the proposed study	The current study will use multiple independent variables. And will rely on primary data collected through a structured questionnaire
Boit et al 2019	Effect of Strategic Environmental Analysis On Disaster Management In Kenya	Survey Research Design	adoption of hazard assessments, risk analysis, evaluation and carrying out contingency planning helps in prevention and mitigation of disaster effects in an organization.	This focused on analysis of one factor strategic environment effect on disaster management in the Kenya	The proposed study will analyze the full spectrum of DRM as established by the Sendai Framework for Disaster Risk Management.
Ahangama et al 2015	To establish the relationship between Disaster Risk Management and Resilience	literature review technique	The study revealed that academic work has paid little attention on how resilience can be embedded into the disaster risk management cycle	Reliance on literature review limits depth of findings	The current study will be conducted in Kenya and will use multiple independent variables. And will rely on primary data collected through a

Researcher	Focus Area of Study	Methodology	Key Findings	Knowledge Gaps	Contribution of Current Study
					structured questionnaire
Uddine et al 2022	Exploring Bangladesh Disaster Management's Institutional and Policy Challenges: A Critical Review	Desktop review	Bangladesh DRM institutional framework was faced with a number of issues ranging from Governance issues; like poor leadership, inadequate coordination mechanisms for stakeholders and political interference. Financial challenges including; inadequate financing of DRM. and lastly Administrative issues including; unskilled staff, inadequate equipment's e.g communication	The study solely utilized desk top methodology which is prone to researcher personal opinion further to this the researcher opted for a critical literature review as opposed to systematic literature review which is an intensive qualitative study.	The current study will be conducted in Kenya and will use multiple independent variables. And will rely on primary data collected through a structured questionnaire

2.4 Conceptual Framework

According to Imenda (2014), the conceptual framework is an interrelated collection of ideas (theories) regarding the function of or relationship to a specific occurrence. It forms a basis upon which the study comprehends the causality or connection patterns of relations to demonstrates the relationship between the two variables, as shown Figure 1.

Figure 2: Conceptual Framework



2.5 Operational framework

Table 3 shows the operationalization of the study variables. The Table summarizes the indicators of each variable, the tools of analysis be used and the scale of measurements.

Table 3: Operationalization of Variables

Variable	Indicators	Measurement Scale	Instrument for Collection of Data	Tools of Analysis
Understanding Disaster Risk	Risk Assesment Risk information Knowledge on Disaster Risk Integration of traditional knowledge Use of Innovation and Technology Public Education DRR in formal and non-formal education	Ordinal	Questionnaire	Descriptive and inferential statistics
Disaster Risk Governance	Mainstreaming of DRR DRR institutions DRR Policies and Strategies Coordination structures DRR Financing Capacity assessments	Ordinal	Questionnaire	Descriptive and inferential statistics
Disaster Risk Reduction Measures	Risk Transfers Structural and Non Structural measures Institute SIA and EIA DRR in Workplace DRR in land use Management of ecosystems DRM IN Healthcare Review building codes	Ordinal	Questionnaire	Descriptive and inferential statistics
Disaster Preparedness Measures	Periodic updates of preparedness plans Multi-hazard EWS Training of Disaster response Allocation for Relief Prepositioning of Response Logistics Coordination mechanisms for response	Ordinal	Questionnaire	Descriptive and inferential statistics

Variable	Indicators	Measurement Scale	Instrument for Collection of Data	Tools of Analysis
	Resilience of existing and new infrastructures Regular preparedness exercise i.e. drills Relocation of at risk public facilities Strengthen SOPs			
Disaster Risk Resilience	Capacity to respond to risk Bounce back from disaster Adapting to the risk Preparation to adjust Risk anticipation	Ordinal	Questionnaire	Descriptive and inferential statistics

2.6 Chapter Summary

The study is assessing the influence of disaster risk management systems on disaster risk resilience of Kenyan counties. The empirical literature review led to the research gaps which were fundamental in justifying the research questions explored in the study. The conceptual framework gave a clear relationship between the independent and dependent variables discussed in the study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This section discussed the methods that was used in the research. It detailed the type of research design adopted, the population targeted and the sampling design, data collection tools and processes, Data analysis procedures and ethical considerations.

3.1 Research Design

According to Janesick (1999), research technique comprises the design, determination of sample sizes, data collection and analysis mechanisms. The research design is the blueprint for how the study will be conducted (Cooper & Schindler, 2003). It provides an overview of the study's methodology (Peffers, Tuunanen, Tothenberger, & Chatterjee, 2007). In the current study, a cross sectional case study design was used, a cross-sectional study is a type of observational study design that involves looking at data from a population at one specific point in time(Wang & Cheng, 2020). Zuleika *et al*, (2022) noted that a cross-sectional study is a type of observational research design where the researcher observes and measures data variables at a certain time. Zuleika *et al.*, (2022) went further to note that, the purpose of this cross-sectional study is to obtain reliable data that can provide conclusions to prove the hypothesis through a study. In a cross-sectional study, researchers typically describe the distribution of variables in a population (Wang & Cheng, 2020).The use of cross sectional study was due to the fact that the researcher and the nature of inquiry targeted a specific institution in this case Baringo County Government. Also because cross-sectional studies are relatively quick and inexpensive to conduct (Wang & Cheng, 2020)

3.2 Target Population

According to Bhandari 2022 as cited in Willie (2023) Target population represents a narrower group of individuals who possess specific characteristics or meet certain criteria. The identification of the target population is based on the research question or the objectives of a particular initiative (Willie, 2023). The current study's target population was 405 officers working in sectors with responsibility in disaster risk management within Baringo County comprising, Directorate of DRM, department of Agriculture and Livestock, Water, Health and Nutrition, Fire, Security and peace building and NGOs/Development partners implementing Disaster Risk Reduction initiatives

at the county level. The targeted population is tabulated in Table 4.the Choice of Baringo County was informed by the prevalence of hazards and disasters events like Droughts, floods and resource based conflict.

Table 4: Target Population

S.NO	Department	Target Population
1.	Disaster Risk Management	20
2.	Devolution Sub County administration	45
3.	Agriculture Livestock and Fisheries	50
4.	finance and Economic Planning	20
5.	Municipal/Town Administration Fire Department	15
6.	Education	20
7.	Social Protection	10
8.	Land Housing and Urban development	20
9.	Roads ,Transport and Infrastructure development	30
10.	water and environment department	35
11.	Health and Nutrition	60
12.	Public Works	10
13.	NGO (KRCS, ACTED, WFP, UNCEF, ACTION AID, SHA)	30
14.	National Government Agencies (NDMA, Security)	40
	Total	**405**

Source; Baringo Disaster Risk Management Directorate 2024

3.3 Sample size and Sampling procedure

Sample, according to UNISA (2010) is defined as a part of a whole or a subset of measurement drawn from the population, Bless and Higson (2000), Sellars (2016) as cited in (UNISA, 2010) posit that we study the sample in an effort to understand the population in which we are interested, further Wilson 1993 as cited in UNISA (2010) adds that researchers use sampling because it is a feasible and a logical way of making statements about a larger group. According to Kothari (2004) sampling technique refers to the process used in selecting a sample. In the first stage the researcher used Krejcie and Morgan (1970) formula to select study sample size as shown below.

$$\boldsymbol{n=\frac{z^2 \times p \times q \times N}{e^2\,(N-1)+ z^2 \times p \times q}}$$

Where.

n is the sample size

z is the value of standard variate at a given confidence level

p is the probability of occurrence of a variate

q is the probability of non-occurrence of a variate given by 1-p

N is the total population size.

e is the precision level with a confidence interval of 95 %.

In this study, the researcher desired to achieve a 95% confidence level giving the value of z tabulated as ±1.96 while the expected acceptable error would be 5 percent (Faraday, 2006), implying that the probability that a significant difference between the actual variate and the observed variate would occur was 5 percent. Kothari (2019) recommends that a p- value of 50 percent would yield maximum sample size and thus give the desired results. The sample size was determined as follows**.**

$$\boldsymbol{n = \frac{1.96^2 \times 0.5 \times 0.5 \times 512}{0.07^2(512-1) + 1.96^2 \times 0.5 \times 0.5}}$$

=105

In the second stage the researcher employed stratified random sampling to determine number of participants from each department with responsibility in disaster risk management using the formulae below.

$$\text{Z} = \frac{n}{N} \times K$$

Where; Z=sampled participants

n=total sample size

N=entire population

K=population of sub-group

For example z=$\frac{105}{402} \times 15$ =3.7

=4

The selected number of respondents from each department based on the above formulae is shown table 5.

Table 5: Sample Size

S.NO	Department	Target Population	Sample size
1.	Disaster Risk Management	20	5
2.	Devolution Sub County administration	45	12
3.	Agriculture Livestock and Fisheries department	50	13
	finance and Economic Planning	20	5
4.	Municipal/Town Administration Fire Department	15	4
5.	Education	20	5
6.	Social Protection	10	2
7.	Land Housing and Urban development	20	5
8.	Roads ,Transport and Infrastructure development	30	8
9.	water and environment department	35	9
10.	Health and Nutrition	60	16
11.	Public Works	10	2
12.	NGO (KRCS, ACTED, WFP, UNCEF, ACTION AID, SHA)	30	8
13.	National Government Agencies (NDMA, Security)	40	11
	Total	**405**	**105**

3.4 Data Collection Instruments

Primary data was used and was collected by use of structured questionnaire, this was due to the fact that structured questionnaire is easy in administering and analysis and cost and time friendly. In order to measure all the variables, the questionnaire utilized a five point Likert scale with a low rating of 1 signifying low opinion by respondent while high rating of 5 signifying a high opinion by respondent. The use of questionnaires was preferred because they are effective instruments for

collecting data and allow respondents to provide their opinions regarding the research problem (Dempsey, 2017). According to Patton et al. (2016), a questionnaire is a suitable tool for gathering data and measuring it against a specific perspective. It provided a standardized approach to data collection. Additionally, Kothari (2019), observed that, information obtained from questionnaires is free from bias and researchers' influence, ensuring the collection of accurate and valid data.

The researcher carefully prepared the structured questionnaire and shared with the supervisor for review to ensure its validity and reliability (Singpurwalla, 2017). The questionnaire used was made up of two sections; first section capturing respondents' socio-demographic data, while the second part was divided into five sections, with sections one to four covering the four independent variables, while section five covered dependent variable.

3.5 Pilot Test

Pilot study is a small study that is designed to test the questionnaire prior to the actual study to provide an opportunity to enhance its quality and efficiency. In this study 10% of the study sample size equivalent to10 respondents was used to pre-test the research questions relevance and clarity this is supported by Mugenda and Mugenda (2017) who posit that the pretest sample should be between 1% and 10% depending on the sample size. Issues that were identified were corrected before the actual study.

The tools were administered online using google forms to respondent from Samburu county but who work in similar sector as per study.

3.5.1 Validity

Validity refers to the degree at which study results from data analysis represents the actual phenomenon under study. Validity According to (Mugenda & Mugenda 2003) is too a large extent determined by the existence or absence of systematic error thus making it a matter of degree because no data has perfect validity. The study tools Validity was established by firstly developing the questionnaires, this was shared with the supervisor for comments and further revision was done based on the supervisor’s comments. The researcher also shared with subject matter experts who work in disaster risk management field outside of Baringo for review and comments on its suitability to measure the study variables. On the other hand, construct validity was ensured by

presenting the questionnaires under specific objectives so as to ensure the questions are relevant to objectives of the study.

3.5.2 Reliability

According to Creswell & Creswell (2017) reliability is defined as scenario where when a person administers a questionnaire as data collection instrument to a respondent twice he/she would get similar results on the second interview similar to the first outcome. Walliman (2017) on the other hand defines Reliability as measurement that supplies consistent results over different situations. Testing of the reliability was important as it helped to check if the questions were clear and whether respondents can consistently interpret the tools questions in a similar manner. Cronbach's alpha was used as a tool for testing reliability of the questionnaire items. A Cronbach's Alpha with a range between 0 and 1 was utilized to measure internal consistency and the extent of the relationship between a set of items in a certain group. It is also used in quantifying the scales reliability (Kultar, 2017). Kothari & Gaurav (2014) assert that a value of 0.7 and higher for Cronbach alpha (α) indicated reliable items in the questionnaire, explaining that their internal consistency is relatively high. Based on the pretest study conducted with 10 respondents from Samburu County and data analysis using SPSS Version 27, the findings showed that Disaster risk awareness had a Cronbach's Alpha Coefficient (α) of 0.893, Disaster Risk Governance had (α) of 0.92, Disaster Risk Reduction Measure at (α) of 0.883. disaster preparedness measures at (α) 0.912, Disaster Risk Resilience at (α) 0. 913.this scores are closer 1 thus the tool was considered of good reliability.

3.6 Data Collection Procedure

This is the process of collecting, processing, and evaluating raw data with the goal of illustrating useful knowledge, recommending, inference, and supporting decision making (Kothari, 2018). The researcher deployed a quantitative structured questionnaire to collect data from the respondent. Three research assistants were appointed and trained prior to the start of the survey whom the researcher used to administer the questionnaire. The research assistant dropped the questionnaires to the targeted respondents and gave them at least two days to fill the questionnaires before the research assistant return to pick. On need basis, additional time was agreed between the respondent and the research assistant of up to a maximum of one week (Seven days) from the day of first drop of the questionnaire.

Prior to the data collection the researcher sought all the relevant approvals including an introductory letter from Management University of Africa, this was then used to acquire a research permit from the National Commission for Science, Technology and Innovation (NACOSTI), also the researcher sought approval Baringo County Government to conduct the study in their institution before finally embarking on data collection.

3.7 Data Analysis Methods

Descriptive statistics and inferential statistics was used in this study to analyze the study variables. firstly, the data was entered into an excel template and was cleaned to check for completeness and accuracy, data was code and into Statistical Package for Social Sciences (SPSS) version 27 where the analysis was done. the study results were presented in the next chapter using tables, charts and bars. Inferential statistics such as correlations analysis was used to show the association between the study variables and regression analysis to illustrate the significance of the relationship between the two variables.

Multiple regression model was used to illustrate the association between different variables of the study using below equation.

$Y= b_0 + b_1X_1 + b_2X_2 + \ldots b_pX_p$,

Where;

Y – Predictive Value or dependent variable (Disaster Risk Resilience)

b_0 – Represents the Y-value when all the independent variables (X1 through Xp) are equal to zero

X1 through Xp - are p distinct independent or predictor variables
b1 through bp - are the estimated regression coefficients

3.8 Ethical Consideration

Human subjects being the main respondent in this research, ethical issues consideration was vital. Rosenthal (2018) describes research ethics as a researcher's capacity to disclose precisely what happened. Ethical consideration involves conducting and documenting scientific research with discipline and integrity and also acknowledging innovations and actions

3.8.1 Informed Consent

The researcher explained the purpose the purpose of the study to the participants before their consent to participate were obtained. The anticipated length of the study was part of the information shared before consent was sought.

3.8.2 Voluntary Participation

The respondent was informed of their right to choose whether to participate or not as part of the introductory note. Participants were allowed the choice to refuse or leave at any stage during the process.

3.8.3 Confidentiality

The study findings were standardized so that no details could be linked to a specific person

3.8.4 Privacy

Respondents' privacy was protected by assigning them unique identities that protect both their privacy and the responses they provide

3.8.4 Anonymity

The study solely focused on the objectives of the study as such focus was based on the overall analysis outcome as opposed to individual respondent responses this way the individual respondent responses remained anonymous, secondly the researcher gave assurance that respondent anonymity will be ensured before administration of the questionnaire.

3.9 Chapter Summary

This section covered research approaches that was used in the study. In the study, the researcher used cross sectional case study design. It also offered information about the target population, the sample size and the sampling design, the data source and instrument of collection, pilot testing, data collecting, data analytic techniques and ultimately the ethical problems identified in the study process.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

This chapter presents the study findings for both descriptive and inferential statistics as per the study objectives. Further the chapter discusses the study limitation of the study.

4.1 Presentation of Research Findings

4.1.1 Pilot Study result

A pilot research was done to test the proposed questionnaire. The researcher deployed the questionnaire to 10 respondents who work in similar sector but in Samburu County which was not the primary target of the study. According to Sekaran and Bougie (2016), as a rule of thumb, 10 to 20 participants is enough for small studies. Cronbach's Alpha values were used to confirm validity and reliability of the questionnaire. Disaster risk awareness had a Cronbach's Alpha Coefficient (α) of 0.893, Disaster Risk Governance had (α) of 0.92, Resource Allocation had (α) of 0.89, information systems at (α) of 0.872, Disaster Risk Reduction Measure at (α) of 0.883. disaster preparedness measures at (α) 0.912, Disaster Risk Resilience at (α) 0.913 As can be seen these scores are very close to 1 hence the tool can be considered of good reliability.

The study tools Validity was established by firstly developing the questionnaires, this was shared with the supervisor for comments and further revision was done based on the supervisor's comments. The researcher also shared with subject matter experts who work in disaster risk management field outside of Baringo for review and comments on its suitability to measure the study variables.

4.1.2 Response Rate

In this study,105 questionnaires were administered while 89 were returned. This translated to 84.7% response rate which was quite high and was therefore considered to provide adequate information that could respond to the concerns of this study. According to Babbie (2012), response rate of 50% is adequate for analysis. According to other opinions, acceptable response rates range from 40% to 75% across different areas (Sataloff & Vontela, 2021). The high percentage of

response rate was due to researcher's effort in ensuring that there was a face to face interaction and follow up were made with the respondents of which clarification was done where required.

4.1.3 Respondent Demographics

The respondents were asked to share their bio data which included their gender, organization they worked for, the sector in which they work and the number of years worked in Baringo.

Table 6. Respondent Gender

		Gender		
Responses	89		N	%
Non Response	16	Male	58	65.2%
		Female	31	34.8%
Total	105		89	100%

Table 6 above shows; males respondent was the majority at 65.2% while female respondent was 34.8%. these findings could be explained by the nature of Baringo County in which majority of the technical and managerial position are occupied by male however despite this the gender disparity was generally balanced and was not expected to bring any biasness.

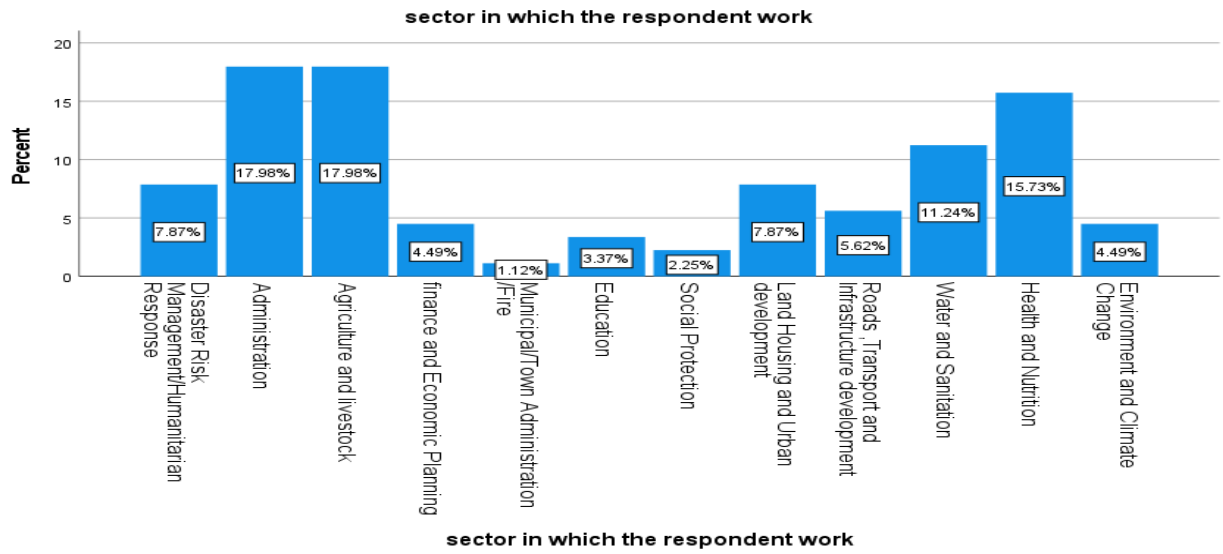
Table 7. Organization respondent worked

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Baringo County Government	76	85.4	85.4	85.4
	National Government	4	4.5	4.5	89.9
	National Drought Management Authority	3	3.4	3.4	93.3
	Non-Governmental Organization	6	6.7	6.7	100.0
	Total	89	100.0	100.0	

As shown in table 7 above majority of the respondent work with Baringo County Government at 85.4%, 6.7% of the respondent worked with Non-Governmental Organization while 4.5% and 3.4% worked with the National Government respectively.

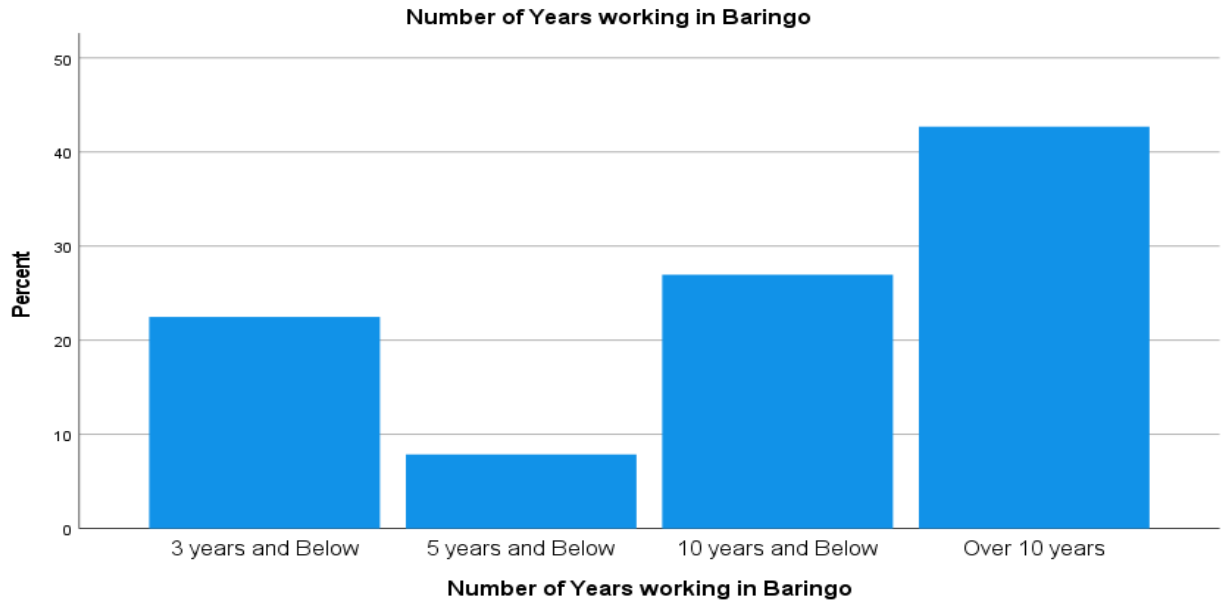
Figure 3 below shows the study received opinion from all relevant sectors involved in disaster risk management in the county and they were well represented hence there were no sectoral bias in the response.

Figure 3. Bar Chart Showing Sector in Which Respondent Worked



Further the respondent was asked about the number of years worked in Baringo. Figure 4. Below present the findings.

Figure 4. Number of years they Have Worked in Baringo



the above figure shows that, majority of the study respondent had worked in Baringo for over ten years at 42.7%, followed by another 27% who have worked for at least 10 years and below, three years and below at 22.5% and lastly 5 years and below at 7.9%. from this finding majority of the respondent at least 69% of the respondent had been working in Baringo for over five years with only 22.5% of the respondent having worked in Baringo for less than three years which means all the respondent have had enough time to understand disaster risk management profiles and disaster risk management system in the County and thus were in a better place to respond to the survey. It is also notable that the length of respondent service in Baringo is well spread thus ensuring theirs is no bias as a result of newness or long term service (Sekaran & Bougie, 2016)

4.1.4 Common Hazards in Baringo

Table 8: Common Hazards in Baringo County

		Responses		
		N	Percent	Percent of Cases
Common Hazards in Baringo[a]	Fire	26	4.9%	29.2%
	Flood	80	15.2%	89.9%
	Drought	82	15.6%	92.1%
	Resource based conflict	67	12.7%	75.3%
	Accident	14	2.7%	15.7%
	Landslide	72	13.7%	80.9%
	Livestock disease	48	9.1%	53.9%
	Human disease	29	5.5%	32.6%
	Crop diseases	32	6.1%	36.0%
	Human wildlife conflict	37	7.0%	41.6%
	Land environmental degradation	39	7.4%	43.8%
Total		526	100.0%	591.0%

a. Dichotomy group tabulated at value 1.

4.2. Descriptive Analysis Main Study Variables

4.2.1 Disaster Risk Awareness.

Establishing the effect of Disaster risk awareness on disaster Risk Resilience of Kenya counties was objective number one of this research, a Likert scale was adopted to collect responses from officers working in sectors with responsibilities on disaster risk management in Baringo with scale ranging from (1) Strongly Disagree, to (5) Strongly Agree . Seven questions were developed based on specific indicators for Disaster Risk Awareness on which the respondent opinions were collected. Table 9 below present the findings.

Table 9: Perception on disaster risk awareness

Items	strongly disagree (%)	disagree (%)	moderate(%)	agree (%)	strongly agree (%)	Mean	Standard deviation
Baringo County Periodic Disaster Risk Assessment enhances disaster risk resilience	2 (2.2)	1 (1.1)	27 (30.3	33 (37.1)	29 (29.2)	3.9	0.918

The County's Periodic update and dissemination of accurate Risk info to communities and decision makers at risk of exposure enhances disaster risk resilience	1 (1.1)	4 (4.5)	21 (23.6)	34 (38.2)	29 (32.6	3.97	0.923
The County's effort of building the knowledge of government, civil societies, communities and volunteers at all levels on disaster risk reduction enhances the disaster resilience	2 (2.2)	9 (10.1)	13 (14.6)	40 (44.9)	25 (28.1)	3.87	1.013
The County's integration of indigenous traditional knowledge and practices on disaster risk management to complement scientific knowledge enhances disaster risk resilience	3 (3.4)	5 (5.6)	18 (20.2)	34 (38.2)	29 (32.6)	3.91	1.03
The County's investments in modern innovation and technological development in all-hazard risk management has helped to address gaps and challenges in disaster risk management	3 (3.4)	17 (19.1)	22 (24.7)	32 (36.0)	15 (16.9)	3.44	1.087
The county's integration of disaster risk education in civic education at all levels enhances the disaster risk resilience in Baringo County	2 (2.2)	8(20.2)	39(43.8)	22(24.7)	22(24.7)	3.8	0.991
The County's effort in public education on disaster risk reduction through community forums (Barazas), radio shows and social media enhances disaster resilience	0	9(10.1)	20(22.5)	31(34.8)	29(32.6)	3.9	0.978

The first question was if The County's County Periodic Disaster Risk Assessment enhances disaster risk resilience. 2.2% strongly disagree while another 1.1% of the respondent disagree 37.1 percent of the respondent agree followed by additional 29.2% who strongly agree, 30.3% of the respondent had a moderate opinion. As to whether The County's Periodic update and dissemination of accurate Risk info to communities at risk of exposure and decision makers enhances their disaster risk resilience? 38.2% agree additionally, another 32.6 percent strongly agree, 23.6% had a moderate opinion, while only 1.1% and 4.5% strongly disagree and disagree respectively. As to whether The County's effort of building awareness of government, civil societies, volunteers and communities at all levels on disaster risk reduction is contributing in enhancing the disaster resilience? 2.2% of the respondent Strongly disagree, 10.1% disagree,

14.6% had a moderate opinion while 44.9% and 8.1 of the respondent agrees and strongly disagrees respectively

For question number 4 which sort respondent opinions on whether The County's integration of indigenous traditional knowledge and practices on disaster risk management to complement scientific knowledge has contributed to enhancing disaster risk resilience 3.4 percent disagreed strongly, and 5.6% disagree while a majority of the respondent at 38.2% agrees and another 32.6% strongly agree, 20.2% of the respondent had a neutral opinion on the question. On whether the County's investments in technological innovation development in all-hazard risk management has helped to address challenges in disaster risk management? 3.4% of the respondent strongly disagree and another 19.1% of the respondent disagree, 24.7 % of the respondent had a neutral opinion while the majority of the respondent at 36.0% agrees, additionally 16.9% strongly agree. The sixth question was on whether the county's integration of disaster risk education in civic education is enhancing the disaster risk resilience in Baringo County a majority of the respondent at 43.8% had a moderate opinion while 2.2% strongly disagree and 20.2 disagree,24.7% agree and 24.7% strongly agree, lastly, on whether The County's effort in public education on disaster risk reduction through community forums (Barazas), radio shows and social media is enhancing disaster resilience, majority of the respondent at 34.8 agrees while another 32.6 of the respondent strongly agrees, 22.5% of the respondent had a neutral opinion on the item while only 10.1% disagrees.

On risk awareness and resilience, the above descriptive statistics shows a general agreement among the respondents which point at a affirmative perception of the effect of risk awareness on disaster risk resilience, this also aligns with (Nifa et al.,2018) which established existence of a direct link between education, and increase in student's perception of risk and their risk reduction measures. Hargono et al, (2023) which established existence of significant relationship between current awareness level of the community towards disaster and community preparedness. Ozbaba, (2022) observed that, to achieve resilience then People need to expand their vision about management of risks in terms of preparedness, knowledge and prevention. (Ozbaba, 2022), sums up, the study by observing that resilience could only be archived if people have awareness about financial disaster risk management. Similarly, Pavlova et al (2017) established that government institutions and emergency response agencies and organizations, local communities and

individuals with adequate knowledge and capacity to anticipate, effectively respond and bounce back from disaster event have helped in reducing their risk and their chances of survival. And Lastly Etinay, Egbu and Murray (2018) established among other findings that, public education and awareness of disaster risks prevention, preparedness and mitigation mechanisms are one of the ways to build resilience to disasters and reductions of damages and loss as a result of disaster event. Thus they conclude that awareness concerning various options for disaster preventions is required. The general agreement across the respondent in this research points at the importance of continued investment on disaster risk awareness as a mechanism to build disaster risk resilience.

4.2.2 Disaster Risk Governance.

Table 10. Respondent Views on Disaster Risk Governance.

Items	strongly disagree (%)	disagree (%)	moderate(%)	agree (%)	strongly agree (%)	Mean	Standard deviation
County's effort in mainstreaming of Disaster risk reduction measures in county policies, laws, plans and strategies enhances better coordination, responsibility and financing of Disaster Risk Management	2 (2.2)	7 (7.9)	18 (20.2)	39 (43.8)	23 (25.8)	3.83	0.98
The County's Disaster Risk Management policy provides clear roles for all levels of government and partners	1 (1.1)	11 (12.4)	18 (20.2)	39 (43.8)	20 (22.5)	3.74	0.983
County's roll out of Disaster risk reduction plans and strategies is helping to prevent the formation of new risk, reducing of existing risk and strengthen of disaster resilience	3 (3.4)	8 (9.0)	25 (28.1)	32 (36.0	21 (23.6)	3.67	1.042
The establishment and staffing of disaster risk management directorate has enhanced implementation and coordination of Disaster Risk Reduction polices, plans and operations towards building of disaster resilience in the county	4 (4.5	7 (7.9	20 (22.5	32 (36)	26 (29.2)	3.78	1.095
The existing coordination structures and forums like County Steering group Meeting and County Executive Emergency Committee has effectively enhanced implementation and coordination of Disaster Risk	3 (3.4	3 (3.4	24 (27	34(38 .2	25 (28.1)	3.84	0.987

Reduction measures towards building disaster resilience							
The county's allocation of financial resources for Disaster Risk Reduction interventions through annual budgets has enhances resilience building	5 (5.6	16 (18)	25 (28.1)	26 (29.2)	17 (19.1)	3.38	1.15 3
The county's efforts to periodically assess and review of the county institutional capacity to manage Disaster Risk Reduction helps in strengthening disaster resilience building	1 (1.1	11 (12.4	25 (28.1	31 (34.8	21 (23.6)	3.67	1.00 9

Disaster risk governance effect on disaster risk resilience was assessed in this study using 5 pointer Likert chart which had choices ranging from strongly disagree, disagree to strongly agree. a total of seven questions were used. Table 10 above present the findings. The first question sought to establish whether The County's effort in integrating of Disaster risk reduction measures in county policies, laws, plans and strategies is enhancing better coordination, responsibility and financing of Disaster Risk Management, 2.2 % of the respondent strongly disagree, 7.9% disagree while 20.2% of the respondent had a neutral opinion on the item, however majority of the respondent at 43.8% agree with the statement and another 25.8% strongly agree with the statement, Question two sought the respondent opinion on whether the County's Disaster Risk Management policy provides clear roles for all levels of government and partners, majority of the respondent at 36.0 agrees with the statement and another 23.6 strongly agrees while 28.1 of the respondent had a neutral opinion on the item however 9.0% and 3.4% disagree and strongly disagree in that order. On whether the County's roll out of Disaster risk reduction strategies and plans is helping to prevent the formation of new risk, reducing of existing risk and strengthening of disaster resilience, 3.4% strongly disagree, 9.0% disagree while 28.1% had a neutral opinion, however majority of the respondent at 36.0 agrees with the statement while another 23.6 strongly agrees. Question four on whether the establishment and staffing of disaster risk management directorate has enhanced implementation and coordination of Disaster Risk Reduction polices, plans and operations towards building of disaster resilience in the county? 36% of the respondent agrees while another 29.2% strongly agrees, 22.5% of the respondent had neutral opinion while 4.5% and 7.9% strongly disagree and disagree in that order.

Question five sought to seek respondent opinion on whether the existing coordination structures and forums like County Steering Group Meeting and County Executive Emergency Committee

has effectively enhanced implementation and coordination of Disaster Risk Reduction measures towards building disaster resilience? 3.4% strongly agree and 3.4% disagree while majority of the respondent agree at 38.2% and another 28.1% strongly agrees, 27% had a neutral response. On whether the county's allocation of financial resources for Disaster Risk Reduction interventions through annual budgets has enhances resilience building, 5.6% strongly disagree, 18% disagree, 28.1% had a neutral opinion while 29.2% agrees with statement and another 19.1% strongly agrees. Lastly, on whether the county's efforts to periodically assess and review of the county institutional capacity to manage Disaster Risk Reduction helps in strengthening disaster resilience building 1.1% strongly disagree, 12.4%disagree while 28.1% had a neutral opinion however the majority of the respondent at 34.8% agrees with the statement while another 23.6% strongly agrees

The 3.7 average mean and 1.03 average standard deviation for Disaster Risk Governance point at the general positive perception of the respondent on the effect of risk governance on disaster risk resilience. this agreement agrees with Muriithi (2021) findings that, the presence of a disaster response approach like policies and guidelines is crucial in the prevention of catastrophes because it provides disaster managers with the required strategies. The study also pointed out the need for requisite staffing skills, regular capacity building and proper equipping and infrastructure as an important determinant for proper response and building readiness. Similarly, Boit et al (2019) found out among other things that, adoption of contingency planning greatly helps in prevention and mitigation of disaster effects in an organization.

4.2.3 Disaster Risk Reduction Measures.

Table 11. Respondent Views on Disaster Risk Reduction Measures

Items	strongly disagree (%)	disagree (%)	moderate(%)	agree (%)	strongly agree (%)	Mean	Standard deviation
The County's implementation of disaster risk transfer measurers like agricultural/livestock insurance, restocking, and inputs provisions has enhanced the county capacity to bounce back and recover from disasters	3(3.4)	15 (16.9)	16(18)	41 (46.1)	14 (15.7)	3.54	1.056

The County's enforcement of structural and non-structural measures (I.E construction of rivers and landslides embankments, Gullies, flood levies, check dams, building codes, land use planning etc) enhances the resilience of public and private infrastructure	2(2.2)	13 (14.6)	24(27)	33(37. 1)	17(19.1	3.5 6	1.03 3
The County's effort of integrating risk assessments in land use policy formulation and implementation contributes to long-term disaster resilience	3(3.4	9(10.1	20(22. 5	31(34. 8	26(29.2)	3.7 6	1.08 7
The County's implementation of inclusive safety net programme i.e (Elderly,PLWD and Relief Cash transfers, restocking and inputs support) contributes to poverty eradication and empower people disproportionately affected by disasters;	0(0)	11(12. 4	15(16. 9	27(30. 3	36(40.4	3.9 9	1.03 9
The County Government allocate resources, including finance and personal, across all sectors for implementation of disaster risk reduction strategies.	6(6.7	15(16. 9	28(31. 5	24(27. 0	16(18.0)	3.3 3	1.15 6
Baringo County Government is implementing environmental and natural resource management and climate change interventions which are disaster risk reduction sensitive	0	11(12. 4	26(29. 2	32(36	20(22.5	3.6 9	0.96 1
The county's integration of disaster risk management in the health care through capacity development of health workers and community health promoters in Disaster Risk Reduction contributes to enhancing the resilience of county health systems	1(1.1	10(11. 2	21(23. 6	33(37. 1	24(27.0	3.7 8	1.00 9
The county supports to livelihoods protection i.e livestock, tools and seeds supports help communities bounce back quickly after a disaster event	1(1.1	8(9	18(20. 2	34(38. 2	28(31.5	3.9	0.98 9

To establish the effect of disaster risk reduction measures on disaster risk resilience. a 5 point Likert scale with a range from strongly disagree, disagree to strongly agree was used and eight questions was put forward to respondent. table 11 above presents the findings. Question one sought to seek respondent opinion as to whether the County's implementation of disaster risk transfer

measurers like agricultural/livestock insurance, restocking, and inputs provisions has enhanced the county capacity to bounce back and recover from disasters? Majority of the respondent 46.1% agrees with statement and another 15.7 % strongly agree. 18% of the respondent had neutral opinion on the subject while 3.4% and another 16.9 percent strongly disagree and disagree with the statement. Question two, sought to find out whether the County's enforcement of structural and non-structural measures (I.E construction of rivers and landslides embankments, Gullies, flood levies, check dams, building codes, land use planning etc) enhances the resilience of public and private infrastructure, 2.2% strongly disagree and 14.6% disagree, while majority of the respondent (37.1%) agrees with the statement a further 19.1% of the respondent strongly agrees, 27% had a moderate opinion. As to whether the County's effort of integrating risk assessments in land use policy formulation and implementation contributes to long-term disaster resilience 3.4%, strongly agrees, 10.1% disagrees,22.5% of the respondent had a moderate opinion while 34.8% of the respondent agrees with the statement also another 29.2 %strongly agrees. question four on whether The County's implementation of inclusive safety net programme i.e (Elderly, PLWD and Relief Cash transfers, restocking and inputs support) contributes to poverty eradication and empower people disproportionately affected by disasters; majority of the respondent 40.4% strongly agrees with the statement while another 30.3% of the respondent agrees, only 12.4% of the respondent disagree while another 16.9% had a neutral opinion on the statements.

Question five was on whether the County Government allocate resources, including finance and personal, across all sectors for implementation of disaster risk reduction strategies. Majority (31.5) of the respondent had moderate opinion, while 27.0% and 18.0% agrees and strongly agrees with the stamen respectively. however, 6.7 strongly disagree, also 16.9% disagree. On whether Baringo County Government is implementing integrated environment, natural resource management and climate change interventions approaches that incorporate disaster risk reduction, 36% agrees and 22,5% respondent strongly agrees, however 29.2 had a neutral opinion on the statement while another 12.4 disagree with the statement. question seven sought to seek respondent opinion on whether the county's integrating of disaster risk management into health care through capacity development of health workers and community health promoters in Risk Reduction contributes to enhancing the resilience of county health systems, 37.1% agree, additionally 27.0% strongly agree, 23.6% of the respondent had a neutral opinion while 1.1% strongly disagree and 11.2% disagree. Lastly on whether The county supports the protection of critical livelihoods and assets, like

livestock, tools, equipment's and seeds help communities bounce back quickly after a disaster event? A majority of the respondent (38.2% and 31.5%) of the respondent agrees and strongly agrees with the statement, while 202. Had a neutral opinion. 1.1% and 9% of the respondent strongly disagrees and disagree respectively.

With an average mean score of 3.69 (SD=1.04), this descriptive statistics point that on average the respondent agreed Disaster risk reduction measures significantly affect risk resilience in Baringo County.The findings was found to be in line with other studies by (Özbaba, 2022) which found out that resilience programming can be adopted to help increase resilience of Turkey to the effects of disasters and also lessen the losses and damages as result of disaster events. Ji and Lee (2021) while taking Hazard Mitigation Grant Program (HMGP) in the United States as a case study, found out that the counties that got HMGP funds were likely to experience less property losses owing to future natural hazards a pointer to effects of risk reduction measures on community resilience. Similarly it aligns with Kehinde (2014) which found out that that long term insurance contracts that is based on specified products like weather derivatives, catastrophe bonds and food security index can facilitate access to reinsurance markets on a competitive term by pooling country specific risk into a single well designed product to manage impacts of extreme event such as cyclones or hurricanes. Further (Kehinde, 2014) noted that design of risk transfer instruments such as the index insurances used in ARC initiative can contribute to sustainable development and lessen the impact of slow onset event on vulnerable groups. Further, (Linnerooth-Bayer and Mechler 2006. as cited in Kehinde 2014) added that formulating risk transfer tools with risk reduction and or loss and damage activities, have great potential to mitigate the human and economic disaster loss and damage. Lastly the findings also aligns with Thomas et al., (2020) who argued that resilience of Health system is crucial to coping disasters like Corona Virus diseases, the similarity of findings in this studies underscores the importance of Disaster Risk Reduction measures in enhancing risk resilience in Baringo County.

4.2.4 Disaster Preparedness Measures.

Table 12. Respondent Views on Disaster Preparedness Measures

Items	strongly disagree (%)	disagree (%)	moderate(%)	agree (%)	strongly agree (%)	Mean	Standard deviation

The county periodic updates of its disasters preparedness plans enhance the effectiveness of response efforts.	2(2.2	7(7.9	19(21.3	36(40.4	25(28.1	3.84	0.999
The county multi hazard early warning system contribute to building community resilience to disaster events	1(1.1	7(7.9	17(19.1	36(40.4	28(31.5	3.93	0.963
The County's initiative of training of staffs, communities and volunteers on disaster preparedness and response enhances effective response and building of resilience	2(2.2	7(7.9	25(28.1	29(32.6	26(29.2	3.79	1.028
The County's allocation of emergency/contingency funds contribute to timely response and recovery to disaster events thus contributing building disaster resilience	3(3.4	9(10.1	30(33.7	25(28.1	22(24.7	3.61	1.073
The directorate of disaster risk management prepositioning of response logistics (foods and non-food items) enhances timely and effective response	0	7(7.9	24(27	26(29.2	32(36	3.93	0.975
The existence of county Disaster Risk Reduction coordination forum (County Steering Group, emergency committee) has contributed to effective response and recovery efforts	0	3(3.4	23(25.8	39(43.8	24(27	3.94	0.817

The County's organization of periodic emergency simulations i.e. drills enhances preparednes s to disasters	3(3.4	12(13.5	21(23.6	39(43. 8	14(15.7	3.55	1.023
The county government ensures construction planning of any infrastructure considered disaster preparedness provisions	4(4.5	13(14.6	30(33.7	28(31. 5	14(15.7	3.39	1.062
The county mechanism for relocation of public facilities at risk of disasters to safer places has enhances the preparedness of public infrastructures	3(3.4	18(20.2	25(28.1	28(31. 5	15(16.9	3.38	1.092
The County's establishment and training of community disaster risk management committees has enhanced disaster preparedness at community levels	1(1.1	11(12.4	18(20.2	43(48. 3	16(18	3.7	0.946

The effect of disaster preparedness measures on disaster risk resilience was assessed in this study using a Likert scale with a five point ranging from strongly disagree, disagree to strongly agree. To achieve this the study to find respondent opinion based on ten question. Question one asked respondent if the county periodic updates of its disasters preparedness plans enhance the effectiveness of response efforts.2.2% strongly disagrees,7.9 of the respondent disagree, 21.3%had neutral opinion, majority of the respondent at 40.4% agrees with another 28.1% strongly agree. on whether the county multi hazard early warning system contribute to building community resilience to disaster events? A majority 40.4% of the respondent agrees with another 31.5% strongly agree, only 1.1% and 7.9 % strongly disagree and disagree. 19.1 % of the respondent had a neutral opinion.as to whether the County's initiative of training of staffs, communities and volunteers on disaster preparedness and response enhances effective response and building of resilience, 2.2% and 7.9% strongly disagree and disagree, while 32.6% agrees and 29.2% strongly agree. 28.1 % had a moderate opinion. question four sought to assess whether The County's allocation of

emergency/contingency funds contribute to timely response and recovery to disaster events thus contributing building disaster resilience. Majority of the respondent at 33.7% had a neutral opinion on the matter while 28.1 and 24.7 agrees and strongly agrees, however 3.4 % and 10.1% of the respondent strongly disagree and disagree respectively. On whether, the directorate of disaster risk management prepositioning of response logistics (foods and non-food items) enhances timely and effective response. A majority 36% of the respondent strongly agrees and another 29.2% of the respondent agrees with the statement, only 7.9% disagree while 27% neither agree nor disagree.

Question six, sought to assess whether, the existence of county Disaster Risk Reduction coordination forum (County Steering Group, emergency committee) has contributed to effective response and recovery efforts. A majority 43.8% agrees and another 27%strongly agrees with the statement. Only 3.4 of the respondent disagree while another 25.8% had a neutral opinion. On whether The County's organization of periodic emergency simulations i.e. drills enhance preparedness to disasters? 43.8% of the respondent agree,15.7% strongly agrees however 3.4% strongly disagree and another 13.5% disagree. 23.6% had a neutral opinion. Question number eight sought to assess whether the county government ensures construction planning of any infrastructure considered disaster preparedness provisions. a majority (33.7%) had a moderate opinion, while 31.5% and 15.7% agrees and strongly agrees. 4.5% strongly disagree and 14.6% disagree. On whether the county mechanism for relocation of public facilities at risk of disasters to safer places had enhanced the preparedness of public infrastructures. 31.5% agrees and another 16.9% respondent strongly agrees, while 28.1% had a moderate opinion, however 3.4% and 20.2% respondent strongly disagree and disagree respectively. Lastly, on whether the County's establishment and training of community disaster risk management committees has enhanced disaster preparedness at community levels? 48.8% and 18% agrees and strongly agrees respectively. 20.2% had moderate opinion however, 1.1% strongly agree 12.4 % disagree.

The descriptive statistics had an aggregate mean score of 3.70 (SD = 0.99) which showed that generally the respondent approved that disaster risk preparedness measure significantly affect risk resilience in Baringo County. The general consensus aligns with findings from, Patel that the establishing of emergency procedures impacts the disaster preparedness. Heinkel et al., (2022) revealed that disaster preparedness can be improved through strengthening public capacity for emergency response and building community readiness, enhancing the capacity for

communications facilities to be used during emergency operations; collaboration with and participation of faith based organizations and other public institutions for use of their infrastructures like building during response for disasters; ensuring better preparedness of urban set up through stockpiling of basic food and nonfood commodities.. Similarly, Pavlova *et al.* (2017) observed that investment in early warning systems, emergency stock piling of critical commodities both food and non-foods, and mapping and setting up of evacuation facilities well in advance of a disaster event are important in building disaster resilience.

4.2.5 Disaster Risk Resilience

Table 13. Respondent Opinion on Disaster Risk Resilience

Items	strongly disagree (%)	disagree (%)	Moderate (%)	agree (%)	strongly agree (%)	Mean	Standard deviation
The disaster risk management system in place in Baringo, has contributed to improved capacity for risk anticipation	0	6 (6.7)	32 (36)	30 (33.7)	21 (23.6)	3.74	0.899
The County Disaster Risk Management System has enhanced the county's capacity to respond to disaster risks	1 (1.1)	9 (10.1)	24 (27.0)	40 (44.9)	15 (16.9)	3.66	0.916
The county Disaster Risk management system has enhanced the county and communities capacity to bounce back from disaster events	0	14(15.7	25(28.1	36(40.4	14(15.7	3.56	0.941
The disaster risk management system in place has contributed to improved adaptation capacity of the county and community to disaster risks	0	9(10.1	29(32.6	36(40.4	15(16.9	3.64	0.882

The disaster risk management system in place has contributed to capacity to prepare to adjust to disaster risk	1(1.1	7(7.9	33(37.1	(34(38.2	14(15.7	3.6	0.888
Overall, the disaster risk management system in Government has contributed to building disaster resilience in county	1(1.1	8(9.0	28(31.5	37(41.6	15(16.9	3.64	0.908

Disaster risk resilience was the dependent variable of this study, the research aimed at assessing what respondent thought of disaster risk resilience in Baringo County. Six question were used to seek respondent opinions. Question one assessed whether The disaster risk management system in place in Baringo, has contributed to improved capacity for risk anticipation, 33.7% respondent agree while another 23.6% strongly agree, only 6.7 % of the respondent disagree while 36% had a neutral opinion. Question two assed whether The County Disaster Risk Management System has enhanced the county's capacity to respond to disaster risks/ 44.9% respondent agrees and another 16.9 strongly agrees, 27.0% had a neutral opinion while 1.1% and another 10.1 % strongly disagree and disagree. on whether the county Disaster Risk management system has enhanced the county and communities' capacity to bounce back from disaster events? 40.4% agree and 15.7% strongly agree 28.1% of the respondent had a neutral opinion while only 15.7% of the respondent disagree. Question four assessed whether The disaster risk management system in place has contributed to improved adaptation capacity of the county and community to disaster risk? 40.4 % of the respondent agree, 16.9% strongly agree while 32.6% had moderate opinion, while only 10.1%of the respondent disagree. Questions five assessed whether The disaster risk management system in place has contributed to capacity to prepare to adjust to disaster risk38.2%agrees,15.7% strongly agree while 37.1% had neutral opinion however 1.1% and 7.9% strongly disagree and disagree respectively. lastly Overall, the disaster risk management system in Government has contributed to building disaster resilience in county, 41.6 with the statement and another 16.9% of the respondent strongly agree. However, 31.5 of the respondent had a moderate opinion while 1.1% strongly disagree and 9.0% disagree.

4.3. Inferential Analysis Main Study Variables

The study used inferential statistics such as correlations analysis to show the association between the variables. Regression analysis was used illustrate the significance of the relationship between independent and dependent variables

4.3.1 Disaster Risk Awareness On Disaster Risk Resilience in Kenyan Counties.

Table 14. Model Summary for Disaster Risk Awareness

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.582[a]	.338	.331	.61895	.338	44.514	1	87	.000

a. Predictors: (Constant), Disaster_Risk_Awareness

The research aimed at determining the effects of Disaster Risk Awareness On Disaster Risk Resilience. With disaster risk awareness being independent variable and disaster risk resilience as the study's dependent variable, regression analysis was thus used to establish the relation. Regression analysis is the method of statistics that is used to illustrate the significance of the relationship between independent and dependent variables. The variable being predicted is known as the dependent variable, while the variables that a researcher uses to determine the value of the dependent variable (Anderson, Sweeney, & Williams, 2008). The findings showed a relationship R = .582 which, according to Kothari, shows a positive correlation between the two variables. (Kothari, 2009) Analysis also showed R^2 of .338 which means that 34% variation in Disaster Risk Resilience can be attributed to disaster risk awareness.

Table 15. Coefficient Result for Disaster Risk Awareness

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	1.468	.332		4.418	.000	.807	2.128
	Disaster Risk Awareness	.568	.085	.582	6.672	.000	.399	.737

a. Dependent Variable: Disaster Risk Resilience

Findings shows that, disaster risk awareness has significant positive impact on disaster risk resilience in Baringo County Government implying that, increase in mean index of Disaster Risk awareness will increase disaster risk resilience by a mean index value of .568 with (t=6.672 and p< .000) which is statistically significant.

4.3.2 Disaster Risk Governance On Disaster Risk Resilience in Kenyan Counties.

Table 16. Summary Model for Disaster Risk Governance

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.621[a]	.385	.378	.59676	.385	54.477	1	87	.000

a. Predictors: (Constant), Disaster_Risk_Governance

To determine the effect of disaster risk governance on disaster risk resilience. The findings from the regression analysis showed that there is a strong positive relation between disaster risk governance and disaster risk resilience with R= .621, and R^2=.385 implying that 38% of the variation in disaster risk resilience in Baringo County could be explained by Disaster Risk Governance.

Table 17. Regression Coefficient for Disaster Risk Governance

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1.413	.308		4.585	.000	.801	2.026		
Disaster_Risk_Governance	.601	.081	.621	7.381	.000	.439	.763	1.000	1.000

a. Dependent Variable: Disaster_Risk_Resillience

From Table 17 it can be seen that a change in mean index of disaster risk governance will lead to a positive change of .601 in disaster risk resilience. Thus further demonstrating that disaster risk governance significantly affects disaster risk resilience in Baringo County in a positive way.

4.3.3 Disaster Risk Reduction Measures On Disaster Risk Resilience in Kenyan Counties.

Table 18. Model Summary for Disaster Risk Reduction Measures

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.697[a]	.486	.480	.54544	.486	82.352	1	87	.000

a. Predictors: (Constant), Disaster_Risk_Reduction_Measures

To assess the effect of disaster risk reduction measures on disaster risk resilience. The findings from the regression analysis showed that there exists strong positive relation between disaster risk reduction measure and disaster risk resilience with R= .697, and R^2=.486. this implies that 49% variation in disaster risk resilience in Baringo County can be explained by Disaster risk reduction measures implemented in Baringo County.

Table 19. Regression Coefficient for Disaster Risk Reduction Measures

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1.120	.284		3.946	.000	.556	1.684		
Disaster_Risk_Reduction_Measures	.683	.075	.697	9.075	.000	.533	.832	1.000	1.000

a. Dependent Variable: Disaster_Risk_Resillience

The study recorded an unstandardized coefficient value of .683, this implies that an increase in mean value for disaster risk reduction measures will result to increase in Disaster risk resilience in Baringo County by .0683. further the (t=9.075, p< .000) affirms that there is a significant positive relation between disaster risk reduction measures and disaster risk resilience in Baringo County.

4.3.4 Disaster Preparedness Measures On Disaster Risk Resilience in Kenyan Counties.

Table 20. Model Summary for Disaster Preparedness Measures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.767[a]	.588	.583	.48838	.588	124.240	1	87	.000

a. Predictors: (Constant), Disaster Preparedness

This study sought to assess the effect of disaster preparedness measures (Independent variable) on disaster risk resilience in Baringo (dependent variable. A regression analysis established a strong positive relation between the two variables where R=.769 and R^2 = .588. implying that 59% variation in Disaster Risk Resilience at Baringo County can be explained by disaster preparedness measures implemented in Baringo.

Table 21. Regression Coefficient for Disaster Preparedness Measures

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	.762	.263		2.895	.005	.239	1.286		
Disaster_Preparedness	.776	.070	.767	11.146	.000	.638	.915	1.000	1.000

a. Dependent Variable: Disaster_Risk_Resillience

4.3.5 Overall Multi Variate Regression

The deployed multiple regression with Disaster Risk Resilience as the dependent variable and disaster risk awareness, Disaster Risk Governance, Disaster Risk Reduction measures and Disaster Preparedness Measure as the predictors. The analysis findings show an overall relationship of R = 0.799 and R2 = 0.638 which meant that 64% of variation in disaster risk resilience is explained by a change in all the predictor factors. These findings are contained in Table 22 below.

Table 22. Model Summary for Overall Multi Variate Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.799[a]	.638	.621	.46592	.638	37.024	4	84	.000

a. Predictors: (Constant), Disaster_Preparedness, Disaster_Risk_Governance, Disaster_Risk_Awareness, Disaster_Risk_Reduction_Measures

The values of F = 37.024 show that all the independent variables significantly affect disaster risk resilience meaning the regression model is a good fit for this study and that disaster risk awareness, Disaster risk Governance, disaster risk reduction measures and disaster preparedness measures determine disaster risk resilience of Baringo County. The level of significance is 0.000 which was less than 0.05 hence the overall regression model significantly predicts the dependent variables this is shown in table 23 below.

Table 23. Anova Result for Multivariate Regression

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.149	4	8.037	37.024	.000[b]
	Residual	18.235	84	.217		
	Total	50.383	88			

a. Dependent Variable: Disaster_Risk_Resillience

b. Predictors: (Constant), Disaster_Preparedness, Disaster_Risk_Governance, Disaster_Risk_Awareness, Disaster_Risk_Reduction_Measures

Table 24. Multi Variate Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	.342	.286		1.197	.235	-.226	.911
Disaster_Risk_Awareness	.047	.102	.048	.465	.643	-.155	.249

Disaster_Risk_Governance	.159	.102	.164	1.558	.123	-.044	.361
Disaster_Risk_Reduction_Measures	.205	.105	.209	1.957	.054	-.003	.413
Disaster_Preparedness	.479	.116	.473	4.116	.000	.247	.710

a. Dependent Variable: Disaster_Risk_Resillience

From above analysis, the findings indicated that independent variables have a significant positive effect disaster risk resilience in Baringo County. Results indicated that there is a significant relationship between disaster risk awareness, disaster risk governance, disaster risk reduction measures, disaster preparedness measures and disaster risk resilience in Baringo County; $p < 0.05$ ($P = 0.00$). Thus, the values of independent variables are statistically significant with $p < .05$ which means an increase in mean index of predictor variables should increase Disaster Risk Resilience as shown in Table 27 above. Therefore, the optimal regression model for the study is: $Y= \beta0 + \beta1X1 + \beta2X2 + \beta3X3+ \beta4X4$. Disaster Risk Awareness= .047 + .159 (disaster risk governance) + .205 (disaster risk reduction measures) + .479 (disaster preparedness) This mode showed that disaster preparedness measures was the predictor that most affects disaster risk resilience in Baringo County followed by disaster risk reduction measure. Disaster risk awareness was the least significant determinant of disaster risk resilience in Baringo County.

4.2 Limitations of the study

The study only focused on four variables as determinants of disaster risk resilience meaning that the study findings can only be applied where the four variables are under study. Due to busy schedules of some of the targeted responders, the Lastly because of the broad nature of disaster risk management and the many sectors and stakeholders involved it also meant that the questionnaire were broad and covered all the different sectors thus some respondent may have limited information on indicators outside their core sectors.

4.3 Chapter summary

This section covered the findings from data analysis, it provides the study response rate and demographics of the of the respondent, further the section provides the findings from the descriptive analysis presented as per the study objectives, this was followed by the inferential analysis presented as per the study variables. The chapter also provides study limitations

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.0 Introduction

This chapter summarizes the findings of this study as guided by its research objectives. It also recommended related areas of further study. This study's general objective was to conduct an assesment of disaster risk management systems on disaster risk resilience of Kenyan counties using Baringo county as a case study.

5.1 Summary of Findings

The study was a cross sectional case study and utilized multi stage sampling technique to get the research subjects. Out of the 105 sample targeted 89 responded translating to 84.79% response rate. the study gender split was 65% and 35% in favor of males, this is informed by the fact that more male hold positions in technical and management level in Baringo, however, the difference is insignificant thus the findings cannot be influenced by one gender. majority of the respondent had worked in Baringo for over ten years at 42.7%, followed by another 27% who have worked for at least 10 years and below, three years and below at 22.5% and lastly 5 years and below at 7.9%. from this finding majority of the respondent at least 69% of the respondent had been working win Baringo for over five years with only 22.5% of the respondent having worked in Baringo for less than three years which means all the respondent had enough time to understand disaster risk profiles and disaster risk management system and thus in they were all in better position to respond to the questionnaire. It is also notable that the length of respondent service in Baringo is well spread thus ensuring theirs is no bias as a result of newness or long term service (Sekaran & Bougie, 2016)

The study also sought to establish the organizations and sectors in which the respondent worked for. The findings showed that 7.9% of the respondent worked in Disaster Risk Management/Humanitarian Sector, 18% from Adminstration,18% from agriculture and Livestock,4.5% finance and economic Planning, 1.1%municiple/town administration, 3.4% education, 2.2% social protection%,7.9 land housing and urban development,5.6 roads, transport and infrastructure development,11.2% water and Sanitation, 15.7% health and nutrition and 4.5% environment and climate change. This finding shows that all relevant sectors involved in disaster

risk management in the county opinion were sort and well represented hence there were no sectoral bias in the response.

The general objective of the study was to conduct an assesment of disaster risk management systems on disaster risk resilience of Kenyan counties using a case of Baringo county. Specifically, the study sought to establish the effects of Disaster Risk Awareness, Disaster Risk Governance, Disaster risk Reduction Measures, and Disaster Preparedness Measures on Disaster Risk Resilience of Baringo County. With Disaster Risk Awareness, Disaster Risk Governance, Disaster risk Reduction Measures, and Disaster Preparedness Measures as independent variables while Disaster Risk Resilience of Baringo County as Dependent Variables. The overall findings showed that there is strong positive relation between the independent and the dependent variables as shown by R = 0.799 and R^2 = 0.638 which meant that 64% of variation in disaster risk resilience is explained by a change in all the predictor factors. Further F = 37.024 show that all the predictor factors statistically and significantly affect disaster risk resilience which meant that the regression model was a good fit for the study. The level of significance was <0.000 which is less than 0.05 hence the overall regression model significantly predicted the dependent variables.

From the above analysis, the findings showed the independent variables had a significant positive effect on disaster risk resilience in Baringo County. Results showed that a significant relationship exist between disaster risk awareness, disaster risk governance, disaster risk reduction measures, disaster preparedness measures and disaster risk resilience in Baringo County; Hence independent variables values at $p < .05$ is statistically significant meaning an increase in mean index of predictor variables should increase disaster risk resilience. Therefore, the optimal regression model for the study is: $Y= \beta0 + \beta1X1 + \beta2X2 + \beta3X3+ \beta4X4$. Disaster Risk Awareness= .047 + .159 (disaster risk governance) + .205 (disaster risk reduction measures) + .479 (disaster preparedness) This mode showed that disaster preparedness measures were the predictor that most affects disaster risk resilience in Baringo County followed by disaster risk reduction measure. Disaster risk awareness was the least significant determinant of disaster risk resilience in Baringo County. Below a summary of specific individual independent variables is discussed.

5.1.1 Disaster Risk Awareness On Disaster Risk Resilience in Kenyan Counties.

The findings form this study showed that their exist a significant positive relation between Disaster Risk Awareness and Disaster Risk Resilience in Baringo County with R=.582 which, according to

Kothari, shows a positive correlation between the two variables. (Kothari, 2009) Analysis also showed R^2 of .338 which means that 34% variation in Disaster Risk Resilience can be attributed to disaster risk awareness. Further regression analysis of the two variable returned a p value of <.000 which is less than 0.05 thus implying that the regression model significantly predicts the dependent variable. Also the unstandardized coefficient Beta value of .568 was recorded which implies that an increase in mean index of Disaster Risk Awareness will result into an increase in disaster risk resilience by a positive mean index value of .568. further t=6.672 and p< .000 values affirms that disaster risk awareness has significant positive impact on disaster risk resilience in Baringo County Government.

5.1.2 Disaster Risk Governance On Disaster Risk Resilience in Kenyan Counties.

The study findings revealed that that there is a strong positive relation between disaster risk governance and disaster risk resilience with R= .621, and R^2=.385 implying that 38% of the variation in disaster risk resilience in Baringo County could be explained by Disaster Risk Governance. The regression analysis returned an F=54.477 which means the regression model was a good fit for this study and significant value = <.000 meaning a statistically significant relationship between disaster risk governance and disaster risk resilience exist and that disaster risk governance is a strong determinant of disaster risk resilience in Baringo County. Further the result of unstandardized coefficient Beta value of .601 implies that a change in mean index of disaster risk governance will lead to a positive change of .601 in disaster risk resilience. Thus further demonstrating that disaster risk governance affects disaster risk resilience in Baringo County.

5.1.3 Disaster Risk Reduction Measures On Disaster Risk Resilience in Kenyan Counties.

The findings from the regression analysis showed that there is a strong positive relation between disaster risk reduction measure and disaster risk resilience with R= .697, and R^2=.486. this implies that 49% variation in disaster risk resilience in Baringo County can be explained by Disaster risk reduction measures implemented in Baringo County. Additionally, Anova test finding on this relation gives a significant value=.000 which means a statistically significant relation exist between disaster risk reduction measure and disaster risk resilience in Baringo County. Further the F value of 82.352 confirm that regression model is a good fit for this study. The study recorded an unstandardized coefficient value of .683, which implied that an increase in mean value for disaster

risk reduction measures will result to increase in Disaster risk resilience in Baringo County by .0683. further the (t=9.075, p< .000) affirms that there is a significant positive relation between disaster risk reduction measures and disaster risk resilience in Baringo County.

5.1.4 Disaster Preparedness Measures On Disaster Risk Resilience in Kenyan Counties.

Findings from the regression analysis established that there exists a strong positive relation between the two variables where R=.769 and R^2 = .588. this implied that 59% variation in Disaster Risk Resilience at Baringo County can be explained by disaster preparedness measures implemented in Baringo. The Anova test further reveals a significant value of <.000 which means there is a statistically significant relation between the two variables. This finding is further affirmed by the unstandardized Coefficient value of .776. meaning that an increase in the mean value of disaster preparedness measure will result to an increase in the disaster risk resilience by .776.

5.2 Conclusion

The general objective of this study aimed at conducting an assesment of disaster risk management systems on disaster risk resilience of Kenyan counties using a case of Baringo county. The research sought to specifically establish the effects of Disaster Risk Awareness, Risk Governance, risk Reduction Measures, and Disaster Preparedness Measures on Disaster Risk Resilience of Baringo County. With Disaster Risk Awareness, Disaster Risk Governance, Disaster risk Reduction Measures, and Disaster Preparedness Measures as independent variables while Disaster Risk Resilience of Baringo County as Dependent Variables. The overall findings revealed that their exist a strong and positive relation between independent and dependent variables as shown by R = 0.799 and R^2 = 0.638 this means that 64% of variation in disaster risk resilience is due to change in all the independent factors. Further F = 37.024 show that all the predictor factors statistically and significantly affect disaster risk resilience which meant that the regression model was a good fit for the study. The level of significance was <0.000 meaning that the overall regression model significantly predicted the dependent variables.

The overall conclusion of the study therefore is that Disaster Risk Awareness, Disaster Risk Governance, Disaster Risk Reduction measures and Disaster Risk Preparedness all plays a complementary role in building risk resilience.

5.3 Recommendations

This study pointed out four critical determinants that Counties should pay attention to in order to enhance their disaster risk resilience. the study has demonstrated a clear and precise significant and positive relations between the four determinants namely Disaster Risk Awareness, Risk Governance, Risk Reduction Measures and Disaster Risk Preparedness and disaster risk resilience. While the regression analysis of the out that Disaster Preparedness measure as the most significant predictor of disaster Risk resilience, followed by Disaster Risk Reduction measures it is notable that all the independent variables plays complimentary roles in strengthening of disaster risk resilience thus Baringo County Government and its partners including the national ministries and agencies, non-state actors and other stakeholders needs to strengthen investments on the four determinants in order to strengthen and build a sustainable disaster risk resilient county.

Further the data analysis also points at areas of weakness under each of the independent variables that can be a focus for special attention by Baringo County Government in order to strengthen its disaster risk resilience. This includes; Under Disaster Risk Awareness, the county need to focus more investments to ensure there is; adequate integration of disaster risk education in the county civic education programme, the county needs to carry out regular Disaster Risk Assessment and dissemination of the findings, and importantly there is need to invest more and adopt the use of innovations and technology in multi-hazard risk management. On Disaster Risk Governance, Baringo County Government needs to; strengthen implementation of sectoral Disaster risk reduction strategies and plans, strengthen financial resources allocation for Disaster Risk Reduction interventions through annual budgets, and the need to ensure periodic assessment and review of the county institutional capacity to manage Disaster Risk Reduction to ensure that there are update and fit for purpose in line with international best practices.

On Disaster Risk Reduction measures the county government needs to strengthen; allocation of resources and personnel across all sectors for implementation of disaster risk reduction strategies The County Government allocate resources, including finance and personal, across all sectors for implementation of disaster risk reduction strategies, strengthen roll out of environmental, climate change actions and natural resource management methods that integrate disaster risk reduction and lastly strengthen efforts in enforcement of structural and non-structural measures like construction of rivers and landslides embankments, Gullies, flood levies, check dams, building

codes, land use planning. On disaster preparedness measure the county needs to; strengthen enforcement of construction planning to ensure they consider disaster preparedness provisions, the need to strengthen and enhance allocation of emergency/contingency funds for effective and timely response and recovery to disaster events, develop and strengthen mechanism for relocation of public facilities at risk of disasters to safer places, strengthening capacity building and training of staffs, communities and volunteers on disaster preparedness and response.

5.4 Suggestion for Future Study

This study recommends further additional studies to sought the perception of the communities in Baringo about the effect of disaster risk managements system on their individual disaster risk resilience.

REFERRENCES

Ahmed, S. K., Chandran, D., Hussein, S., SV, P., Chakraborty, S., Islam, M. R., & Dhama, K. (2023). Environmental Health Risks After the 2023 Turkey-Syria Earthquake and Salient Mitigating Strategies: A Critical Appraisal. *Environmental Health Insights*, *17*. https://doi.org/10.1177/11786302231200865

Alam, E., & Ray-Bennett, N. S. (2021). Disaster risk governance for district-level landslide risk management in Bangladesh. *International Journal of Disaster Risk Reduction*, *59*(March), 102220. https://doi.org/10.1016/j.ijdrr.2021.102220

Awah, L. S., Belle, J. A., Nyam, Y. S., & Orimoloye, I. R. (2024). A Systematic Analysis of Systems Approach and Flood Risk Management Research: Trends, Gaps, and Opportunities. *International Journal of Disaster Risk Science*, *15*(1), 45–57. https://doi.org/10.1007/s13753-024-00544-y

Bol, G. K., & van Niekerk, D. (2024). Application of African indigenous knowledge systems and practices for climate change and disaster risk management for policy formulation. *International Journal of Disaster Risk Reduction*, *111*(June), 104670. https://doi.org/10.1016/j.ijdrr.2024.104670

Chepkoech Boit, L., Bii, J., Tanui, J., & Gitahi, N. (2019). *Effect Of Strategic Environmental Analysis On Disaster Management In Kenya. (A Case Of National Government Ministries)*. http://ir.kabarak.ac.ke/handle/123456789/1

Cho, H. S., & Choi, N. H. (2024). Analyzing Vulnerabilities of Disaster Risk Management Systems of Local Governments in South Korea: Evidence from National Audit Office Reports. *Systems*, *12*(3). https://doi.org/10.3390/systems12030076

CRED, UCLouvain, & USAID. (2023). 2023 Disaster in Numbers. *Nature Medicine*, *29*(7), 1857–1866. https://files.emdat.be/ reports/2023_EMDAT_report.pdf

Dar, R. U. N., & Alam, M. (2020). Understanding Disaster Risk, Its Components and Reduction. *International Conference On Building Resilient and Sustainable Societies: Emerging Social and Economic Challenges*, *December*. https://www.researchgate.net/profile/Roouf-Un-Nabi-Dar/publication/346935377_Understanding_Disaster_Risk_its_components_and_reduction/links/61b323de590a0b7ed6352ac7/Understanding-Disaster-Risk-its-components-and-reduction.pdf

Etinay, N., Egbu, C., & Murray, V. (2018). Building Urban Resilience for Disaster Risk Management and Disaster Risk Reduction. *Procedia Engineering*, *212*, 575–582. https://doi.org/10.1016/j.proeng.2018.01.074

Gall, M., Cutter, S. L., & Nguyen, K. (2014). Governance in Disaster Risk Management. *Research Gate*, *July*, 1–36. https://doi.org/10.13140/2.1.2130.2568

Galperin, A., & Wilkinson, E. (2015). *Strengthening Disaster Risk Governance: UNDP Support during the HFA Implementation Period 2005-2015*. 1–102.

Hargono, A., Artanti, K. D., Astutik, E., Widodo, P. P., Trisnawati, A. N., Wardani, D. K., & Lioni, E. (2023). Relationship between disaster awareness and disaster preparedness: online survey of the community in Indonesia. *Journal of Public Health in Africa*, *14*(9).

https://doi.org/10.4081/jphia.2023.2376

Izumi, T., Shaw, R., Djalante, R., Ishiwatari, M., & Komino, T. (2019). Disaster risk reduction and innovations. *Progress in Disaster Science*, *2*, 100033. https://doi.org/10.1016/j.pdisas.2019.100033

Johnson, K., Camara, J., Sinha, R., Madanian, S., & Parry, D. (2021). Towards self-adaptive disaster management systems. *Proceedings of the International ISCRAM Conference*, *2021-May*(May 2021), 49–61.

Kapucu, N., & Garayev, V. (2011). Collaborative Decision-Making in Emergency and Disaster Management. *International Journal of Public Administration*, *34*(6), 366–375. https://doi.org/10.1080/01900692.2011.561477

Kato, N., & Shaw, R. (2024). Evolution of disaster risk governance and its implication to resilience building in Nepal. *Disaster Prevention and Resilience*, *3*(2). https://doi.org/10.20517/dpr.2024.05

Kehinde, B. (2014). Applicability of Risk Transfer Tools to Manage Loss and Damage from Slow-onset Climatic Risks. *Procedia Economics and Finance*, *18*(September), 710–717. https://doi.org/10.1016/s2212-5671(14)00994-0

Lai C. & Lin S. (2017). Systems Theory. *TheInternational Encyclopedia of Organizational Communication*, 134–137. https://doi.org/10.1016/B978-0-08-047163-1.00689-5

Lauta, K. C., Albris, K., Zuccaro, G., Grandjean, G. (2018). *ESPREssO Enhancing Risk Management Capabilities Guidelines* (Issue October). www.espressoproject.eu

Mavrouli, M., Mavroulis, S., Lekkas, E., & Tsakris, A. (2023). An Emerging Health Crisis in Turkey and Syria after the Earthquake Disaster on 6 February 2023: Risk Factors, Prevention and Management of Infectious Diseases. *Healthcare (Switzerland)*, *11*(7). https://doi.org/10.3390/healthcare11071022

McNamara, M. (2012). Starting to Untangle the Web of Cooperation, Coordination, and Collaboration: A Framework for Public Managers. *International Journal of Public Administration*, *35*(6), 389–401. https://doi.org/10.1080/01900692.2012.655527

Mele, C., Pels, J., & Polese, F. (2010). *A Brief Review of Systems Theories and Their Managerial Applications*. *May 2014*. https://doi.org/10.1287/serv.2.1

Mohamed, I. A. H. (2017). Some issues in the institutional theory: A critical analysis. *International Journal of Scientific & Technology Research*, *6*(09), 150–156. www.ijstr.org

Muia, D. (2021). Effects of Extreme Flooding of Lake Baringo on Livelihoods of Communities Lining around the Lake. *Advances in Applied Sociology*, *11*(08), 404–414. https://doi.org/10.4236/aasoci.2021.118036

Nifa, F. A. A., Lin, C. K., Wan, W. N. M., Rani, M., & Wei, O. J. (2018). A study on awareness of disaster risk reduction (DRR) among university students: The case of PETRONAS residential hall students. *AIP Conference Proceedings*, *2016*. https://doi.org/10.1063/1.5055407

Nojavan, Mehdi; Salehi, Esmail; Omidvar, B. (2018). Conceptual change of disaster management models: A thematic analysis Research methodology. *Jamba-Jpurnal of Disaster Risk Studies*,

1–11.

Osunga, M., & Kingori, S. (2021). *An Application of Flood Risk Analysis for Impact Based Forecasting in Kenya*.

Patel, R. K., Pamidimukkala, A., Kermanshachi, S., & Etminani-Ghasrodashti, R. (2023). Disaster Preparedness and Awareness among University Students: A Structural Equation Analysis. *International Journal of Environmental Research and Public Health*, *20*(5). https://doi.org/10.3390/ijerph20054447

Paudel, P. K., Parajuli, S., Bohara, M., Kibria, M. G., Abedin, M. A., & Sinha, R. (2024). Mainstreaming ecosystem-based approaches into disaster risk reduction policies: a comparative study of Nepal, India, and Bangladesh. *Policy Design and Practice*, *7*(3), 324–342. https://doi.org/10.1080/25741292.2024.2368919

Rogayan, D. V., & Dollete, L. F. (2020). Disaster awareness and preparedness of barrio community in Zambales, Philippines: Creating a baseline for curricular integration and extension program. *Review of International Geographical Education Online*, *10*(2), 92–114. https://doi.org/10.33403/rigeo.634564

Shafique, K., & Gabriel, C. A. (2022). Vulnerable Stakeholders' Engagement: Advancing Stakeholder Theory with New Attribute and Salience Framework. *Sustainability (Switzerland)*, *14*(18), 1–19. https://doi.org/10.3390/su141811765

Sharma, N., Nitivattananon, V., Tsusaka, T. W., & Pandey, R. (2024). An Application of the Stakeholder Theory and Proactive-Reactive Disaster Management Principles to Study Climate Trends, Disaster Impacts, and Strategies for the Resilient Tourism Industry in Pokhara, Nepal. *International Journal of Sustainable Development and Planning*, *19*(4), 1337–1346. https://doi.org/10.18280/ijsdp.190411

Simonovic, S. P. (2015). Systems Approach to Management of Disasters – A Missed Opportunity. *Journal of Integrated Disaster Risk Management*, *5*(2), 70–83. https://doi.org/10.5595/idrim.2015.0099

The International Disaster Database. (2024). Disaster Year in Review. *The International Disaster Database*, *April*, 5–6. https://www.emdat.be/publications/

The World Bank. (2014). *GLOBAL FACILITY FOR DISASTER REDUCTION AND RECOVERY UNDERSTANDING DISASTER RISK IN AN EVOLVING WORLD A Policy Note*. www.worldbank.org

Thomas, S., Sagan, A., Larkin, J., Cylus, J., Figueras, J., & Karanikolos, M. (2020). Strengthening health systems resilience, Key concepts and strategies. European Observatory of Health Systems and Policies. *Who*, 33.

Tin, D., Cheng, L., Le, D., Hata, R., & Ciottone, G. (2024). Natural disasters: a comprehensive study using EMDAT database 1995–2022. *Public Health*, *226*, 255–260. https://doi.org/10.1016/j.puhe.2023.11.017

UN Secretary-General. (2016). *Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction*. *21184*(December), 1–41.

UNDP. (2010). Disaster Risk Reduction, Governance & Mainstreaming. *Bureau for Crisis Prevention and Recovery*, 1–4.

http://www.preventionweb.net/files/17429_4disasterriskreductiongovernance1.pdf

UNISDR. (2015a). . *Making Development Sustainable: The Future of Disaster Risk Management. Global Assessment Report on Disas_ter Risk Reduction. Geneva, Switzerland: United Nations Office for Disaster Risk Reduction (UNISDR).* . Geneva, Switzerland: United Nations Office for Disaster Risk Reduction (UNISDR).

UNISDR. (2015b). Sendai Framework for Disaster Risk Reduction 2015 - 2030 Contents. *Sendai Framework for Disaster Risk Reduction*, *March*, 1–25.

Victor, N., Eric, P., & Kyeba, K. (2023). The Risk of Flooding to Architecture and Infrastructure amidst a Changing Climate in Lake Baringo, Kenya. *American Journal of Climate Change*, *12*(01), 80–99. https://doi.org/10.4236/ajcc.2023.121005

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *Chest*, *158*(1), S65–S71. https://doi.org/10.1016/j.chest.2020.03.012

Willie, M. M. (2023). Distinguishing Between Population and Target Population: A Mini Review. *Surgery Research Journal*, *3*(2), 4–6. https://doi.org/10.33425/2768-0428.1027

Wisner, B., Gaillard, J. C., & Kelman, I. (2012). Handbook of Hazards and Disaster Risk Reduction. *Disaster Prevention*, 44–62. https://doi.org/10.4324/9780203844236-13

Zuleika, P., Sriwijaya, U., Siswo, L., & Sriwijaya, U. (2022). *Archives of The Medicine and Case Report s. November*, 3–7. https://doi.org/10.37275/amcr.v3i2.193

APPENDICES

Appendix I: Introduction Letter

REF: REQUEST FOR PARTICIPATION IN RESEARCH STUDY

I am a student at Management University of Africa pursuing Master of Development Studies. I am currently undertaking a research study on ***Disaster Risk Management System on Disaster Risk Resilience of Kenyan Counties: A Case of Baringo County***. I will appreciate if you could find time from your busy schedule and complete the enclosed questionnaire(s). All the information provided will be treated with a lot of privacy and confidentiality. The views that you will express are your own personal views and not that of the organization. A copy of the final report will be made available to you on your request. Your timely response and corporation will be highly appreciated.

Yours faithfully,

Abdushakur Khatib Lendapana

Appendices II: Research Questionnaire

Introduction:

Dear Respondent,

I am a postgraduate student at the Management University of Africa pursuing a Master's degree in Development Studies. I am conducting a study titled***: Assessing Disaster Risk Management System in Devolved Units of Kenya. A Case for Baringo County Government***. I assure you of Confidentiality on information provided will be maintained and protection of your privacy.

PART A: RESPONDENT DEMOGRAPHIC

1	Gender	Male	**{ }**
		Female	**{ }**
2	Organization	Baringo County Government	**{ }**
		NDMA	**{ }**
		National Government	**{ }**
		NGO	**{ }**
3	Highest Education Level	Post Graduate	**{ }**
		Degree	**{ }**
		Diploma	**{ }**
		Certificate	**{ }**
4	Department/Sector	Health and Nutrition	**{ }**
		Water and Sanitation	**{ }**
		Agriculture and livestock	**{ }**
		Social Protection	**{ }**
		Education	**{ }**
		Administration	**{ }**
		Disaster Risk Management	**{ }**
		Environment and Climate Change	**{ }**
		Municipality/Town Administration /Fire	**{ }**
		Roads, Transport and Infrastructure Development	**{ }**
		Finance and Economic Planning	**{ }**
		Land Housing and Urban Development	**{ }**
5	Number of years Working in the Organization	Less than 1 year	**{ }**
		3 years and Below	**{ }**
		5 years and Below	**{ }**
		Over 5 years	**{ }**

6. What are the likely hazards to occur that results disasters in this County?

(a) Fire [ ]

(b) Floods [ ]

(c) Droughts [ ]

(d) Accidents [ ]

(e) Resource Based Conflicts [ ]

(f) Landslides

(g) Livestock Disease

(h) Human Diseases

(I) Crop Diseases

(j) Human Wildlife Conflicts

(K) Land Degradation

(l) Other? …….

PART B: Understanding DISASTER RISK

What is your level of agreement on the following statements about the effect of Understanding Disaster Risk on Disaster risk resilience in Baringo County, Kenya? Using the scale 1-strongly disagree, 2-disagre, 3-moderate, 4-agree, 5-strongly agree

No	Statement	1	2	3	4	5
1	Periodic Disaster Risk Assesment enhances disaster risk resilience.					
2	Periodic update and dissemination of accurate locational based Risk information to decision makers and communities at risk of exposure enhances disaster risk resilience					
3	Building the knowledge of government, civil societies, communities and volunteers at all levels on disaster risk reduction enhances the disaster resilience					
4	Integration of indigenous traditional knowledge and practices on disaster risk management to complement scientific knowledge enhances disaster risk resilience					
5	Investments in innovation and technology development in multi-hazard risk management has helped Baringo County to address gaps and challenges in disaster risk management					
6	Disaster risk knowledge on prevention, mitigation, preparedness, response and recovery in formal and non-formal education at all levels enhances the disaster risk resilience in Baringo County					
7	Public education in disaster risk reduction through community forums (Barazas), radio shows and social media enhances disaster resilience					

PART C: DISASTER RISK MANAGEMENT INSTITUTIONAL FRAMEWORK

On the scale of 1-5, Please indicate by ticking (√) the effect of disaster risk governance/ institutional framework on disaster risk resilience in Baringo County. *Where: Key: 5=strongly agree 4=agree 3=undecided 2=disagree 1=strongly disagree*

No	Statement	1	2	3	4	5
1	Mainstreaming of Disaster risk reduction measures in county policies, laws, plans and strategies enhances better coordination, responsibility and financing					
2	DRM policy provides explicit responsibilities defined for all levels of government.					
3	Implementation of Disaster risk reduction strategies and plans has helped in preventing the creation of new risk, the reduction of existing risk and strengthening resilience					
4	Establishment and staffing of disaster risk management directorate has enhanced implementation and coordination of Disaster Risk Reduction polices, plans and operations towards building of disaster resilience in the county					
5	The existing coordination structures and forums like County Steering group Meeting and County Executive Emergency Committee has effectively enhances coordination and implementation of DRR measures towards building disaster resilience					
6	The county allocates financial resources for DRR through annual budgets					
7	There is periodic assessments and review of the county institutional capacity to manage DRR					

PART D: DISASTER RISK REDUCTION MEASURES

On the scale of 1-5, Please indicate by ticking (√) the effect of to which disaster risk reduction measures on disaster risk resilience in Baringo County. *Where: Key: 5=strongly agree 4=agree 3=undecided 2=disagree 1=strongly disagree*

No	Statement	1	2	3	4	5
1	The county implements disaster risk transfer measurers like agricultural/livestock insurance which has enhanced the capacity to bounce back and recover from disasters					
2	Proper Enforcement of structural and non-structural measures enhances the resilience of public and private infrastructure					
3	Enforcement structural and non-structural measures has contributed to disaster risk resilience of workplaces					

4	Mainstreaming of disaster risk assessments into land-use policy development and implementation contributes to long-term disaster resilience.					
5	Implementation of inclusive safety net programme contributes to poverty eradication and empower people disproportionately affected by disasters;					
6	The County Government allocate resources, including finance and personal, across all sectors for implementation of disaster risk reduction strategies.					
7	Baringo County Government has developed and is implementing integrated environmental and natural resource management approaches that incorporate disaster risk reduction					
8	The county has integrated disaster risk management into health care through capacity development of health workers and community health groups in DRR contributes to enhancing the resilience of county health systems					
9	The county supports to protection of livelihoods and productive assets, including livestock, working animals, tools and seeds help communities bounce back quickly after a disaster event					

PART E: DISASTER PREPAREDNESS MEASURES

On the scale of 1-5, Please indicate by ticking (√) the effects of disaster preparedness measures on disaster risk resilience in Baringo County. *Where: Key: 5=strongly agree 4=agree 3=undecided 2=disagree 1=strongly disagree*

No	**Statement**	**1**	**2**	**3**	**4**	**5**
1	The county periodic updates its disasters preparedness enhance the effectiveness of response efforts.					
2	The county multi hazard early warning system contribute to building community resilience to disaster events					
3	The county training of staffs, communities and volunteers enhances effective response and building of resilience					
4	The emergency/contingency funds contribute timely response and recovery to disaster events thus contributing building disaster resilience.					
5	The directorate of disaster risk management prepositioning of response logistics (foods and non-food items) enhances timely and effective response					
6	The existence of county DRR coordination forum (CSG, emergency committee) has contributed to effective response					
7	The organization of periodic emergency simulations i.e. drills enhances preparedness to disasters					

8	The county government ensures construction planning of any infrastructure considered disaster preparedness provisions					
9	The county mechanism for relocation of public facilities at risk of disasters to safer places has enhances the preparedness of public infrastructures					
10	The establishment and training of community disaster risk management committees has enhanced disaster preparedness at community levels					

PART F: DISASTER RISK RESILIENCE

What is your level of agreement on the following statements about disaster risk resilience in Baringo County , Kenya. Using the scale 1-strongly disagree, 2-disagre, 3-moderate, 4-agree, 5-strongly agree

No	**Statement**	**1**	**2**	**3**	**4**	**5**
1	The disaster risk management system in place has contributed to improved capacity for risk anticipation					
2	The County Disaster Risk Management System has enhanced the county's capacity to respond to disaster risks					
3	The county Disaster Risk management system has enhanced the county and communities capacity to bounce back from disaster events					
4	The disaster risk management system in place has contributed to improved adaption capacity of the county and community to					
5	The disaster risk management system in place has contributed to capacity to prepare to adjust to disaster risk					
6	Overall, the disaster risk management system in the county has contributed to building disaster resilience in the county					

Appendix III: Informed Consent Form

Title of the project:	
Name of the researcher:	
Researcher's contact details:	
Participant number:	

Date:	

Part 1: Consent to participate

1. I confirm that I have been informed about this research project and I agree to take part.
2. I have been provided with a participant number as shown above. The researcher will record data against my participant number instead of recording my name. The file linking my name to my participant number will be accessible only to the researcher, and will be securely destroyed after two years.
3. I am aware that even if I agree to participate now, I can withdraw at any time or decline to answer any question without any consequences of any type.
4. I am aware that I can withdraw rights to use data for any other purpose other than the one intended for.
5. The purpose and nature of the research was explicitly explained to me and had the chance to make inquiries on where I did not understand.
6. I am aware that there are no benefits of whatsoever that I shall accumulate for agreeing to participate in this study.
7. I understand that all information I provide in this research shall be held confidentially.
8. I understand that disguised information from my participation may be cited in dissertation, conferences, published materials etc.
9. I understand that by informing the researcher on any potential harm to myself or any other individual of participating in this study, they may have to report this to the relevant authorities-they may decide to report to me first or report to the relevant authority without my permission.
10. I understand that signed consent forms will be retained at Management University -Kenya and shall be granted access upon permission by relevant authorities.
11. I understand that I am free to contact any of the people who participated in the study to ask for more clarification and information.

Part 2: confirm the security of data storage.

I understand that the data I provide will be used for the purpose of research.

I am happy for my anonymized transcript to be published

Analytical software will be used to aggregate the results of the research and every reasonable step will be taken to anonymize the data.

I understand that the aggregated data will be published in support of the research findings.

I confirm that I have read and understand the information provided on this form and give my consent to taking part in this research.

Participant's signature:		**Date:**	
Participant's name:			
Researcher's signature:		**Date:**	