INSTITUTE OF HEALTH

FACULTY OF PUBLIC HEALTH

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE

AND TECHNOLOGY

ROLE OF DISASTER RISK MANAGEMENT QUALITY ON DISASTER RESILIENCE PERFORMANCE IN JIMMA CITY ADMINISTRATION, SOUTHWEST ETHIOPIA

BY:

BEYADGILIGN MENGESHA

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DECLARATION

I, Beyadgilign Mengesha Mekuria, here declared that this research entitled ***"Role of Disaster Risk Management Quality on Disaster Resilience Performance in Jimma City Administration (JCA), Southwest of Ethiopia"***, is submitted to by me in partial fulfillment for the requirements in the award of the Degree of Master in Environmental Science and Technology at Jimma University. It is my original work and has been carried out by me under the the guidance and advisor of Professor Seid Tiku (Main Advisor) and Mr. Yared Mekbib (Co - advisor). It has not been submitted earlier for the award of any degree and diploma.

Name: _____

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Date of Submission: _____

APPROVAL SHEET

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This is to certify that the research paper prepared by Beyadgilign Mengesha, entitled: **"Role of Disaster Risk Management Quality on Disaster Resilience Performance in Jimma City Administration, Southwest Ethiopia"** submitted in partial fulfillment of the requirements for the degree of masters of science in Environmental Science and Technology complies with the regulations of the Jimma University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

Resilience is the ability to prepare and plan for absorb, recover from, and more successfully adapt to adverse events. Disaster resilience performance is the capability of someone to be prevented and recovered from disaster related events and the main focuss is rely on reducing disaster risks. The main objective of this research was to examine the role of disaster risk management quality on disaster resilience performance. To achieve the purpose, quantitative research approach was used in which 331 self administered questionnaires were distributed to collect data. The disaster resilience performance was measured through the developed disaster risk management quality dimension questionnares. Descriptive and inferential statistical data analysis techniques were used in this research. The test score in governance had week correlation but the remaining variables were found to be moderately correlated with disaster resilience performance. Furthermore, the adjusted R-square value was 0.481 (48.1% variations) which means 48.1% of disaster risk management dimensions explained the disaster resilience performance whereas 51.9% was due to other factors which are not included in this research. The finding show that comparatively the 1st, 2nd, 3rd, 4th & 5th frequently used intervention for disaster resilience performance in the selected study area was risk assessment, risk management & vulnerability reduction, knowledge & education, disaster preparedness & response, and governance respectively. However, as indicated from standardized coefficient value, disaster preparedness, knowledge and education, governance, risk management and vulnerability reduction and risk assessment has the influential predicors on disaster resilience performance respectively. For those city sector managers and stackholders, to enhance disaster resilience performance, it is recommended to work more on disaster preparedness and response through working inclusively with many other sectors. In this regard minimizing problems associated with weak governance is crucial and recommended so as to improve the city's disaster resilieance performance.

Key words: *governance, risk assessment, knowledge & education, risk management & vulnerability reduction, disaster preparedness & response, disaster resilience performance.*

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ACRONYMS

MoDMRA	Ministry of Disaster Management and Refugee Affair
HFA	Hyego Framwork Action
MoUDC	Ministry of Urban Develoment and Constraction
ESCAP	Econics and Social Commission for Asia and the Pacific
GFDRR	Global Facility for Disaster Reduction and Recovery
GSDRC	Governance and Social Development Research Center
NDRMS	National Disaster and Risk Management Strategies
UNDP	United Nation Disaster Prevention
UNISDR	United Nation International Strategy for Disaster Reduction
ISDR	International Strategy for Disaster Reduction
JCA	Jimma City Administration
DFID	Department for International Development
EDRM	Emergency Disaster Risk Management
WHO	World Health Organization
IFRC	International Federation of Red Cross and Red Crescent Societies
USAID	United States Agency International Development
UNOCHA	United Nations Office for Coordination of Humanitarian Affairs
G	Governance
RA	Risk Assessment
KE	Knowledge and Education
RMVR	Risk Management and Vulnerability Reduction
DPR	Disaster Preparedness and Response
DRP	Disaster Resilience Performance
DRM	Disaster Risk Mamagement
DRR	Disaster Risk Reduction

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CHAPTER ONE: INTRODUCTION

1.1. Background

Resilience is the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events (Committee on Science, 2012). The application of resilience within the context of a disaster is generally a reactive approach and offers only a short-term perspective of resilience (Alexandra, 2015). Aims of the research concentrate on the performances of bounce back reactive approach. The policy objective of anticipating and reducing risk is called disaster risk reduction (DRR). Although often used interchangeably with DRR, disaster risk management (DRM) can be thought of as the implementation of DRR, since it describes the actions that aim to achieve the objective of reducing risk (UNISDR, 2015).

Since a way of implementing and measuring resilience is through DRM which has proven popula r with development actors (Rockström, 2022), the target of this research was to measure disaster resilience performance (DRP) of Jimma city administration (JCA) by using DRM quality dimension. DRM quality dimension for this research is derived from hyego framework of action (HFA). In this research DRM means the services delivered by the city administration by coordina ting different stakeholders (sectors), when any type of disaster happened. Disasters are a major problem worldwide and a serous threat to sustainable development (Twigg, 2015). Disaster can destroy the outcomes of years of work and investment by communities, governments and develop ment organizations. That is why the principle of the disaster resilience is central to the 2030 Agenda's Sustainable Development Goals (ESCAP, 2017). Since the number of people affected in the 1990s was nearly three times greater than during the 1970s, economic losses in the 1990s were nearly five times higher in real terms than in the 1970s (Twigg J. , 2004), improving DRM quality and DRP has been the major concern of city administration in any country in recent years.

The Government of Ethiopia is highly committed to the international DRM initiatives. Ethiopia is one of the countries that committed to implement the HFA, which serves as the primary international framework on DRM (MoUDC, 2020). Improving DRP is not an option; it is a must to survive communities from the serous damage.

DRM has a direct effect on disaster resilience. A study by (ŞEN, 2021) revealed that there was significance relationship between disaster resilience and DRM in the attainment of city administrational targets. Similarly, (GSDRC, 2014) described that there is a significant relationship between DRM and disaster resilience in city administration. The DRM quality and DRP since these two concepts is central for city administration.

DRM quality and DRP are strongly important concepts that any city administrations must undersand if they want to sustainably save the communities from any disasters.

It is a daily talk as well as walk of researchers that lack of effective DRM in the city administration creates many outcomes such as hazardous waste, property damage, structural damage to buildings, loss of utilities like electricity and water, debris cleanup and waste management solutions, infrastructure related problems such as closed roads and communication losses of the city (Twigg J. , 2004). Moreover, this outcome happens due to lack of strategic inteventions of specific DRM to the particular situations are predicted as the problems at hand.

Similar challenges are observed in this research context. Many people complain about quality of DRM of the Jimma city. To mention some there is lack of governance, lack of proper risk assessments, lack of dissemination of knowledge and education, lack of risk management and vulnerability reduction activities, lack of disaster preparedness and respons etc. Those problems may affect the enhancement of DRP. Researches conducted in different countries associate such symptom with the actions DRM is exercised. Although these researches are partly acknowledged as they can offer some lessons, using them for conclusions as they are in this research context would be missing the objectives of the research. Therefore, researches that sense contextual manifestation was considered important. However, no research has yet been conducted in the study area to ratify the fact on the ground. In other words, no research is conducted by this title and using such predicted variables in the study area. Therefore, this research intended to fill this gap by answering the role of DRM quality actually exercising on DRP in the JCA.

1.2. Statement of the Problem

Many hazard types, from floods to nuclear tests, are either created or influenced by humans, and their devastating and unequal consequences to human lives are mostly anthropogenic (Eija Meriläinen, 2020). Disasters are first and foremost a major threat to development, and specifically to the developmentt of the poorest and most marginalized people in the world. Disasters seek out the poor and ensure they stay poor (Twigg J. , 2004).

Therefore, reducing vulnerability requires strengthening coping capacities to minimize the degree of loss emerging from a disaster (Dickson, 2012). Ethiopia is highly prone and vulnerable to a range of natural and man made hazards with severe human and economic impacts. Ethiopia ranks among the top 10 countries globally with the largest number of disaster-affected (MoUDC, 2020) Urban disasters like fire and other incidents are also rising because of fast growing urbanization (NDRMS, 2013). Urban areas concentrate disaster risk due to the aggregation of people, infrastructure and assets, urban expansion, and inadequate management (UNISDR, 2009).

The development of Jimma City is fast more than ever and the city is one of the prone areas. The city is more vulnerable to disasters like fire and flood. Jimma city founded in the late 1830`s. In case of this the city is highly slum, this slum property of the city make vulnerable to fire. In addition to this the city has a dozen of not standard hotels, bread and Injera bakeries are also sources of sudden starting of fire. As an example, on 11-September-2019, there was fire hazard in Jimma city near to "Biherawi Lottery" office, in front of commercial bank of Ethiopia, "Hermata Branch" The Fana Radio News reported that at least more than Br 11,000,000 property had damaged at that time. The city is frequently suffered by the flood hazard in case of three rivers i.e., "Awetu River", "Kito River" and "Dololo River". The upstream location of Jimma city is "Blida", "Bebela", and "Jiren". Jimma city is affected by the flood when the countryside has got heavy rain. As an example, on 24-August-2021, high rainfall in the uplands caused the worst floods in the Jimma city's history (Awetu River's history). At that day no rain at Jimma city, the case was countryside village of "Blida" and "Bebela".

Let mention other example, according to Jimma city environmental management plan team minutes in 1-August-2021. In Jimma city in "Mendera kochi kebele" around "Dipo" Jimma university women condominium, attack by worst floods. In these disaster a dozen properties has been damaged. The dweller has been complaining to Jimma university vice president office, but community didn't get enough response.

Several researchers and authors state about the responsibilities of sectors on hazard and disaster time. In one sense the distinction between relief and development is artificial in that risk is not a distinct sectors, it should be everyone's business (Twigg J. , 2004). Disaster resilience is everyone's business and is a shared responsibility among citizens, the private sector, and government (Committee on Science, 2012). Everyone has a responsibility for DRR. Strong partnerships between government agencies, the private sector, civil society organizations are essential to truly develop a culture of risk reduction, and to integrate DRR into policies and planning (ISDR, 2005-2015). In the previous mentioned disaster related problems of Jimma city it observed that any sector doesn't participate (involve) in helping the affected community sufficiently, except Jimma city municipality fire truck for only fire hazard. Thus, there are confusions on who should be the responsible stakeholders (sectors) to respond the problem of the disasters in very well way. Even though, most researches confirmed that disaster responsiveness needs well coordination of different sectors but it seems not true in case of Jimma city. In Jimma city there seems availability of negligence of responsible sectors to work in coordination. In this regard, this research examines the role of DRM quality on DRP in JCA by evaluating the perceptions of different sectors employee.

1.3. Significance of the Research

The ultimate success or failure of a city administration depends on its performance to bounce back the occurred disaster, what it takes action on quality of DRM relatively for a longer period. The research enhances the level of DRP and it identifies the position of DRM qualities at city administration. The present research will be important to show preliminary data regarding the DRP of city administration.

Moreover, the research has the following significances

- It helps the city administration to assist in decision making, by identifying key variables ascendingly to develop strategies to address and improve DRP of city adminstartion
- To the managements of municipality in city administration, the finding of this study provides a more reliable scientific measure to take action respectively from more influential to low for affecting the level of DRP from DRM quality dimension.
- To other stakeholders like investors, NGOs, employees, pressure groups, foreigners, donors and among others, the research was provided invaluable information that will allow them to provide in what variable they have to invest to improve DRP of city administration
- The research used by providing additional evidence as to the relationship between DRM quality and DRP.
- The research serves as baseline information to measuring of DRP at city level for concerning bodies.
- The research contributes as baseline information to undertake additional studies on assessment of DRP.

1.4. Scope of the Research

This research focuses on role of DRM quality on DRP in JCA. The spatial scope of this research covered the sectors that are found under the built up area of JCA which is southwest of Ethiopia, because it is very difficult to cover the whole sectors found in city (federal sector and private sector) in terms of time and budget constraint. The research scope was identifies the gap between what the employee (respondents) think about DRP and what actual DRP looklikes in JCA. Dependent variables are a DRP and independent variables are governance (G), risk assessment (RA), knowledge and education (KE), risk management and vulnerability reduction (RMVR), disaster preparedness and response (DPR).

CHAPTER TWO: LITERATURE REVIEW

2.1. Disaste Risk Management

The inferences of the government and the whole community have a vital role in managing disaster. Therefore, the government alone cannot prevent and manage disaster without the participation of the whole community of the disaster prone area. The top – down approaches to disaster management is not effective. As a consequence, many professional and stakeholders commented to it a time to develop another options and a strategies the way that involve the disaster prone and vulnerable communities in the activities of planning and implementation and mitigation, preparedness, response and recovery measures because communities are the best judges of their own vulnerability and capable of making the best decisions regarding their well – being (Huq, 2016). Over the past decade, the number of people that required support through DRM actions has regard from ranged from 1.36 – 13.2 million people. The support activities include those of food and no-food emergency resource distribution for the disaster affected communities. The food ensures the affected people receive more predictable and timely relief in the event of risks. From the non-food DRM actions supports health and nutrition, water, environmental sanitation, agriculture and livestock services. DRM also provides early warning, contingency planning and financing, and strengthening institutional arrangements and capacity buildings for the concerned body (FDRE, 2012).

The recognized thing is that the result of disaster risk reduction is health, and the incorporation DRR and health is the important in order to make Senday Framework disaster risk reduction 2015 – 2030. Health Emergency and Disaster Risk Management (Health – EDRM) has merged as an umbrella field that encompasses emergency and disaster medicine, DRR, humanitarian response, community health resilience, and health systems resilience.

In Septembers 2016, an international group of experts met in Hong Kong to assess the current status and potential of the health-EDRM research field, a research area that these scholars characterized as underdeveloped and fragmented. The basic challenges propound includes research overlap, lack of basic research topic, lack of general understanding on the terminologies and absence coordination among the concerned body (Sharon Tsoon Ting Lo, 2017).

Disaster risk management is defined as the process of using organizational directions, organizations, and potential skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the advance impacts of hazards and the possibility of disaster. This term is an extension of the more general term “risk management” to address the specific issue of disaster risks.

DRM aims to avoid, lessen or transfer the adverse effect of hazards through activities and measure of prevention, mitigation and preparedness. The proceeding the DRR program actions related with aligning, preparedness, response and retrieval. It contains hazards and vulnerability research and information system. Disaster management concentrates against organizing and developing, it is different from operational response activity the later execute plans and procedures which are already developed by the program (Tuvalu, 1997).

A way of implementing and measuring resilience is through DRM, which has proven popular with development actors (Rockström, 2022). The individuals, families as well as the whole societies have a vital role in influencing the community how can protected from risks in addition to the capacity of the societies the in resilience to disaster. Families are expected to have responsibility to save their own properties from natural and man-made by using the system of identification, minimization and insuring the properties so as to insure the damaged assets (Republic of Namibia, 2011). To get people think in a preventive way, and to see the links between disasters, development and environment one needs a mindset that is best developed at an early age. A culture of prevention is something that forms over time. Cultural approaches and paradigms must be taught early and in school to have real success. There is a various ongoing efforts and process to prevent disaster and to become more disaster resistant population in the world. In 1999s UN campaign focused on assessing the concrete results and achievements of disaster reduction, on promoting "a global culture of prevention for 21st century". During this occasions, stated that the past few decades there was $90,000 million economic losses were occurred (Ozmen, 2006).

However, more research is required to compare methods of measuring resilience and DRM effectiveness. Measuring disaster resilience is a key component of successful DRM and climate change adaptation (Marzi, 2019).

2.1.1. Benefits of Disaster Risk Management

Disasters disappers kill one million peoples around the world every decade and make millions homeless each year. Disasters regardless of natural or man made can foray at any time. The possible solution of after the disaster is already happened emergency response. But, if the concerned body that means both government and the affected community is prepared of it is simple to handle the happened disaster.

If not the impact is high on the economic development of the country. The impacts of disaster can be mitigated through good understanding of the community with issues of disaster risk reduction and sustainable development along with having the skills and knowledge of disaster risk management tools and methods so as to save the life and property at the time of disaster happening (Ayalew, 2014). The extent and effectiveness of sectors participation from the perspectives of a

shift from a managerial approach to an approach using participatory, collective decision – making and resource – sharing to manage disaster risk. There are very limited research about the DRM to attain sustainable development via sectors participation and further analysis needed in near future (Committee on Science, 2012).

2.1.2. Quality of Disaster Risk Management

This can take many forms. Better-quality DRM provides greater resilience to most types of hazard. Qualified urban management and governance is at the heart of reducing disaster and climate change risks and making cities safer (Dickson, 2012). Communities and the nation face difficult fiscal, social, cultural, and environmental choices about the best ways to ensure basic security and quality of life against hazards, deliberate attacks, and disasters (Committee on Science, 2012).

A high level of accuracy and detail is often possible in hazard assessment, for example, visually through maps, remote sensing and GIS, and in prediction such as complex flood models that model rainfall to run-off, the movement of floodwaters through waterways and flood plains, and inundation areas (Twigg C. B., 2007).

2.1.3. Ethiopian National Policy of Disaster Risk Management

The national policy and strategy on disaster risk management was adopted by the government of Ethiopia in July 2013. This the new policy amends the earlier National Policy on Disaster Prevention and Management (under implementation since 1993) and marks a paradigm shift in doing business differently moving away from a system focused on drought and emergency assistance to a comprehensive disaster risk management approach. The overall vision of the policy is to see capacity for resisting the impacts of hazards and related disasters is built a national, local, community, household and individual levels; and damages caused by disasters are significantly reduced by 2023. The general objective of the policy were to mitigate the disaster related effects and so as to mitigate the effect forming a comprehensive and cooperation disaster risk management system so as to fulfill the issues of sustainable development of the country. Beside this the policies have the following sub objective. These are: to reduce and eventually prevent disaster risk and vulnerability; ensure all disaster affected population is provided with recovery and rehabilitation assistance, reduce dependency on and expectations for relief aid by bringing attitudinal change and building resilience of vulnerable people and ensure disaster risk management. Therefore, disaster risk management have considered along with the development plans and programs (Anderson, 2015).

2.2. Disaster Resilience Performance

DFID: 'the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their longterm prospects, and

Hyogo Framework of Action: 'the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure' (GSDRC, 2014). From the above two definition derive the following general truth Resilience means the ability to "resile from" or "spring back from" a shock. Adopting resilience as our core approach to tackling disasters means identifying where different areas of our work can complement and enhance one another. This includes disaster risk reduction, climate change adaptation, and social protection, working in fragile contexts and humanitarian preparedness and response (UKaid, 2011).

The concept of resilience has been used extensively in disaster research and the word resilience derives from the Latin word resilience meaning to rebound. In engineering, resilience is defined as a measure of how easily a material returns to its original shape after elastic deformation. In ecology defined resilience as the capacity to absorb shock and linked resilience to the idea of systemic stability. (Platt, 2017).

Disaster resilience is everyone's business and is a shared responsibility among citizens, the private sector, and government. Increasing resilience to disasters requires bold decisions and actions that may pit short-term interests against longer-term goals. Disaster resilience may not be on the forefront of a political or institutional agenda until a disaster strikes one's own community (Committee on Science, 2012). Disaster resilience is the ability of individuals, communities, organizations and states to adapt to and recover from hazards, shocks or stresses without compromising long-term prospects for development (GSDRC, 2014).

According to the Hyogo Framework for Action (2005 - 2015), disaster resilience is determined by the degree to which individuals, communities and public and private organizations are capable of organizing themselves to learn from past disasters and reduce their risks to future ones, at international, regional, national and local levels. Generally, DRP means that the ability (performance) of the city to rebounce back the impacts of disasters, recover the whole affected thing after the disaster and make it as earlier situations.

Resilience is a multifaceted field of research that explores how systems respond to change. The application of resilience within the context of a disaster or crisis is generally a reactive approach and offers only a short-term perspective of resilience. Even with appropriate planning, such

response strategies are often rapid and designed to achieve short-term objectives, rather than long-term community efficacy. Using this perspective fails to fully encompass key elements of resilience theory, such as anticipation and preparedness, leaving an underdeveloped area of resilience knowledge (Alexandra, 2015).

2.2.1. Urban Disaster Resilience

Resilience describes the ability of a system to withstand or accommodate stresses and shocks such as climate impacts, while still maintaining its function. At an urban scale, resilience will depend on the ability to maintain essential assets, as well as to ensure access to services and functions that support the wellbeing of citizens. This is particularly so for members of the population lacking access to financial, material, and social capital that can be used to buffer stresses. Urban populations depend on interrelated and interdependent urban systems (infrastructure, ecosystems, institutions, and knowledge networks) that support and are supported by a city's actors or social agents (individuals, households, and private and public sectors). The resilience of a city depends on both the fragility of the urban system and the capacity of social agents to anticipate and to take action in order to adjust to changes and stresses, recognizing that their ability to act is constrained by access to resources and (Dickson, 2012).

2.2.2. Benefits of Disaster Resilience

Strengthening resilience of households, communities and systems against environmental, political, socioeconomic, and health shocks is a key long term goal of USAID's investments in Ethiopia (USAID, 2020). Disaster resilience programming aims to save lives whilst protecting infrastructure , livelihoods, social systems and the environment (Venton, 2013). Building resilience to natural hazards can have wider-reaching positive effects in fragile states and violent conflicts (GFDRR, 2010). Evidence from a range of countries supports the potential contribution of disaster resilience to saving lives. Statistical evidence suggests disaster prevention has helped limit loss of life to disasters in a number of developed and developing countries (GSDRC, 2014).

In Bangladesh, for example, the fact that far fewer people were killed by a cyclone in 2008 (3,000) than by a similar one in 1970 (almost 500,000) is attributed to better disaster prevention (Ashdown, (2011).). Disaster resilience has several benefits it is impossible to list the whole benefits of the disaster resilience in fact. Some of the benefits are: protecting infrastructure and livelihoods, protecting social systems, protecting the environment, supporting broader resilience in contexts of violent conflicts or fragile states.

2.2.3. Measuring of Resilience

By measuring trends or patterns in resilience, we can try to determine whether the measures for enhancing resilience have worked. There have been a number of approaches, tools and methods

applied to measuring resilience, focusing on assessing elements such as: Technological capacity, Skills and education levels, Economic status and growth prospects, Quality of environment and natural resource management institutions, Livelihood assets, Political structures and processes, Infrastructure, Flows of knowledge and information, Speed and breadth of innovation. Like any assessment, it is necessary to constrain the geographical and time-scale of the analysis.

A way of implementing and measuring resilience is through disaster risk management, which has proven popular with development actors. However, more research is required to compare methods of measuring resilience and disaster risk management effectiveness (Rockström, 2022).

At the community level, factors measuring resilience include: levels of economic development and social capital, 'community competence' (e.g. collective problem-solving and creativity), and the quality of communication and information in the community (GSDRC, 2014).

2.3. Effective Disaster Resilience Performance

Several agencies have developed guidance for measuring effective disaster resilience. One of the most comprehensive and widely-cited frameworks is Twigg's (2009) 'characteristics of resilience' framework. Based on five dimensions of resilience identified in the HFA (governance, risk assessment, knowledge and education, risk management and vulnerability reduction, disaster preparedness and response) (GSDRC, 2013).

The student researcher takes these components as DRM quality dimensions to measure the JCA DRP. To say the DRP is effective the concerned body have to fulfill these HFA model. Therefore, the issues of DRM have to consider in Government and non-governmental developmental plan (FDRE, 2013). Thus, every sector must to think components of DRM quality below.

Table 1: Components of disaster risk reduction

Thematic area	Main components
Governance	Policy and planning Legal and regulatory systems Resources and capacities Integration with development Institutional mechanisms, capacities and structures Political commitment Accountability and participation
Risk Assessment	Hazards/risk data and analysis Vulnerability and impact data/indicators Early warning systems Scientific and technical innovation
Knowledge and Education	Information management and sharing Education and training Public awareness Learning and research
Risk Management and Vulnerability Reduction	Environmental and natural resource management; climate change adaptation Sustainable livelihoods Social protection Financial instruments Structural and technical measures Planning regimes
Disaster Preparedness and Response	Organisational capacities and coordination Preparedness and contingency planning Emergency response mechanisms Participation and voluntarism

Source: (Twigg J. , 2007)

2.3.1 Governance:

Governance defined as the "exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and

mediate their differences" (UNDP, 2007). Governance has a direct and indirect impact on disaster management (Sterre Bierens, 2020). Governance is the umbrella under which disaster risk reduction takes place. The existence of public awareness, political will and sufficient capacity are keys to making DRR an underlying principle in all relevant development sectors (UNDP, 2010). Disaster risk governance refers to the way in which the public authorities, civil servants, media, private sector, and civil society coordinate at community, national and regional levels in order to manage and reduce disaster and climate related risks. There are many factors that affect the disaster resilience. Such factors include friendly governance, courteous governance, and knowledgable governance helpful governance, accuracy of sectors treatment, treatment timelines, and competitive governance disaster service quality. Governance is the ability of city administration in order to coordinate different stakeholders (sectors) both private and governmental accurately. Governance is fundamental for the sustainability of development and economic growth in city administration (Belize, 2011).

Strong governance at all levels is a key element of resilience and includes the making of consistent and complementary local, state, and federal policies. Policies at all levels of governance do exist to enhance resilience; however, some government policies and practices can also have unintended consequences that negatively affect resilience (Committee on Science, 2012). Hence, in good governance adopting early warning system can reduce fatalities and economic loss and can result in increased local resilience (The Legitimacy, Accountability, and Ownership of an Impact-Based Forecasting Model in Disaster Governance, 2020). As illustrated in literatures, concluded that governances significantly affect the DRP of any city administration.

2.3.2. Risk Assessment (RA)

The risk field has two main tasks, (I) to use risk assessments and risk management to study and treat the risk of specific activities, and (II) to perform generic risk research and development, related to concepts, theories, frameworks, approaches, principles, methods and models to understand, assess, characterise, communicate and (in a wide sense) manage/govern risk (Aven, 2016). RA provides estimates of potential losses to lives and property and some estimate of annual likelihood of occurrence (Committee on Science, 2012). Risk assessments include:

- Review of the technical characteristics of hazards such as their location, intensity, frequency and probability;
- Analysis of exposure and vulnerability including the physical social, health, economic and environmental dimensions;
- Evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios (UNISDR, 2009).

- Analysis of loss/impact to estimate potential losses of exposed population, property, services, livelihoods and environment, and assess their potential impacts on society (UNDP, 2010).
- In addition to this in general risk assessment has a significant impact on DRP as personal as well as city administration level (Irasema Alcántara-Ayala (Mexico), 2015).

2.3.3. Knowledge and Education

Encourage hazard, vulnerability, risk and disaster schorars to integrate issues of knowledge into their research. We are convinced that addressing such issues will lead to significant improvements in DRR policy and practice (Pigeon J. W., 2015). The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually 23 and collectively to reduce exposure and vulnerability to hazards (ISDR, 2009). Therefore, knowledge and education is a key factor in effective disaster risk reduction (Prasanna, 2016).

Educatin: encompasses formal and informal transmission of knowledge, and engagement of groups of people (children, youth, lay people and professionals) in identifying hazards and feasible actions to mitigate them and to prepare for the risk that cannot be reduced. This includes the formal public and private education systems (primary, secondary and tertiary), vocational and professional training courses, community-based self assessment, and public discourse involving the media, awareness campaigns, museums, memorials and special events

(Wisner, 2006). The protective effects of education – from the pre-disaster phase, during the disaster event, to the disaster aftermath – indicates that investment in public education can have a positive externality in reducing vulnerability and enhancing adaptive capacity (Lutz, 2014).

Knowledge: A similarly broad definition has been adopted for "knowledge", covering universal, codified and professional understandings as well as local, often oral, vernacular bodies of knowledge. Following the conceptual framework adopted by the International Federation of Red Cross and Red Crescent Societies (IFRC) in its World Disaster Report 2005, "data" are viewed as the building blocks that create "information". "Information" becomes "knowledge" when it is put into a context that gives it meaning and, usually, some relevance to action or inaction. "Wisdom" is what organizes knowledge, and though less tangible, is the result of accumulated experience of action and inaction (IFRC 2005) (Wisner, 2006). Generally, knowledge and education has a positive impact on DRP as personal as well as city administration level.

2.3.4. Risk Management and Vulnerability Reduction

Disaster risk or vulnerability reduction is the foundation of community based DRM (Suvit Yodmani, 2022). Managements of activities address and seek to avoid the development of new or increased disaster risks. Therefore, **Risk Management:** is the systematic approach and practice of managing uncertainty to minimize potential harm and loss (ISDR, 2009). Vulnerability: the

characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (ISDR, 2009). Risk managegement and vulnerability reduction indicate measure the potential impact of natural hazards, the key element of those countries' vulnerability, and their capacity to manage risks (Cardona, 2007). Therefore, **Vulnerability Reduction** means minimizing that susceptiblitness of communities, systems or assets.

2.3.5. Disaster Preparedness and Response

John Twigg (2004) states that, many standard risk reduction terms are used loosely and inconsistently. 'Disaster preparedness' is one. Basically, it has three main elements:

- Forecasting events and issuing warnings.
- Taking precautionary measures in response to warnings
- Improving response by organizing and strengthening capacity to deliver timely and effective rescue, relief and assistance.

Disaster preparedness therefore has two main aims: to help people to avoid impending disaster threats; and to put plans, resources and mechanisms in place to ensure that those who are affected receive adequate assistance. John Twigg summarizes his idea disaster preparedness comprises several elements: forecasting and warning, taking precautionary measures and organizing effective rescue and relief. Establishing a disaster preparedness system involves addressing a range of technical and institutional issues. Good disaster preparedness planning is crucial to success. Plans should be based on thorough and realistic analysis, should ensure coordination by all groups concerned and should be 'owned' by them.

Disaster Preparedness: From the 'preparedness saves lives' approach came the insight that economics played a significant role and a recognition that a longer-term approach was required to reduce disaster risk and build resilience (UNISDR, 2012). Preparedness aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery (ISDR, 2009). Weather services are one of the DRM.

Weather services significantly support efforts to reduce disaster risks, alleviate poverty, enhance food security, and protect health (Abhas K. Jha, 2013).

To ensure effective preparedness and response to hydro meteorological hazards, emergency evacuation capacity at the municipal level needs to improve. The backbone of city administration emergency preparedness and response function is a network of well organized volunteer organizations, or Municipal Civil Protection Committees (Republic of Haiti, 2019).

Response: Resilience-building costs more than early response, but its benefits can significantly outweigh the costs (GSDRC, 2014). The provision of DRM and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and

meet the basic subsistence needs of the people affected (ISDR, 2009). The boundary between disaster preparedness and response is blurred in food crises, because they can develop over such a long period (Twigg J. , 2004). As stated previously different studies about DRM quality and DRP relationship found out DRM quality of city administration have role on DRP.

Join Twigg (2007) explain that the excellent DRM quality not only inspires subordinates potential to enhance efficience but also meets their requirements in the process of achieving city administrational goals. Disaster preparedness and response for hazard events is mainly concerned with two objectives: increasing capacity to predict, monitor and be prepared to reduce damage or address potential threats and strengthening preparedness to respond in an emergency and to assist those who have been adversely affected (UNOCHA, 2008).

Generally, the selected predicted variables are the Climate Change Cell, Disaster Management Information Centre (governance), Community Risk Assessment, Risk Reduction Action Planning, Local Disaster Risk Reduction Fund, and Livelihood Adaptation to Climate Change programs have all made significant contributions to increasing the nation's capacity to respond proactively to disasters (Khanam, 2013).

2.4. Framework for Disaster Resilience

The framework will be instrumental in enhancing coordination and collaboration among the Government Departments, non-governmental organizations and development partners (Government of Nepal, 2011). All countries require clear policies, strategies and related programmes to minimize health risks and their associated health and other consequences (WHO, 2019). Effective Health Environmental DRM requires the active participation of representatives of stakeholder groups who are interested parties in the management of risks, for example, risk owners, groups with vulnerabilities, or groups with capacities to manage the risk (WHO, 2019). Some of the key stakeholder groups are included the following

Community: at-risk populations, subpopulations or groups with higher levels of vulnerability according to the local context (e.g. the poor, women, men, children, people with disabilities, older people, indigenous people, migrants, refugees and displaced people) (WHO, 2019).

Governments (at all levels): Government ministries and agencies (e.g. health, social services, finance, planning, education, agriculture, foreign affairs, environment, infrastructure, public information, communications, transport, defence, industry, tourism, international development) (WHO, 2019).

Health (at all levels): Private sector health organizations and professionals (health-care facilities, health insurance, pharmaceutical) (WHO, 2019).

Other Groups (in health and other sectors): Nongovernment and volunteer groups; faith-based groups; labour unions and groups (WHO, 2019).

UN, regional and International Organizations: International NGOs, Red Cross/Red Crescent Movement (IFRC, International Committee of the Red Cross (ICRC)) (WHO, 2019). The monitoring framework for the Hyogo Framework for Action (HFA) tracks goals and priority areas on the activity and output level using a set of capacity indicators based on self-assessments. Many measurements focus on inputs and outputs: The monitoring framework for the Hyogo Framework for Action (HFA), for example, measures resilience on the levels of input, activity and output.

For outputs, the indicators are mostly limited to the actions taken and do not include vulnerabilities or exposure (Winderl, 2014). Nevertheless, there is a logical sequence of sorts: planning must be preceded by understanding of vulnerability and leads on to the establishment of an institutional framework; The framework is a foundation for setting up information and warning systems, assembling resources, putting resource mechanisms in place and testing them, and providing public education and training (Twigg J. , 2004).

Table 2: Disaster Preparedness Framework

1. Vulnerability Assessment Starting point for planning and preparation, linked to longer-term mitigation and development interventions as well as disaster preparedness.	**2. Planning Disaster** preparedness plans agreed and in place, which are achievable and for which commitment and resources are relatively assured.	**3. Institutional Framework** Well co-ordinated disaster preparedness and response system at all levels, with commitment from relevant stakeholders. Roles and responsibilities clea
4. Information Systems Efficient and reliable systems for gathering and sharing information (e.g. forecasts and warnings, information on relevant capacities, role allocation and resources) between stakeholders.	**5. Resource Base Goods** (e.g. stockpiles of food, emergency shelter and other materials), services (e.g. search and rescue, medical, engineering, nutrition specialists) and disaster relief funding (e.g. for items not easily stockpiled or not anticipated) available and accessible.	**6. Warning Systems Robust** communications systems (technologies, infrastructure, and people) capable of transmitting warnings effectively to people at risk.
7. Response Mechanisms Established and familiar to disaster response agencies and disaster victims (may include: evacuation procedures and shelters, search and rescue teams, needs assessment teams, activation of emergency lifeline facilities, reception centres and shelters for displaced people).	**8. Education and Training** Training courses, workshops and extension programmes for at-risk groups and disaster responders. Knowledge of risk and appropriate response shared through public information and education systems.	**9. Rehearsals Evacuation** and response procedures practised, evaluated and improved.

Source: (Twigg J. , 2004)

Each sector has its own responsibility within the disaster frameworks since the disaster risk reduction is a team effort, the city administration must be the first line of response and responsibility. The table 5 indicates the framework of the disaster

Table 3: Responsibility of Sectors

Stakeholders	Responsibilities
Local Government:	Take the lead, convene other actors, regulate, monitor.
Sectors (education, health, transport, environment, etc.):	Integrate risk reduction as part of plans and responsibilities, contribute information, and implement activities.
Academia, research centres:	Provide research and data analysis; participate.
Citizens, community groups, including indigenous communities and other vulnerable populations:	Participate, be actively informed, and take individual responsibility.
Private sector/business community:	Comply with safety regulations; contribute to the community with know-how and business continuity.
Professional Groups, including chartered surveyors, engineers, architects, and planners:	Provide technical expertise on the built environment; social workers, teachers and others: organize, raise awareness, collect data; inform the media, etc.
Civil Society, non-governmental organisations (community-based, faith-based, voluntary, etc.):	Participate, organize communities, coordinate, help oversee, monitor.
National government authorities and parliamentarians:	Support decentralized capacities with resources, policy and enabling legislation.
International organisations:	Provide technical cooperation, capacity development, resources, meeting space.

Sourec: (Action, 2011)

2.4.1. Hyogo Framework for Action (HFA)

HFA 2005 - 2015: Plan adopted by 168 UN member states in 2005, developed collaboratively by governments, international agencies, disaster experts and many others to reduce disaster risk and to ensure a common system of coordination.

The HFA outlines five priorities for action, and offers guiding principles and practical means for achieving disaster resilience. Its goal is to substantially reduce disaster losses by 2015 by building the resilience of nations and communities to disasters.

The HFA was adopted by 168 Member States of the United Nations in 2005 at the World Disaster Reduction Conference (McNicholas, 2012).

2.4.2. Conceptual Framework

Based on the literature review it was found that a number of research on the various aspects on DRM and particularly on specific aspects of disaster risk flood, drought, landslide and the like have been conducted. But, this research have examined the role of disaster risk management quality on DRP in Jimma city, southwest of Ethiopia

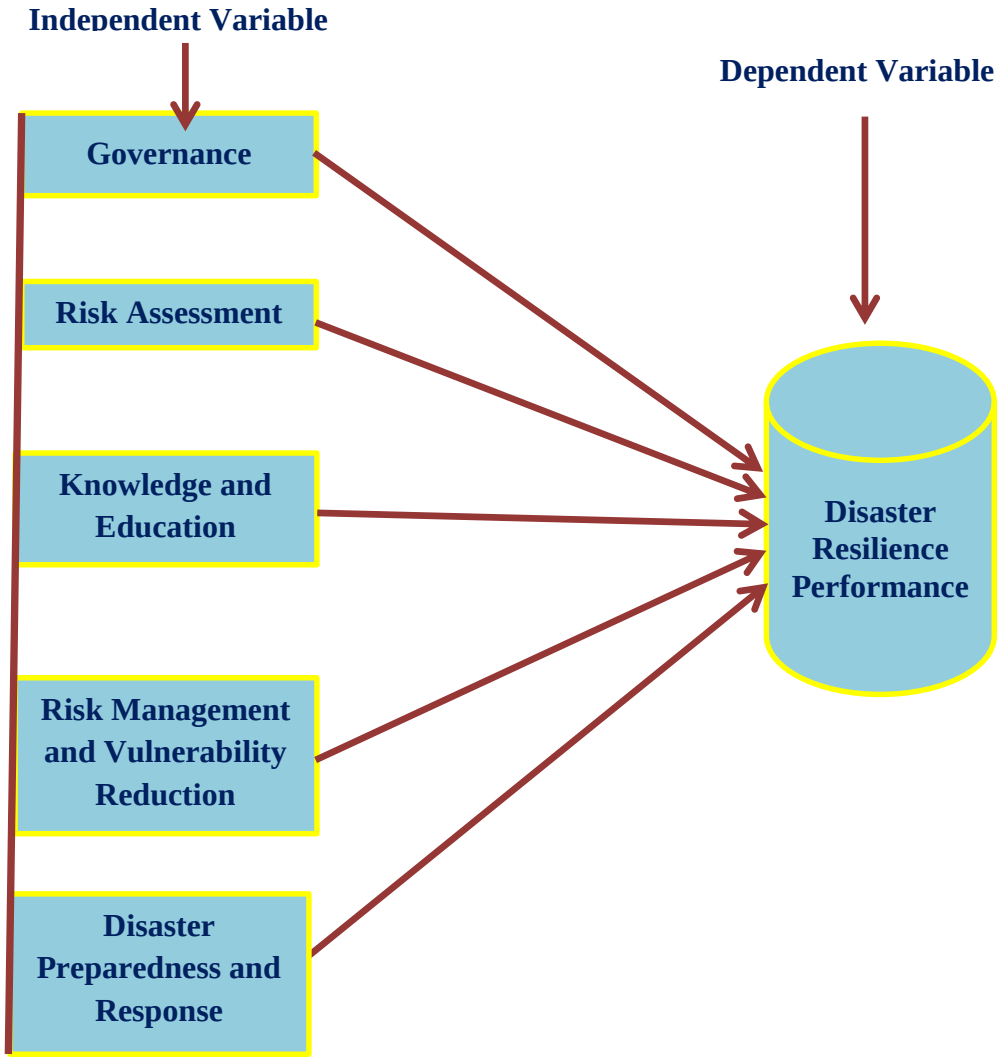

Figure 1: Conceptual Framework

CHAPTER THREE: OBJECTIVES

3.1. General Objective

The major objective of this research was to examine the role of disaster risk management quality on disaster resilience performanc in Jimma city administration.

3.2. Specific Objectives

The specific objectives of the research were to:

- Assess the quality of disaster risk management level in Jimma city administration.
- Assess the overall level of disaster resilience performance of Jimma city administration.
- Investigate the relationship between disasters risk management quality dimensions and disaster resilience performance in in Jimma city administration's sectors.

3.3. Research Questions

This research was aimed to respond the following major questions:

- What is the level of disaster risk management quality in Jimma city administration?
- What is the level of disaster resilience performance in Jimma city administration?
- Is there a relationship between disaster risk management quality dimensions and disaster resilience performance in Jimma city administration's sectors?

3.4. Hypotheses

H1: Governance has a no positive and significant role on disaster resilience performance in Jimma city administration.

H2: Risk Assessment has no a positive and significant role on disaster resilience performance in Jimma city administration.

H3: Knowledge and Education has no a positive and significant role on disaster resilience performance in Jimma city administration.

H4: Risk Management and Vulnerability Reduction have no a positive and significant role on disaster resilience performance in Jimma city administration.

H5: Disaster Preparedness and Response has no a positive and significant role on disaster resilience performance in Jimma city administration.

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study Area Discription

The study was conducted in Oromia Region, Jimma Zone, and Jimma City. The city consists of seventeen kebeles is positioned at 350km to the southwest of Ethiopia. According to report of the 2014 to 2015 Central Statistical Agency population and housing census, the projected total population of the city is 170,955 (Male = 85,695 and Female = 85,260 with 85,260 number of households). As current structural plan area of JCA 11,417 hectare, with projected population of 425,816 (Male 240,267 and Female = 185,549). Total household of 37,878. The temperature in the city is relatively low in the early morning and during the night, but high around the noon. Temperature variation is observed among seasons. The lowest temperatures were observed during December - January period. According to the data optained from Jimma meteorology branch 2016 the hottest months are February, March, and April. And the coldest months are July, August, September and October. But, December, January & February are the coldest months during morning time it is in the range of 6.2^{o}C to 30.3^{o}C with the mean daily temperature of 19.8C^{o}. Topographically, the Jimma area might be divided into escarpment and alluvial plains. Elevation within the city boundary ranges from the lowest 1720m MSL of the airfield (kitto) to the highest 2010m MSL of Jiren. As shown below Jimma city grouped between 1500-2000m elevations that covers 0.52% from considered area. According to current structural plan (master plan) JCA is cover 0.66% Area of Jimma Zone.

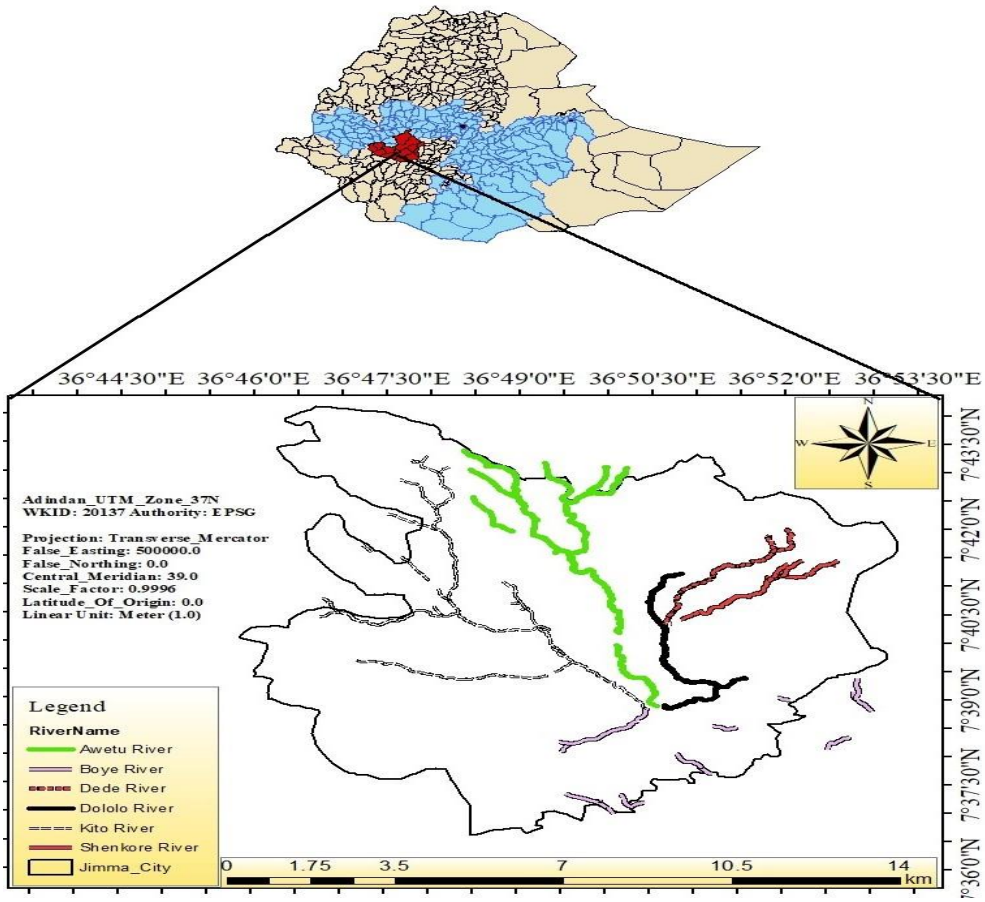

Figure 2: Study Area

4.2. Study Design

An institutional based cross sectional quantitative study was undertaken.

4.3. Study Period

This study was conducted from April 11, 2022 – April 30, 2022

4.4. Target Population

4.4.1. Source Population

The source populations were all sector servants which exist under JCA lead by city mayor (kentiba).

4.4.2. Study Population

Sectors which availables under JCA was sampled according to their number of employee

4.5. Inclusion/Exclusion criteria

4.5.1. Inclusion Criteria

Sectors servants under Jimma city administration

4.5.2. Exclusion Criteria

A sectors servant under the federal government, private sectors and affected community in JCA

4.6. Sampling Technique

The sampling technique of this research is a simple random sampling this type of sampling is the process draws subjects from an identified population in such a manner that every unit in that population has precisely the same chance of being included in the sample (Berg H. L., 2017).

4.7. Sample Size Determination

The target population of this research was employees of the JCA sectors and they were 1757 in number. In order to determine the number of respondents from the target population sample size determination formula developed by (Yemane, 1967) was used as follows.

$$\mathbf{n} = \frac{N}{1+N(e)^2} \quad \text{..... Equation 1}$$

Where,

n = Number of Sample size

N = Total Population size

e = margin of error at 5% (standard value of 0.05)

Therefore, $n = \frac{1757}{1+1757(0.05)2}$ = 326. Based on the above formula 326 respondants were selected from all sectors. To select respondents from each sector the following proportional formula was applied (C.R.Kothari, 1990) $n1 = n(\frac{Ni}{N})$. Where,

n1 = Sample in Sector one

Ni = Strata Population One

N = Total Population

- Finally the sample size of the research will be **331** key respondents

4.8. Research Variable

4.8.1 Dependent variables

- Disaster Resilience Performance

4.8.2. Independent variables

- Governance
- Risk Assessment
- Knowledge and Education
- Disaster Preparedness and Response
- Risk Management and Vulnerability Reduction

4.9. Data Collection

Both primary and secondary data were collected. Primary data of the research was data gathered from the whole sectors of JCA.

A questionnaire that has only self administered question was prepared to employee of JCA in order to gather the primary data. The sources of secondary data were collected from published and unpublished materials like newsletters, minutes, manuals or guidelines, magazines, books, journals, articles and variety of annual reports.

4.9.1. Data Collection Tools

Questionnaires:

According to Ostrom (2011) describe the benefits of Likert as; what exactly you are trying to measure, generate a set of potential scale items and then have a set of judges rate the items, quick and economical to administer and score, easily quantify (easy to calculate mean) most attitude measurement, provide direct and reliable assessment of attitudes and they lend themselves well to item analysis procedure. The DRP was measured through the DRM quality dimensions questinnares developed by student researcher based on (Twigg J. , 2007) to fit the context of the research. The questionnares were translated from English to Amharic and translated from Amharic to Afan Oromo then distribute to the JCA sectors employee. The disaster DRM quality dimension was measured by 5 point Likert Scale gives wider chance to respondents with five response categories. A five point likert scale (Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA)) were used to evaluate the attitudes of the survey participants regarding the DRM quality for DRP. The Likert Scale method was preferred to make questions interesting to respondents and thereby enhance their cooperation, ultimately to ensure maximum response rate (Akalu, 2015). The questionnaires were divided into three sections. Section 1 was about personal information, section 2 was about DRM quality, and section 3 was about DRP overall judgment of the city administration

4.10. Data Analysis

The collected data were first checked for its consistency, completeness, missing and other errors before the entry process. To examine the role of DRM quality on DRP, multiple linear regressions model was ustilized. Before carrying out the the multiple linear regression the student researcher was tested around six assumptions. The tested assumptions were normality test, linearity test, multicollinearity test, heteroscedasticity test, sample size test and independent of observation test. The whole test did not violate the the rules.

The data were analyzed using descriptive and inferential statistics with the help of SPSS – Version 22 (Statistical Package for Social Science).

4.11. Data Quality

To insure the quality of data, the English version questionnaire that was prepared by reviewing different literature, was arranged for use and translated into Amharic and Afan Oromo by student researcher and checked by other fluent speaker of the above languages who were health professionals to check for its consistency. The questionnaire was pre tested on 5% of sample only at Jimma city municipality. During pre-test participants were contacted to give their general feelings, comments and problem encountered while responding the questions. Finally, relevant modification was made before the start of the actual data collection. Every day, all the collected data were reviewed and checked for completeness and consistency by the student researcher regularly.

4.11.1. Validity and Reliability of Instruments

The pre – test was being done before actual data collection. In deed necessary adjustment was made on the items and unclear questions was be adjusted or remove from the questionnaire index. The reliability was measure so as to find out the degree to which the measuring items gave similar result over a number of repeated trials. The overall Crombach's alpha result was found 0.940. This result indicated that the items used to measure the variable were internally consistent.

4.12. Operational Definition

Disaster Resilience: the ability of individuals, institutions (sectors), communities, systems to resist, absorb, accommodate to and recover from the effects of a disaster in a timely and efficient manner, including through the preservation and restoration of its essential structures and functions.

Governance: interchangeable with environmental governance refers the way that individuals, public sectors, private sectors and other stakeholders develop solutions and create opportunities to address societal challenges

Risk Assessments: is a combined effort of identifying and analyzing potential events that may negative impact on individuals, assets, and/or the environment.

Knowledge and educations: providing knowledge among individuals, sectors, and communities, to take actions to reduce their vulnerability to disaster whether formal or informal way.

Risk Management & Vulnerability Reduction: DRR sometimes called risk management which is a systematic approach to identifying, assessing & reducing the risk of the disaster as well as reducing vulnerability of individuals, assets, and environment.

Disaster Preparedness & Response: preparedness is activities prior to a disaster in the form of money, manpower and material and response is activities during a disaster.

4.13. Ethical Consideration

Ethical clearance was obtained from Jimma university institutional review board after department of environmental health science and technology confirmed all the contenets of the proposal. This clearance letter delivered to Jimma city administration sectors to get further permission to reach study population. Before starting study necessary information about; absence of any risk related to instruments used, issue of confidentiality and right of respondent were clearly described. For this, one – page subject information sheet and informed consent letters were attached to each questionnaire.

4.14. Dissemination Plan

The purpose of this research is to contribute to the existing of DRP and solve the shortages by taking action on DRM quality in terms of HFA. The finding from this research submitted to the department of Environmental Health Science and Technology, postgraduate school, JCA, JCA sectors, JCA health offices, JCA Agriculture offices, JCA environmental and climate chage offices, and others. Publication in national or international journal is also considered

4.15. Limitation of the Research

Data collection for this research was made from sectors only and even it was not included from victemed communities. Also, the research is limited to the five DRM quality dimensions (variables) and there would be other categories of dimensions which can have role on DRP. The research used only cross sectional research design to identifiy the role of DRM quality on DRP.

CHAPTER FIVE: RESULTS

5.1. Demographic Characteristics of Respondents

In this section the relevant data collected is organized, presented and analyzed accordingly to realize the research objectives. The result was discussed in the following tables.

Table 4: Demographic Background of the Respondents

Description	Category	Frequen	Percent
Gender	Female	181	54.7
	Male	150	45.3
Age	18 – 25	68	20.5
	26 – 35	155	46.8
	36 – 45	83	25.1
	46 – 60	25	7.6
Educational Level	Diploma	7	2.1
	First Degree	212	64.0
	Second Degree	112	33.8
Position in the Sectors	Manager	11	3.3
	Assistance Manager	5	1.5
	Team Leader	59	17.8
	Representatives	16	4.8
	Expert	240	72.5
Jimma City Experience in Serous Disasters	Yes	233	70.4
	No	98	29.6

As shown in table 4, 181 (54.7%) respondents were female while the remaining 150 (45.3%) of the respondents were male. Interms of age, the large majority of respondents of about 155 (46.8%) were between the age group 26 – 35 years, whereas 68 (20.5%) of the respondents were between 18 – 25 age group, 83 (25.1%) of the respondents were between 36 – 45 age groop, while 25 (7.6%) were from the age group ranging from 46 to 60. It can therefore be concluded that the majority of the respondents participated in this research are in the most youth age and much has to know the disaster resilience meaning.

The level of education of employees (respondents) is an important contributor to the citys' level of performance and competence. Accordingly, of the research participants, 7 (2.1%) are holders of diploma, 212 (64%) holds first degree, 112 (33.8%) are holds second degree. This clear articulate that the majority of city's sector employees are first degree qualified academically.

Details from the research regarding the experience of the city sectors illustrates that, about more of the research participants' or 129 (39%) were with an experience ranging from 6 to 10 years, 85 (25.7%) having an experience up – to 5 years. 90 (27.2%) with an experience ranging between 11 and 20 years. 27 (8.2%) with an experience more than 20 years.

Interms of position, the large majority of respondents of about 240 (72.5%) were experts, whereas 11 (3.3%) of the respondents were managers, 5 (1.5%) of the respondents were assistance managers, while 59 (17.8%) of the respondents are under the team leaders.

To understand city's experience to face serious disaster from respondents. They were asked to the availability of serious disaster in the last five years. As shown in table 9 the sample reflected a fairly uneven an availability of disaster balance; with 233 (70.4%) respondents are responded yes and 98 (29.6%) of respondents are responded by saying no. It is clear from the results that the sample respondents were dominated by in the last five years Jimma city has faced serous disaster. This result indicated that Jimma city was exercised by disaster and the result also appreciates conduction of this research.

5.2. Descriptive Statistics of DRM Quality Dimension

Descriptives statistics of JCA sectors DRM quality is measured using the 24 items divided under the five DRM quality dimensions of HFA model. The analysis result is presented below in two parts. First, descriptive statistics of each DRM quality dimension using the 24 item is discussed with its implications. Then the overall descriptive statistics of the five DRM quality dimension is presented here. The highest and lowest mean scored was identified and interpreted with regarding to every item of each DRM quality dimensions.

I. Descriptive Statistics of Governance

Governance in this research is about policy and planning, Legal and regulatory systems, Resources and capacities, Integration with development, Institutional mechanisms, capacities and structures, Political commitment, Accountability and participation (Twigg C. B., 2007).

Descriptive statistics towards governance is presented in table 8.

Table 5: Descriptive Statistics of Governance

Assessment Factors	**SD**	**D**	**N**	**A**	**SA**	**μ**
JCA has an appropriate policy application and planning framework to reduce disaster and related problems	3.9%	48.6%	10.0%	34.4%	3.00%	2.84
JCA has put in place regulations and regulatory systems that enable to reduce disaster and related problem	4.8%	47.1%	10.6%	34.7%	2.70%	2.83
JCA has an appropriate resources and capacity to address disaster and related problems	2.1%	16%	10.3%	58.9%	12.7%	3.64
JCA has conducted the urban development activities are focused on disaster reduction.	2.7%	39.3%	5.70%	47.4%	4.80%	3.12
JCA has the ability to use the existing sectors according to their capacity and structure to solve disaster and related problems.	5.7%	47.4%	10.3%	34.4%	2.10%	2.80
JCA has politically committed to tackling (minimizing) disaster and related problems	4.5%	37.8%	29.9%	23.6%	4.20%	2.85
JCA will help the sectors to develop a transparent and participatory approach to reduce disaster and related	5.7%	45.6%	9.4%	34.7%	4.50%	2.87
					Total Mean Score	**2.9935**

SD *– Strongly disagree,* ***D*** *– Disagree,* ***N*** *– Neutral,* ***A*** *– Agree,* ***SA*** *– Strongly Agree,* ***μ*** *– Mean Score*

Table 5 shows that 52.5% of the respondents either strongly disagreed or disagreed and 10% did not make any specification about their attitudes that JCA has an appropriate policy application and planning framework to reduce disaster and related problems. This clear stipulates the presence of knowledge gap on the part of the participants on the issue.

This is mainly because without the provision of an appropriate policy application and planning framework, a city administration cannot able to gain a competitive resilience performance which can be translated to improving the city level of disaster resilience.

To measure the level of DRP of the city administration the items JCA has put in place regulations and regulatory systems that enable to reduce disasterand related problem was designed. Yet, the finding of the research shows that there is a significant gap as about 51.9% of the respondents stated that JCA has not put in place regulations and regulatory systems that enable to reduce disaster and related problem and 10.6% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA has anappropriate resources and capacity to address disaster and their attitudes.

To measure the level of DRP of the city administration the items JCA hasconducted the urban development activities are focused on disaster reduction was designed. The finding of the research shows that there is a gap as about 42% of the respondents stated that JCA has not conducted the urban development activities are focused on disaster reduction and 5.7% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA has the ability to use the existing sectors according to their capacity and structure to solve disaster and related problems was designed. Yet, the finding of the research shows that there is a significant gap as about 53.1% of the respondents stated that JCA has not the ability to use the existing sectors according to their capacity and structure to solve disaster and related problems and 10.3% did not make any related problems was designed. The finding of the research shows that there is a gap as about 18.1% of the respondents stated that JCA has not an appropriate resources and capacity to address disaster and related problems and 10.3% did not make any specification about specification about their attitudes.

To measure the level of DRP of the city administration the items JCA has politically committed to tackling (minimizing) disaster and related problems was designed. The finding of the research shows that there is a gap as about 42.3% of the respondents stated that JCA has not politically committed to tackling (minimizing) disaster and related problems and 29.9% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA will help the sectors to develop a transparent and participatory approach to reduce disaster and related was designed.

Yet, the finding of the study shows that there is a significant gap as about 51.3% of the respondents stated that JCA will not help the sectors to develop a transparent and participatory approach to reduce disaster and related and 9.4% did not make any specification about their attitudes.

II. Descriptive Statistics of Risk Assessments

RA in this research is about the hazards/risk data and analysis, Vulnerability and impact data/indicators, Early warning systems, Scientific and technical innovation (Twigg C. B., 2007).

Table 6: Descriptive Statistics of Risk Assessment

Assessment Factors	**SD**	**D**	**N**	**A**	**SA**	**μ**
Climate changes, fire hazard, weakness of solid and liquid waste management are the most common disasters for the Jimma city ecosystem.	3.6%	9.70%	6.0%	58.9%	21.8%	3.85
JCA conducts practice to identify disaster factors and their implications.	3.0%	18.4%	11.8%	58.6%	8.20%	3.5
JCA is working hard to take care of vulnerable communities.	1.8%	22.7%	8.50%	60.4%	6.60%	3.47
JCA creating Geographical referenced terrain database with the satellite imageries and topographical maps for disaster management and risk reduction and also informs this technology to all sectors.	1.8%	23.0%	10.0%	58.6%	6.60%	3.45
					Total Mean Score	**3.5718**

Table 6 shows that 13.3% of the respondents either strongly disagreed or disagreed and 6% did not make any specification about their attitudes for the items of Climate changes, fire hazard, weakness of solid and liquid waste management are the most common disasters for the Jimma city ecosystem. Without the risk assessment it is impossible to know which types of hazard is frequently available in the city. Again without an appropriate risk assessment a city administration cannot able to gain a competitive resilience performance which can be translated to improving the city level of DRP. To measure the level of DRP of the city administration the items JCA conducts practice to identif y disaster factors and their implications was desgned.

The finding of the research shows that there is a gap as about 21.4% of the respondents stated that JCA does not conducts practice to identify disaster factors and their implications and 11.8% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA is working hard to take care of vulnerable communities was designed. The finding of the research shows that there is a gap as about 24.5% of the respondents stated that JCA is not working hard to take care of vulnerable communities and 8.5% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA creating Geographical referenced terrain database with the satellite imageries and topographical maps for DRM and risk reduction and also informs this technology to all sectors was designed. The finding of the research shows that there is a gap as about 24.8% of the respondents stated that JCA does not creating Geographical referenced terrain database with the satellite imageries and topographical maps for DRM and risk reduction and also informs this technology to all sectors and 10% did not make any specification about their attitudes.

III. Descriptive Statistics of Knowledge and Education

Knowledge and education in this research is about the information management and sharing, education and training, public awareness, learning and research (Twigg J. , 2007). Descriptive statistics towards items of knowledge and education is presented in table 10.

Table 7: Descriptive Statistics of Knowledge and Education

Assessment Factors	**SD**	**D**	**N**	**A**	**SA**	**μ**
JCA has the experience to compile and Disseminate information on disasters and Related issues to the relevant body.	2.1%	25.7%	9.70%	57.4%	5.1%	3.38
JCA has the experience of providingeducated and training for the sectors to reach the public Regarding disaster and related problems	2.7%	19.3%	11.8%	61.0%	5.1%	3.47
JCA is creating awareness among the Public about the disaster and related issues.	3.0%	22.7%	8.80%	58.9%	6.6%	3.44
JCA uses educational and research processes to reduce disaster and related problems	1.5%	23.0%	11.8%	58.3%	5.4%	3.43
					Total Mean Score	**3.4275**

Table 7 shows that 27.8% of the respondents either strongly disagreed or disagreed and 9.7% did not make any specification about their attitudes for the items of JCA has the experience to co mpile and disseminate information on disasters and related issues to the relevant body.

Without the compile disaster related information and disseminate disaster related information it is impossible to think about disaster resilience. Again without knowledge and education a city administration cannot able to gain a competitive resilience performance which can be translated to improving the city level of DRP.

To measure the level of DRP of the city administration the items JCA has the experience of provi ding education and training for the sectors to reachthe public regarding disaster and related probl ems was designed. The finding of the research shows that there is a gap as about 22% of the resp ondents stated that JCA has not the experience of providing education and training for the sectors to reach the public regarding disaster and related problems and 11.8% did not make any specific ation about their attitudes.

To measure the level of DRP of the city administration the items JCA is creating awareness amon g the public about the disaster and related issues was designed. The finding of the research shows that there is a gap as about 25.7% of the respondents stated that JCA does not create awareness a mong the public about the disaster and related issues and 8.8% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA uses educational and resear ch processes to reduce disaster and related problems was designed. The finding of the research sh ows that there is a gap as about 24.5% of the respondents stated that JCA doesn’t uses educationa l and research processes to reduce disaster and related problems and 11.8% did not make any specification about their attitudes.

IV. Description Statistics of Risk Management and Vulnerability Reduction

Risk management and vulnerability reduction in this research is about the Environmental and natural resource management; climate change adaptation, Sustainable livelihoods, Social protection, financial instruments, Structural and technical measures, Planning regimes (Twigg J. , 2007).

Table 8: Descriptive Statistics of Risk Managements and Vulnerability Reduction

Assessment Factors	SD	D	N	A	SA	μ
JCA coordinates environmental and natural resource management regarding disaster and related issues.	3.6%	24.8%	11.8%	55.9%	3.9%	3.32
JCA works to reduce the disaster an d related problems and create asustai nable living environment for the community.	2.7%	18.1%	10.9%	63.4%	4.8%	3.50
JCA provides sustainable protection to the community by monitoring disaster and related issues	3.3%	18.4%	7.90%	65.6%	4.8%	3.50
JCA will plans moneys and related issues to reduce the disaster.	2.4%	16.3%	8.80%	67.7%	4.8%	3.56
JCA will take structural (such as construction) and technical (such as training) measures to reduce disaster and related problems	4.2%	15.7%	7.30%	66.8%	6.0%	3.55
					Total Mean Score	**3.4846**

Table 8 shows that 28.4% of the respondents either strongly disagreed or disagreed and 11.8% did not make any specification about their attitudes for the items of JCA coordinates environment al and natural resource management regarding disaster and related issues. Without coordinates the environment and natural resource it is impossible to think about disaster resilience. Again without risk management and vulnerability reduction a city administration cannot able to gain a competitive resilience performance which can be translated to improving the city level of DRP.

The city administration to measure the level of DRP the item JCA works to reduce the disaster an d related problems and create a sustainable living environment for the community. The finding of the research shows that there is a gap as about 20.8% of the respondents stated that JCA does not works to reduce the disaster and related problems and create a sustainable living environment for the community and 10.9% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA provides sustainable protec tion to the community by monitoring disaster and related issues was designed.

The finding of the research shows that there is a gap as about 21.5% of the respondents stated that JCA does not provides sustainable protection to the community by monitoring disaster and re lated issues and 7.9% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA will plans moneys and rela ted issue to reduce the disaster was designed. The finding of the research shows that there is a ga p as about 18.7% of the respondents stated that JCA will not plans moneys and related issues to r educe the disaster and 8.8% did not make any specification about their attitudes.

V. Descriptive Statistics of Disaster Preparedness and Response

Items constructed under the dimension of Disaster Preparedness and response is organisational ca pacities and coordination, preparedness and contingency planning, emergency response mechanis ms, participation and voluntarism. (Twigg C. B., 2007).

Table 9: Descriptive Statistics of Disaster Preparedness and Response

Assessment Factors	SD	D	N	A	SA	μ
There is an appropriate administrati on initiative in coordinating sectors and other stakeholders to address t he ecological crisis in Jimma city.	12.4%	32.3%	10.3%	38.7%	6.3%	2.94
In Jimma City, the lack of disaster preparedness and lack of contingen cy planning is one of the main reas ons for the loss of resources when t he disaster strikes.	2.40%	10%	6.9%	27.2%	53.5%	4.19
In Jimma City, affected communiti es will be rehabilitated immediately	9.40%	37.2%	10.9%	36.6%	6%	2.93
JCA allows the sharing of qualified professionals or manpower for disaster prevention among sectors.	11.8%	34.1%	11.2%	35.3%	7.6%	2.93
					Total Mean Score	**3.2477**

Table 9 shows that 44.7% of the respondents either strongly disagreed or disagreed and 10.3% did not make any specification about their attitudes for the items there is an appropriate administr ation initiative in coordinating sectors and other stakeholders to address the ecological crisis in Jimma city.

Without appropriate administrative initiatives in coordinating sectors it is impossible to think about disaster resilience. Again without disaster preparedness and response a city administration cannot able to gain a competitive resilience performance which can be translated to improving the city level of DRP.

To measure the level of DRP of the city administration the items lack of disaster preparedness an d lack of contingency planning is one of the main reasons for the loss of resources when the disas ter strikes was designed. The finding of the research shows that there is a gap as about 12.4% of t he respondents stated that the lack of disaster preparedness and lack of contingency planning is n ot one of the main reasons for the loss of resources when the disaster strikes and 6.9% did not ma ke any specification about their attitudes.

To measure the level of DRP of the city administration the items In Jimma City, affected commu nities will be rehabilitated immediately was designed. The finding of the research shows that ther e is a gap as about 46.6% of the respondents stated that In Jimma City, affected communities will not be able rehabilitated immediately and 10.9% did not make any specification about their attitudes.

To measure the level of DRP of the city administration the items JCA allows the sharing of qualified professionals or manpower for disaster prevention among sectors was designed. The finding of the research shows that there is a gap as about 45.9% of the respondents stated that JCA does not allows the sharing of qualified professionals or manpower for disaster prevention among sectors and 11.2% did not make any specification about their attitudes.

5.2.1. Descriptive Statistics of Overall DRM quality dimensions

Descriptive statistics of each of the five DRM quality dimension items are discussed earlier in this chapter. Now descriptive statistics towards the five DRM quality dimension in general will be discussed. The mean score of each of the 24 items were computed and converted to their respective dimensions. The table 13 presents the summarized score of the five DRM quality dimension. The mean, standard deviation, and the interpretation of mean scores of employees' perception towards DRM quality of JCA sectors are presented.

Table 10: Descriptive Statistics overall DRM quality dimensions

Statistics

		G	RA	KE	RMVR	DPR
N	Valid	331	331	331	331	331
	Missing	0	0	0	0	0
Mean Score		**2.9935**	**3.5718**	**3.4275**	**3.4846**	**3.2477**
Std. Deviation		.64926	.66880	.72746	.65085	.78540

As table 10 depicted based on the measurement of descriptive statistics the risk assessment dimension of DRM quality is resulted superior to the other four dimensions with a mean score of 3.5718. This meaning that the respondent perceived that they feel comparatively the first frequently used intervention for DRP in JCA is Risk Assessment.

As per the rating of respondents the second highly scored DRM quality dimension is Risk Managements and Vulnerability Reduction with a mean score of 3.4846 means that employees are feeling that comparatively the second frequently used intervention for DRP in JCA is Risk Managements and Vulnerability Reduction.

The third highly rated DRM quality dimension by employee is Knowledge and Education with 3.4275 mean score which indicate that comparatively the third frequently used intervention for DRP in JCA is Knowledge and Education.

The fourth highly rated DRM quality dimension by employee is disaster preparedness& response with 3.2477 mean score which also indicate comparatively the fourth frequently used intervention for DRP in JCA is Disaster Preparedness and Response.

From the five DRM quality dimensions the least performed DRM quality dimension is Governance with a mean score of 2.9935. The result indicated that comparatively the last/least frequently used intervention for DRP in JCA is Governance.

5.3. Level of Disaster Resilience Performance

To determine the level of DRP with the DRM at JCA sectors points of whether prevention or remediation, respondents were asked to rate their level of agreement using a 5-point liker scale. The level of DRP was analyzed with the descriptive statistics (frequency distribution) and table 14 presents the result of the analyzed overall DRP level.

Table 11: Overall Disaster Resilience Performance Level for JCA

Disaster Resilience Performance	SD	D	N	A	SA	μ
I trust the disaster resiliences of JCA since it has an appropriate administrative movement	10.9%	32.3%	8.50%	41.4%	6.90%	3.01
The activities of JCA on disaster risk assessments are somewhat up-to-date	0.9%	15.4%	8.20%	66.5%	9.10%	3.67
When mentioned about city's DRP, I will speak good about the Jimma city DRP to other cities by making example	2.1%	13.6%	34.4%	41.1%	8.80%	3.41
The disaster resiliences of JCA proud of its knowledge-based approach to disaster reduction.	2.1%	16.9%	8.50%	63.1%	9.40%	3.61
The JCA's measures on risk management and vulnerability reduction have significantly reduced community threat in appropriate way.	3.3%	19.9%	10.0%	56.5%	10.3%	3.50
I satisfied by JCA with disaster preparedness and response.	10%	37.5%	9.40%	38.4%	4.80%	2.91
					Overall Mean Score	**3.35**

Table 11 shows that 43.2 percent of the respondents either strongly disagreed or disagreed and 8.5 percent did not make any specification about their attitudes for the items I trust the disaster resiliences of JCA since it has an appropriate administrative movement. Undoubtedly if there is an appropriate administrative movement in the city, there will be availability of DRP. Again without an appropriate administrative movement a city administration cannot able to gain a competitive DRP which can be translated to improving the city level of DRP.

To know whether the city administrations have DRP, items the activities of JCA on disaster risk assessments are somewhat up to date presented to the respondents. The finding of the research shows that there is a gap as about 16.3percent of the respondents stated that the activities of JCA on disaster risk assessments are not somewhat up to date and 8.2 percent did not make any specification about their attitudes.

To know whether the city administrations have DRP items when mentioned about city's DRP, I will speaks good about the Jimma city DRP to other cities by making an example is presented to the respondents.

The finding of the research shows that there is a gap as about 15.7 percent of the respondents stat ed that when mentioned about city's DRP, I will not speaks good about the Jimma city DRP to ot her cities by making example and 34.4% did not make any specification about their attitudes.

To know whether the city administrations have DRP items the disaster resiliences of JCA proud of its knowledge based approach to disaster reduction is presented to the respondents. The findin g of the research shows that there is a gap as about 19 percent of the respondents stated that the di saster resilience of JCA does not proud of its knowledge based approach to disaster reduction and 8.5 percent did not make any specification about their attitudes.

To know whether the city administrations have DRP items JCA's measures on risk management and vulnerability reduction have significantly reduced community threat in appropriate way is pr esented to the respondents. The finding of the research shows that there is a gap as about 23.2 per cent of the respondents stated that JCA's measures on risk management and vulnerability reducti on have not significantly reduced community threat in appropriate way and 10 percent did not ma ke any specification about their attitudes.

To know whether the city administrations have DRP items I satisfied by JCA with disaster prepar edness and response is presented to the respondents.

The finding of the research shows that there is a gap as about 47.5 percent of the respondents stat ed that I do not satisfied by JCA with disaster preparedness and response and 9.4 percent did not make any specification about their attitudes.

5.4. Correlation

Correlation test was performed to assess the strength of association between each field (group) of predictor variables. As data collected in this research is ordinal variables data, the pow erful method of examining the relationship between pairs of variables is by using Spearman's cor relation. Correlation is a statistical technique used to determine the degree to which two variables are related. It measures the nature and strength between two variables of the quantitative type (Cohen J. , 1998). Correlation sign is either positive or negative. If the sign is positive this means the relation is direct (an increase in one variable is associated with an increase in another variable and a decrease in one variable is associated with a decrease in the other variable).

While if the sign is negative this means an inverse or indirect relationship (which means an increase in one variable is associated with a decrease in the other). Thus, the table 15 below shows the correlation analysis of DRM quality with DRP in JCA.

Table 12: Correlations between Variables

Correlations

Variables		G	RA	KE	RMVR	DPR	DRP
G	Pearson Correlation	1					
	Sig. (2-tailed)						
RA	Pearson Correlation	-.091	1				
	Sig. (2-tailed)	.097				.	
KE	Pearson Correlation	-.055	.583**	1			
	Sig. (2-tailed)	.318	.000				
RMVR	Pearson Correlation	.018	.487**	.600**	1		
	Sig. (2-tailed)	.740	.000	.000			
DPR	Pearson Correlation	.461**	.103	.115*	.156**	1	
	Sig. (2-tailed)	.000	.061	.036	.005		
DRP	**Pearson Correlation**	**.325****	**.398****	**.496****	**.459****	**.476****	**1**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Where: G *governance,* ***RA*** *risk assessment,* ***KE*** *knowledge and education,* ***RMVR*** *risk managem ent and vulnerability reduction,* ***DPR*** *- disaster preparedness and respone,* ***DRP****-disaster resilience performance.*

Table 12 interpret as; moderate and statistically significant relationship in between governance and DRP ($r = 0.325$, $N = 331$, $p < 0.05$), also there is a moderate and statistically significant relati onship in between risk assessment and DRP ($r = 0.398$, $N = 331$, $p < 0.05$), also there is somewha t strong and statistically significant relationship in between knowledge & education and DRP ($r = 0.496$, $N = 331$, $p < 0.05$), also there is somewhat strong and statistically significant relationship in between risk management and vulnerability reduction and DRP ($r = 0.459$, $N = 331$, $p < 0.05$) and there is somewhat strong and statistically significant relationship in between disaster prepare dness and response and DRP ($r = 0.476$, $N = 331$, $p < 0.05$) are the level of association in between independent and dependent variables.

5.5. Multiple Linear Regressions

Multiple regressions is not just one technique but a family of techniques that can be used to explore the relationship between one continuous dependent variable and a number of independent variables or predictors (usually continuous). Multiple regressions are based on correlation, but allow a more sophisticated exploration of the interrelationship among a set of variables. Therefore student researcher used to explore between dependent variable (DRP) and predictor variables in JCA.

5.5.1 Model Summary

Determining how well the model fits

The first table of interest is the model summary (Table 16). This table provides the R, R^2, adjusted R^2, and the standard error of the estimate, which can be used to determine how well a regression model fits the data:

Table 13: Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.699[a]	.489	.481	.46208	2.075

a. Predictors: (Constant), Disaster Preparedness and Response, Risk Assessments, Governance, Risk Managements and Vulnerability Reduction, Knowledge and Edu

b. Dependent Variable: Disaster Resilience Performance

Table 14: R Value Ranges and Their Equivalent R Square Value Ranges

	r	**R Square**
Noteworthy	Greater than 0.3	Greater than 9% to 10%
Large	Greater than 0.5	Greater than 25%
Very large	Greater than 0.7	Greater than 49% to 50%

Source: (Salsedo, 2015)

In table 13 the Adjusted R^2, which is the determinant and defining coefficient, is found .481. Though the model is meaningful, it is seen that DRP is not totally affected by G, RA, KE, RMVR, and DPR since this model not able to meet 51.9% of DRP of the city administration. This shows the existence of other factors which has a role on level of DRP in addition to G, RA, KE, RMVR,

and DPR in the city administration. This speaks loud as the city administration is not effectively utilizing G, RA, KE, RMVR, and DPR to enhance city's level of DRP

5.5.2 Analysis of Variance (ANOVA)

The analysis of variance (ANOVA) result in table 18 of the regression between predictor variables and DRP shows that, the probability value of 0.000 ($p < 0.05$) indicates the relationship was highly significant in predicting how DRM quality explain DRP as shown in table 18

Table 15: ANOVA Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.463	5	13.293	62.255	.000[b]
	Residual	69.394	325	.214		
	Total	135.857	330			

a. Dependent Variable: Disaster Resilience Performance

b. Predictors: (Constant), Disaster Preparedness and Response, Risk Assessments, Governance, Risk Managements and Vulnerability Reduction, Knowledge and Education

To this effect, since p – value is 0.000 ($p < 0.05$), DRM quality does a good job in explaining the variation in the dependent variable (DRP). These results estimate that as the p-value of the table 16 is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis. In general in this research the ANOVA table used to saw the overall regression model was significant, $F(5,325) = 13.293$, $p < 0.001$, $R^2 = 0.481$.

5.5.3 Regression Results

Multiple regression analysis was conducted so as to determine the relationship between DRP and the predictor variables. The regression equation becomes:

$$\mathbf{Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 \ldots + \beta_n * X_n + \varepsilon}$$

$$\mathbf{DRP = 0.207G + 0.127RA + 0.261KE + 0.164RMVR + 0.250DPR + 0.003.}$$

Where: $\boldsymbol{G = \beta_1}$ *governance,* $\boldsymbol{RA = \beta_2}$ *risk assessment,* $\boldsymbol{KE = \beta_3}$ *knowledge and education,* $\boldsymbol{RMVR = \beta_4}$ *risk management and vulnerability reduction,* $\boldsymbol{DPR = \beta_5}$ *disaster preparedness and respone,* ***DRP****-disaster resilience performance,* $\boldsymbol{\beta_0 = 0.003}$ *is constant.*

The Beta coefficient (B) result in table 16 shows the strength of the effect of each individual independent variable to the dependent variable.

Table 16: Regression Coefficients

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.003	.205		.016	.987		
G	.207	.045	.209	4.620	.000	.766	1.305
RA	.127	.048	.132	2.629	.009	.622	1.607
KE	.261	.048	.296	5.418	.000	.528	1.894
RMVR	.164	.050	.166	3.262	.001	.605	1.654
DPR	.250	.037	.306	6.720	.000	.758	1.319

a. Dependent Variable: Disaster Resilience Performance

Thus, from regression result the B column shows you how one-unit change in an independent variable impacts the dependent variable (Salsedo, 2015). Based on table 16, **Constant** is predicted value of **"DRP"**, when all other variables are 0. Important to note, values of 0 for all variables is not interpretable either (i.e., all predictors cannot equal 0 since in our sample all respondents are answered the rate between 1 and 5 agreement and SPSS software converted this to mean to make continuous).

The Beta value (B) of the governance is 0.207 which means that, If a unit intervention by governance can enhance DRP by 20.7 percent being other things remain constant at $p = 0.000$ ($p < 0.05$).

Secondly, the Beta value (B) of the risk assessment is 0.127 which means that, If a unit intervention by risk assessment can enhance DRP by 12.7 percent being other things remain constant at $p = 0.009$ ($p < 0.05$).

Thirdly, the Beta value (B) of the knowledge and education is 0.261 which means that, If a unit intervention by knowledge and education can enhance DRP by 26.1 percent being other things remain constant at $p = 0.000$ ($p < 0.05$).

Fourthly, the Beta value (B) of the risk management and vulnerability reduction is 0.164 which means that, If a unit intervention by governance can enhance DRP by 16.4 percent being other things remain constant at $p = 0.001$ ($p < 0.05$).

Finally, the Beta value (B) of the disaster preparedness and response is 0.250 which means that, If a unit intervention by disaster preparedness and response can enhance DRP by 25 percent being other things remain constant at $p = 0.000$ ($p < 0.05$).

Lastly, as stated in table 16 the hypothesis stated as the overall DRM quality (G, RA, KE, RMVR and DPR) have no statistically significant role on DRP was rejected because the result of the regression analysis shows as the overall DRM quality has significant role at ($p < 0.05$).

CHAPTER SIX: DISCUSSION

Good disaster governance is expected to elevate DRR into a policy priority, allocate the necessar y resources to it, ensure and enforce its implementation and assign accountability for failures, as well as facilitate participation by all relevant stakeholders (ISDR, 2004). Thus, for JCA governance in this research was seen from point of Policy and planning, Legal and regulatory systems, Resources and capacities, Integration with development, Institutional mechanisms, capacities and structures, Political commitment, Accountability and participation (Twigg J. , 2007).

According to table 5 from the seven items of governance, respondents state their agreement that JCA has an appropriate resources and capacity to address disaster and related problems with a me an score of 3.64. However, employees perceived that JCA has no the ability to use the existing sectors according to their capacity and structure to solve disaster and related problems with mean score 2.80. This could be related with the causes for sectors do not participate for disaster mitigation time when the disaster happened in the city as stated in statement of problems.

Based on the table 10 when we compare the predictor variables, the variable governance is the least frequently used intervention in the JCA for DRP with Mean Score = 2.9935. When we compare the predictor variables based on table 16 by using standardized coefficient of beta the third influence on DRP is from the governance (0.209)

The risk field has two main tasks, (I) to use risk assessments and risk management to study and treat the risk of specific activities, and (II) to perform generic risk research and development, related to concepts, theories, frameworks, approaches, principles, methods and models to understand, assess, characterise, communicate and (in a wide sense) manage/govern risk (Aven, 2016). In this research for JCA risk assessment was seen from point of Hazards/risk data and analysis, Vulnerability and impact data/indicators , Early warning systems, Scientific and technical innovation (Twigg J. , 2007).

According to table 6 from the four items of risk assessment, respondents state their agreement that climate changes, fire hazard, weakness of solid and liquid waste management are the most co mmon disasters for the Jimma city ecosystem with a mean score of 3.85. However, employees perceived that JCA does not create Geographical referenced terrain database with the satellite im ageries and topographical maps for disaster management and risk reduction and also informs this technology to all sectors with mean score 3.45. This could be related with the causes for city administration doesn’t active participants in technology related resources.

Based on the table 10 the variable risk assessment is the first frequently used intervention in the JCA for DRP with Mean Score = 3.5718. Based on table 16 by using standardized coefficient of beta the last influence on DRP is from the risk assessment (0.132).

Education encompasses formal and informal transmission of knowledge, and engagement of groups of people (children, youth, lay people and professionals) in identifying hazards and feasible actions to mitigate them and to prepare for the risk that cannot be reduced. This includes the formal public and private education systems (primary, secondary and tertiary)…etc (Wisner, 2006). Disaster risk reduction policy and practice require knowledge for informed decision making and coordinated action (Pigeon J. W., 2015). Thus, in this research for JCA Knowledge and education was seen from point of Information management and sharing, Education and training, Public awareness, Learning and research (Twigg J. , 2007).

According to table 7 from the four items of knowledge and education, respondents state their agreement that JCA has the experience of providing education and training for the sectors to reach the public regarding disaster and related problems with a mean score of 3.47. However, employees perceived that JCA has no the experience to compile and disseminate information on disasters and related issues to the relevant body with mean score 3.38. This could be related with the causes for the city administration didn't active in awaring of relevant stakeholders about disaster mitigation way as stated in statement of problem. Based on the table 10 the variable knowledge and education is the third frequently used intervention in the JCA for DRP with Mean Score = 3.4275. Based on table 16 by using column of standardized coefficient of beta the second influence on DRP is from the knowledge and education (0.296).

Disaster risk or vulnerability reduction is the foundation of community based DRM (Suvit Yodmani, 2022). In this research for JCA Risk Management and Vulnerability Reduction was seen from point of Environmental and natural resource management; climate change adaptation, Sustainable livelihoods, Social protection, financial instruments, Structural and technical measures Planning regimes (Twigg J. , 2007).

According to table 8 from the five items of risk management and vulnerability reduction, respondents state their agreement that JCA will plans moneys and related issues to reduce the disaster with a mean score of 3.56. However, employees perceived that JCA does not coordinates environmental and natural resource management regarding disaster and related issues with mean score 3.32. This could be related with there is negligence about environment and natural resources by city administration.

Based on the table 10 the variable risk management and vulnerability reduction is the second frequently used intervention in the JCA for DRP with Mean Score = 3.4846. Based on table 16 by using standardized coefficient of beta the fourth influence on DRP is from the risk management and vulnerability reduction (0.166).

Disaster preparedness and response for hazard events is mainly concerned with two objectives: increasing capacity to predict, monitor and be prepared to reduce damage or address potential threats and strengthening preparedness to respond in an emergency and to assist those who have been adversely affected (UNOCHA, 2008).

In this research for JCA disaster preparedness and response was seen from Organisational capacit ies and coordination, Preparedness and contingency planning, Emergency response mechanisms, Participation and voluntarism

According to table 9 from the four items of disaster preparedness and response, respondents state their agreement that In Jimma City, the lack of disaster preparedness and lack of contingency planning is one of the main reasons for the loss of resources when the disaster strikes with a mean score of 4.19. However, employees perceived that JCA not allows the sharing of qualified professionals or manpower for disaster prevention among sectors and In Jimma City, affected communities will be rehabilitated immediately with mean score 2.93. This could be related with the causes for city administration doesn't coordinate the sectors for disaster related problems as stated in statement of problems.

Based on the table 10 the variable disaster preparedness and response is the fourth frequently used intervention in the JCA for DRP with Mean Score = 3.2477. When we compare the predictor variables based on table 16 by using the column standardized coefficient of beta the largest influence on DRP is from the disaster preparedness and response (0.306)

A way of implementing and measuring resilience is through DRM, which has proven popular with development actors (Rockström, 2022). However, more research is required to compare methods of measuring resilience and DRM effectiveness. Measuring disaster resilience is a key component of successful DRM and climate change adaptation (Marzi, 2019). Resilience types of strategies play a key role in meeting risk, uncertainties, and potential surprises. The level of resilience for a system or organisation is linked to the ability to sustain or restore its basic functionality following a stressor (Aven, 2016).

In this research for JCA DRP was leveled (measured) from trusting the disaster resiliences of JCA since it has an appropriate administrative movement, the activities of JCA on disaster risk assessments are somewhat up-to-date, when mentioned about city's DRP, I will speak good about the Jimma city DRP to other cities by making example, the disaster resiliences of JCA is proud of its knowledge based approach to disaster reduction, the JCA measures on risk management and vulnerability reduction have significantly reduced community threat in appropriate way and wheather a stisfying by JCA with disaster preparedness and response.

According to table 11 from the six items of disaster resilience respondents state their agreement that activities of JCA on disaster risk assessments are somewhat up-to-date with a mean score of 3.67. However, employees perceived that they not satisfied by JCA with disaster preparedness and response with mean score 2.91. This could be related with the DRP in Jimma city is not enough in order to satisfied the employee of the JCA.

The Pearson correlation coefficient is a measure of the extent to which there is a linear (straight line) relationship between two variables. Its values are between -1and +1 (Salsedo, 2015). A correlation analysis was performed to determine if there were any relationships between a variable. There are standards for evaluating the magnitude of a correlation/strength of relationship between variables. Values of r between 0 and 1, show the different strength of the relationship between the two variables. In general if r is between 0.0 - 0.3 it is considered to be a weak relationship; if r is between 0.31 and 0.50 it indicates a moderate strength relationship; and if r is between 0.51 and 0.80 it indicates a strong relationship and if r is between 0.81 and 1 it indicates a very strong relationship (Hassan, 2019).

According to table 12 the result of correlation coefficients of this research for governance r = 0.325, risk assessment r = 0.389, knowledge and education r = 0.496, risk management and vulnerability reduction r = 0.459 and disaster preparedness and response r = 0.476. These results show that governance and risk assessments are somewhat moderately correlated with DRP and the rest variables are also somewhat strong correlated with DRP.

Regression analysis is about predicting the future (the unknown) based on data collected from the past (the known). Regression allows you to further quantify relationships by developing an equation predicting (Salsedo, 2015). Therefore, conduction regression was sound worthy. Thus, from regression result the B column shows you how one-unit change in an independent variable impacts the dependent variable (Salsedo, 2015). Therefore, as illustrated in table 19 can interpret accordingly;

If a unit intervention by governance can enhance DRP by 20.7 percent being other things remain constant at $p = 0.000$ ($p < 0.05$). In the hypothesis of research (H1): Governance has no positive and significant role on DRP in JCA. Based on the regression result stated in table 19, governance has a positive role on DRP and it is statistically significant to predict the dependent variable. This leads us to reject the designed null hypothesis.

It is clear that as previously described in the literature review the governance has a positive effect on DRP and the result of this research coincides with the result of most researchers. As an example, the studies conducted by Sterre Bierens.

Secondly, a unit intervention by risk assessment can enhance DRP by 12.7 percent being other things remain constant at $p = 0.009$ ($p < 0.05$). In the hypothesis of the research (H2): Risk Assessment has no positive and significant role on DRP in JCA. Based on the regression result stated in table 19, risk assessment has a positive role on DRP and it is statistically significant to predict the dependent variable. This leads us to reject the designed null hypothesis. It is clear that as previously described in the literature review the risk assessment has a positive role on DRP and the result of this research coincides with the result of most researchers. As an example, the studies conducted by Irasema Alcántara.

Thirdly, a unit intervention by knowledge and education can enhance DRP by 26.1 percent being other things remain constant at $p = 0.000$ ($p < 0.05$). In the hypothesis of the research (H3): Knowledge and Education has no positive and significant role on DRP in JCA. Based on the regression result stated above, knowledge and education has a positive role on DRP and it is statistically significant to predict the dependent variable. This leads us to reject the designed null hypothesis. It is clear that as previously described in the literature review the knowledge and education has a positive role on DRP and the result of this research coincides with the result of most researchers. As an example, the research conducted by Nadeera Ahangama and Raj Prasanna.

Fourthly, a unit intervention by risk management and vulnerability reduction can enhance DRP by 26.1 percent being other things remain constant at $p = 0.001$ ($p < 0.05$). In the hypothesis of the research (H4): Risk Management and Vulnerability Reduction have no a positive and significant role on DRP in JCA. Based on the regression result stated in table 16, risk management and vulnerability reduction has a positive role on DRP and it is statistically significant to predict the dependent variable. This leads us to reject the designed null hypothesis. It is clear that as previously described in the literature review the risk management and vulnerability reduction has a positive role on DRP and the result of this research coincides with the result of most researchers. As an example, the studies conducted by Suvit Yodmani, Yan Du and Yibo Ding.

Finally, a unit intervention by disaster preparedness and response can enhance DRP by 25 percent at $p = 0.000$ ($p < 0.05$). In the hypothesis of of the research (H5): Disaster Preparedness and response have no a positive and significant role on DRP in JCA.

Based on the regression result stated in table 16, disaster preparedness and response has a positive role on DRP and it is statistically significant to predict the dependent variable. This leads us to reject the designed null hypothesis.

R-value represents the correlation between the dependent and independent variable. According to table 14 a value greater than 0.5 is taken for furthers analysis. In this research, the value is 0.699, which is good. R-Square shows the total variation for the dependent variable that could be explained by the independent variables. According to table 14 a value greater than 0.25 shows the model is an effective enough to determine the relationship. In this research, the value is 0.489, which is good. Adjusted R square was 0.481 which means that 48.1% variations in DRP were explained by the DRM quality jointly and 51.9% was due to other factors which are no included in this research.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1. Conclusions

Based on the results of the research, it can be concluded that:

- All of the HFA dimensions were significantly related to DRP. DRM quality is becoming an increasingly important factor and a pre requisite for DRP in sectors like city administration. The DRM quality offered will determine DRP and sustainability of the ecosystem health. DRP and DRM quality are inter-related. The advanced the DRM quality, the advanced the DRP.
- Based on the Mean Score value of this research, comparatively the 1st, 2nd, 3rd, 4th & 5th frequently used intervention for DRP in JCA was risk assessment, risk management & vuln erability reduction, knowledge & education, disaster preparedness & response, and governance respectively.
- From the above comparison governance is the less intervention in JCA which shows the governments reluctantness to perform its role in leading, controlling, and managing disaster related problems.
- Further more, as indicated from standardized coefficient value, the most influential predictors for DRP was disaster preparedness & response, knowledge & education, governance, risk management & vulnerability reduction, and risk assessment respectively.

7.2. Recommendations

Currently, most of the cities are adopting technological advancements that enable them to provide similar actions on DRM to their communities. There is no major difference among cities with regard to their DRM. The major difference of one city from the other is the quality of the DRM that the city provides to its community, assets, and ecosystems. DRM quality and DRP are strongly energetic concepts that cities must comprehened if they want to save their ecosystem health. Based on the conclusions of the research, the following recommendations are forwarded:

- Inorder to have efficient DRP in JCA, the city administration evaluate the amount of DRP interms of HFA model against that of other disaster related model, and make necessary adjustment, DRP based motivational activities to the disaster related sectors will help to sustain DRM. Besides, training need identification and providing training is useful for both the JCA sectors employee and other stakeholder like private sectors, federal sectors of the city to enable them to make resilient sectors in a better way.
- In order to improve the city DRP, JCA have to formulating and implementing qualified DRM dimension by giving priority to disaster preparedness & response, knowledge & education, governance, risk management and vulnerability reduction and risk assessment respectively.
- For those city sector managers, to improve DRP of JCA it is better to work in coordination with many other sectors in an inclusive way through exploring collaboration and teamwork. Especially, linkage with city administrations like Climate change offices, Municipalities, and Agricultural offices should be made to work cooperatively and enhance DRP of the city.
- JCA have to know which variables have more impact on DRP to be role model or competent as a country level since competition was the way of improving and JCA have to work hard to provide efficient and effective DRM to protect its ecosystem and get remarkable result.
- Finally, this research was limited only to JCA sectors one of the outsanding cities from southwest Ethiopia's. Therefore, in order to increase the generalizability of the result of the research, region wide similar research is recommended

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Appendixes

Appendix I: English Version Respondent Information Sheet

Name of Investigator: Beyadgilign Mengesha

Name of Study Area: Jimma city administration southwest of Ethiopia

Research Budget Covered By: by own force (self sponsored)

Research Objective: To Evaluate DRP in JCA, southwest of Ethiopia

Significance of the Research: The significance of this research will be summarized as follows

- It helps the city administration to assist in decision making, in identifying key variables in order to develop strategies to address the improve DRM quality
- To the managements of municipality in city administration, the finding and results that will be reported in this research will provide a more reliable scientific measure and perspective for describing and evaluating the level of their DRP with the DRM they have

Study Procedure: disasters management quality data will be collected using structured data collection tool to determine DRP of JCA

Risks: No risk will be incurred to the respondents during the research

Participant Right: The right of participants to with draw from the questionnaires or not to participate will be respected

Beneficial: The research benefial to for JCA good knowledge how to improve DRP in future

Incentives: Respondents will not be provided any specific incentives for taking part in the research other than acknowledgement.

Confidentialities: The research result will not include respondents name and address

Agreements: Respendents are expected to be fully voluntary to participate in the study

Whom to Contact: if you have any kind of inconviniencies about the research, you can contact the following individual: Beyadgilign Mengesha: Cell Phone: +251917481457 (biyadgilignm@gmail.com)

Appendix II: English Version Questionnaire

First I would like to thank you for your time. My name is **Beyadgilign Mengesha** and I am a graduate student at Jimma University Institute of Health. I am conducting this research for the completion of my **Master's Degree in Environmental Science and Technology**. The purpose of the research is to assess of DRM quality on disaster resilience performance in JCA. This research questions will only use to this research. Your correct answer enables me to present truth and reliable research. Your kind

cooperation will help me to find reliable data and will be used only for this research. Please try to answer all stated questions and I would like to thank you for your time again. Please mark your response with **"√"** If you have any question, please contact me through biyadgilignm@gmail.com

Part I: General Information.

1. Age

☐ Between 18 - 25 ☐ 26 – 35 ☐ 35 – 45 ☐ Between 46 – 60.

2. Gender

☐ Male ☐ Female

3. Education Level

☐ Diploma ☐ 1st Degree ☐ Masters ☐ PhD & Above

4. Position in the Sectors

☐ Manager ☐ Assistance Manager ☐ Team Leader ☐ Representative ☐ Expert

5. **Work Experience** ☐ 0 – 5 years ☐6 – 10 year's ☐ 11 – 20 years ☐ > 20 years

6. JCA has faced a serous disaster in past five years? ☐ Yes ☐ No

Part II: Factors that enable the DRM **quality provided by in Jimma city administration.**

The listed below dimension are enable to conduct the evaluation of DRP in JCA. From those listed factor depending your experience, please express your opinion on rate of importance in DRM quality based on the representative numbers listed below. Please tick the appropriate box

(1 = Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5= Strongly Agree)

Table 17: Questionnnaires for DRM quality English Version

S.N	**DRM Quality Dimensions**	**Agreement scale**				
Governance		**1**	**2**	**3**	**4**	**5**
1.1	In Jimma City Ecolosystem, the city administration has an appropriate policy application and planning framework to reduce disaster and related problems					
1.2	In Jimma City Ecolosystem, the City Administration has put in place regulations and regulatory systems that enable to reduce disaster and related problem					

1.3	In Jimma City Ecolosystem, the city administration has sufficient resources and capacity to address disaster and related problems					
1.4	In Jimma City Ecolosystem, the city administration has conducted the urban development activities are focused on disaster reduction.					
1.5	In Jimma City Ecolosystem, the city administration has the ability to use the existing sectors according to their capacity and structure to solve disaster and related problems.					
1.6	In Jimma City Ecolosystem, The city administration has politically committed to tackling (minimizing) disaster and related problems					
1.7	In Jimma City Ecolosystem, the city administration will help the sectors to develop a transparent and participatory approach to reduce disaster and related problems.					
Risk Assessment		**1**	**2**	**3**	**4**	**5**
2.1	Climate changes, fire hazard, weakness of solid and liquid waste management are the most common disasters for the Jimma city ecosystem.					
2.2	In Jimma City Ecolosystem, the city administration conducts practice to identify disaster factors and their implications.					
2.3	In Jimma City Ecolosystem, the city administration is working hard to take care of vulnerable communities.					
2.4	In Jimma City Ecosystem, the city administration creating Geographical referenced terrain database with the satellite imageries and topographical maps for disaster management and risk reduction and also informs this technology to all sectors.					
Knowledge and Education		**1**	**2**	**3**	**4**	**5**

3.1	In Jimma City Ecolosystem, the city administration has the experience to compile and disseminate information on disasters and related issues to the relevant body.					
3.2	In Jimma City Ecolosystem, the city administration has the experience of providing education and training for the sectors to reach the public regarding disaster and related problems.					
3.3	In Jimma City Ecolosystem, the city administration is creating awareness among the public about the disaster and related issues.					
3.4	In Jimma City Ecolosystem, the city administration uses educational and research processes to reduce disaster and related problems					
Risk Management and Vulnerability Reduction		**1**	**2**	**3**	**4**	**5**
4.1	In Jimma City Ecolosystem, the city administration coordinates environmental and natural resource management regarding disaster and related issues.					
4.2	In Jimma City Ecolosystem, the city administration works to reduce the disaster and related problems and create a sustainable living environment for the community.					
4.3	In Jimma City Ecolosystem, the city administration provides sustainable protection to the community by monitoring disaster and related issues					
4.4	In Jimma City Ecolosystem, the city administration will plans moneys and related issues to reduce the disaster					
4.5	In Jimma City Ecolosystem, the city administration will take structural (such as construction) and technical (such as training) measures to reduce disaster and related problems.					
5. Disaster Preparedness and Response		**1**	**2**	**3**	**4**	**5**

5.1	There is an appropriate administration initiative in coordinating sectors and other stakeholders to address the ecological crisis in Jimma city.					
5.2	In Jimma City Ecolosystem, the lack of disaster preparedness and lack of contingency planning is one of the main reasons for the loss of resources when the disaster strikes.					
5.3	In Jimma City Ecolosystem, affected communities will be rehabilitated immediately					
5.4	In Jimma City Ecolosystem, the city administration allows the sharing of qualified professionals or manpower for disaster prevention among sectors.					

Part III: Disaster Resilience performance

From those listed factor depending your experience, please express your opinion on rate of importance in DRP based on the representative numbers listed below. Please tick the appropriate box (1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5= Strongly Agree)

Table 18: Questionnnaires for disaster resilience performance English Version

S.N	Disaster Resilience Performance	Agreement Scale				
		1	2	3	4	5
1.	I trust the disaster resiliences of Jimma city administration since it has an appropriate administrative movement					
2.	The activities of Jimma city administration on disaster risk assessments are somewhat up-to-date					
3.	When mentioned about city's DRP, I will speak good about the Jimma city DRP to other cities by making example					
4.	The disaster resiliences of JCA proud of its knowledge-based approach to DRR.					
5.	The Jimma city administration's measures on risk management and vulnerability reduction have significantly reduced community threat in appropriate way.					
6.	I satisfied by Jimma city administration with disaster preparedness and response.					

Appendix III: Amharic Version Respondent Information Sheet

ጥናቱን የሚያካሒደው ሰው ሥም: ቢያድግልኝ መንገሻ

ጥናቱ የሚካሔድበት ሥፍራ: ጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ

የጥናቱ ነዋይ ሚሸፈነው: በራስ

የጥናቱ አላማ: የጥናቱ ዓላማ የአደጋ ስጋት አስተዳደር ጥራትን እና የመቋቋም አቅም ደረጃን በጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ ለመለካት ነው።

የጥናቱ ፋይዳ: የጥናቱን ፋይዳ በአጭሩ እንደሚከተለው ማቅረብ ይቻላል

- ጥናቱ ለጅማ ከተማ አስተዳደር ሳይንሳዊ ውሳኔ ለመስጠት ያገለግላል, የአደጋ ስጋት አስተዳደር ጥራት ለማሻሻል የሚያስችሉ ነገሮችን ለማቀድ ያገለግላል
- በዚህ ጥናት ሪፖርት ሚደረገው ውጤት ለጅማ ከተማ አስተዳደር እየሰጠ ካለው የአደጋ ስጋት አስተዳደር ጥራት እጅጉን የተሻለና ሳይናሳዊ የሆነ ግብዓት ይፈጥርለታል

የጥናቱ ቅደም ተከተል: የአደጋ ስጋት አስተዳደር ጥራት መረጃ በተደራጀ መጠይቅ ይሰበሰባል፤ ከዚያ የጅማ ከተማ የመቋቋም አቅም ይወስናል።

አደጋ: በዚህ ጥናት ውስጥ መላሾች በሚመልሱት መልስ ሚመጣ ምንም አይነት አደጋ የለም

የመላሾች መብት: መላሾች በተጠየቁ ሰዓት መልሱን አልመልስም ወይም በዚህ መጠይቅ ምንም አይነት ተሳትፎ አናደርግም ቢሉ መብታቸው ይጠበቅላቸዋል

ተጠቃሚዎች: የዚህ ጥናት ዋና ተጠቃሚ ጅማ ከተማ አስተዳደር ሲሆን ወደፊት እንዴት አደጋን የመቋቋም አቅማቸውን ማሻሻል እንደሚችሉ ይማሩበታለ

ክፍያ: ከምስጋና ያለፈ ምንም አይነት ክፍያ ለመላሾች አልተዘጋጀም

ሚስጥራዊነት: የጥናቱ ውጤት የመላሾችን ስምም ሆነ አድራሻ በምንም ተዓምር አያካትትም

ስምምነት: መላሾች የዚህ ጥናት ሙሉ ተሳታፊ ይሆናሉ ተብሎ ይጠበቃል

ግኑኝነት ለሚፈልግ: በጥናቱ ላይ ያልተመቾት ካለ በዚህ ግል አድራሻዬ ሊያገኙኝ ይችላሉ፡ ቢያድግልኝ መንገሻ፡ ስልክ ቁጥር፡ 0917481457 (biyadgilignm@gmail.com)

Appendix IV: Amharic Version Questionnaires

የጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ የአደጋ ስጋት አስተዳደር ጥራት አደጋን የመቋቋም አቅም ምዘና መጠይቅ። በመጀመሪያ ጊዜዎን ስለሰጡኝ ላመሰግንዎ እወዳለሁ። ስሜ **ቢያድግልኝ መንገሻ** ይባላል። በጅማ ዩኒቨርሲቲ የአካባቢ ጤና አጠባበቅ ሳይንስ ትምህርት ክፍል በአካባቢ ሳይንስና ቴክኖሎጂ ትምህርት የ2ኛ ዲግሪ ተመራቂ ተማሪ ሥሆን ይህንን ጥናት የማካሒደው ትምህርቴን ለማጠናቀቅ እንዲረዳኝ ነው። የጥናቱ

ዓላማ የአደጋ አገልግሎት ጥራትን እና የመቋቋም አቅም ደረጃን በጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ ለመለካት ነው። ትብብርዎ እውነተኛ እና አስተማማኝ መረጃ ለማግኘት የሚረዳኝ ሲሆን ከእርስዎ የሚገኘው መረጃም ለጥናቱ ዓላማ ብቻ የሚውል ይሆናል። እባክዎን ሁሉንም የተጠቀሱትን ጥያቄዎች ለመመለስ ይሞክሩ፤ ጊዜዎን ስለሰጡኝ እንደገና ላመሰግንዎ እወዳለሁ። እባክዎን ምላሽዎን በ "√" ያመላክቱ። የጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ በአደጋ ጊዜ አገልግሎት ጥራት አደጋን የመቋቋም አቅም ምዘና መጠይቅ።

ክፍል አንድ፡

1. **ዕድሜ**

☐ ከ 18 እስከ 25 ☐ ከ26 እስከ 35 ☐ ከ36 እስከ 45 ☐ ከ46 እስከ 60

2. ***ፆታ***

☐ ወንድ ☐ ሴት

3. **የትምህርት ደረጃ**

☐ ዲፕሎም ☐ የመጀመሪያ ዲግሪ ☐ ሁለተኛ ዲግሪ ☐ ሦስተኛ ዲግሪና ከዚያ በላይ

4. **በሚያገለግሉበት ቢሮ ያልዎት ሃላፊነት?**

☐ ዋና ሥራ አስኪያጅ ☐ ምክትል አስኪያጅ ☐ ቡድን መሪ (አስተባባሪ)☐ ተወካይ☐ ባለሞያ

5. **ያልዎት የሥራ ልምድ?**

☐ 0 – 5 አመት ☐ 6 – 10 አመት ☐ ከ11 – 20 አመት ☐ ከ20 አመት በላይ

6. **ባለፉት 5 (አምስት) አመታት ጅማ ከተማ የከፋ አደጋ አጋጥሟት ያውቃል?** ☐ አዎን ☐ አይ

ክፍል ሁለት፡ የአደጋ አገልግሎት ጥራት ገፅታዎች መለኪያ

የሚከተሉት ዓረፍተ ነገሮች የጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ የአደጋ አገልግሎት ጥራት ገፅታዎች የሚያመለክቱ ናቸው። እርስዎ በሴክትር አገልግሎትዎ በነበርዎት ቆይታ መሰረት በዓረፍተ ነገሮቹ ያሎትን የስምምነት መጠን እባክዎን ያመልክቱ። (1 = በጣም አልስማማም 2 = አልስማማም 3 = ውሳኔ አልሰጥም 4 = እስማማለሁ 5 = በጣም እስማማለሁ)

Table 19: Questionnnaires for DRM quality Amharic Version

ተቁ	በጅማ ከተማ አስተዳደር የአደጋ ስጋት አስተዳደር ጥራት	የስምምነት መጠን

	ገፅታዎች መለኪያ					
አስተዳደር		**1**	**2**	**3**	**4**	**5**
1.1	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የሚያስችል አግባብነት ያለው የፖሊሲ ትግበራ እና የዕቅድ ማዕቀፍ አለው					
1.2	በጅማ ከተማ ሥነ ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የሚያስችል ደንቦችና የቁጥጥር ሥርዓቶችን ዘርግቷል					
1.3	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የሚያስችል የሃብት ምንጭና አቅም አለው					
1.4	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ የሚያከናውናቸው የከተማ ልማት እንቅስቃሴዎች አደጋ መቀነስን ያገናዘቡ ናቸው					
1.5	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ በስሩ ያሉትን ሴክተሮች እንደየአቅማቸውና ቅርፃቸው የመጠቀም ሁኔታ አለው					
1.6	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የፖለቲካ ቁርጠኝነት አለው					
1.7	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ ሴክተሮች ለህብረተሰቡ ግልፅና አሳታፊ የሆነ አሰራር እንዲዘረጉ ያግዛቸዋል					
የአደጋ ዳሰሳ		**1**	**2**	**3**	**4**	**5**
2.1	የአየር ንብረት ለውጥ፣ የእሳት አደጋ፣ የደረቅ እና የፈሳሽ ቆሻሻ አወጋገድ ድክመት በጅማ ከተማ ሥነ-ምህዳር ላይ በጣም የተለመዱ አደጋዎች ናቸው።					
2.2	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ ለአደጋ ተጋላጭ የሆነን ጉዳይና የሚያመጣውን ተፅዕኖ ለይቶ የማወቅ ልምምድን ያደርጋል					

2.3	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ ለአደጋ የተጋለጡ ማህበረሰቦችን ቅድመጥንቃቄ እንዲያደርጉ ያደርጋል					
2.4	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ በጂኦግራፊያዊ የተጠቀሰ የመሬት ዳታቤዝ ከሳተላይት ምስሎች እና የመሬት አቀማመጥ ካርታዎች ለአደጋ አያያዝ እና ለአደጋ ቅነሳ ይጠቀማል እንዲሁም እሴን ቴክኖሎጂ ለየሴክተሮችም ያሳውቃል					
እውቀት እና ትምህርት		**1**	**2**	**3**	**4**	**5**
3.1	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን በተመለከተ መረጃን በማጠናቀር ለሚመለከተው አካል የማሰራጨት ልምድ አለው					
3.2	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን በተመለከተ ሴክተሮች ለህብረተሰቡ እንዲደርሱ ለሴክተሮች ትምህርትና ስልጠናን የማዘጋጀት ልምድ አለው					
3.3	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን በተመለከተ ሴክተሮች ለህብለተሰቡ ግንዛቤ እንዲፈጥሩ ያደርጋቸዋል					
3.4	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የሚያስችል ትምህርታዊና ጥናታዊ ሒደቶችን ይጠቀማል					
የአደጋ አስተዳደር እና የተጋላጭነት ቅነሳ		**1**	**2**	**3**	**4**	**5**
4.1	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን በተመለከተ ከአካባቢና የተፈጥሮ ሃብት አያያዝ ጋር በማቀናጀት ያከናውናል					
4.2	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ ለህብለተሰቡ ዘላቂ የሆነ የኑሮ ሁኔታን ለመፍጠር ይሰራል					

4.3	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን በመከታተል ዘላቂ የሆነ ጥበቃ ለህብረተሰቡ ያደርጋል					
4.4	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ የሚያስችል ገንዘብና ተያያዥ ነገሮችን ያቅዳል					
4.5	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ አደጋንና ተያያዥ ችግሮችን ለመቀነስ መዋቅራዊ (እንደ ግንባታ ያለ) እና ቴክኒካዊ (እንደ ስልጠና ያለ) ያሉ እርምጃዎችን ያከናውናል					
5 የአደጋ ዝግጁነት እና ምላሽ		**1**	**2**	**3**	**4**	**5**
5.1	በጅማ ከተማ ሥነ-ምህዳር ላይ የሚደርሰውን አደጋ ለመቋቋም ሴክተሮችንና ሌሎች ባለድርሻ አካላትን በማስተባበር በኩል ተገቢ የሆነ የአስተዳደር ተነሳሽነት አለ።					
5.2	በጅማ ከተማ ሥነ-ምህዳር ዝግጁነት ማጣትና መጠባበቂያ ነገሮችን አለማቀድ በአደጋ ጊዜ ብዙ ሐብት ለማጣት መንስኤ ናቸው					
5.3	በጅማ ከተማ ሥነ-ምህዳር በአደጋ ጉዳት የደረሰባቸው ማህበረሰቦች ወዲያውኑ ከጉዳቱ እንዲያገግሙ ይደረጋሉ					
5.4	በጅማ ከተማ ሥነ-ምህዳር የከተማ አስተዳደሩ ብቃት ያላቸውን ባለሙያዎችን ወይም የሰው ሀይልን ለአደጋ መከላከል በሴክተሮች መካከል መጋራትን ይፈቅዳል					

ክፍል ሶስት፡ የአደጋ የመቋቋም አቅም መለኪያ

የሚከተሉት ዓረፍተ ነገሮች የጅማ ከተማ አስተዳደር ደቡብ ምዕራብ ኢትዮጵያ የአደጋ መቋቋም ገፅታዎች የሚያመለክቱ ናቸው። እርስዎ በሴክትር አገልግሎትዎ በነበርዎት ቆይታ መሰረት በዓረፍት ነገሮቹ ያሎትን የስምምነት መጠን እባክዎን ያመልክቱ። (1= በጣም አልስማማም 2= አልስማማም 3= ውሳኔ አልሰጥም 4= እስማማለሁ 5= በጣም እስማማለሁ)

Table 20: Questionnnaires for disaster resilience performance Amharic Version

ተ.ቁ	አደጋ የመቋቋም አቅም	የሥምምነት መጠን				
		1	2	3	4	5
1.	የጅማ ከተማ አስተዳደር አደጋን በመቋቋም በኩል ተገቢ የሆነ አስተዳደራዊ እንቅስቃሴ ሥላለው እተማመናለው					
2.	የጅማ ከተማ አስተዳደር አደጋን በመቋቋም በኩል የሚያደርገው አደጋ ዳሰሳና እንቅስቃሴ በመጠኑም ቢሆን ከዘመኑ ጋር የዘመነ ነው					
3.	ስለ ከተማ አስተዳደር አደጋን መቋቋም አቅም ሲነሳ የጅማ ከተማ ስነምህዳር አደጋን መቋቋም አቅም ምሳሌ በማድረግ ለሌሎች ከተሞች በአራያነት እናገራለሁ					
4.	የጅማ ከተማ አስተዳደር አደጋን በመቋቋም በኩል ተገቢ የሆነ ዕውቀትና ትምህርት ተኮር አካሔዱ የሚያኮራ ነው					
5.	የጅማ ከተማ አስተዳደር አደጋን በመቋቋም በኩል የአደጋ አስተዳደርና የተጋላጭነት ቅነሳ እንቅስቃሴ የህብረተሰቡን ሥጋት በአግባቡ ቀንሷል					
6.	የጅማ ከተማ አስተዳደር አደጋን በመቋቋም በኩል ያለው የአደጋ ዝግጁነትና ምላሽ ረክቻለው					

አመሰግናለው!!!

Appendix V: Afan Oromo Version Respondent Information Sheet

Unkaa Odeffannoo Deebisootaa

Maqaa Qoo'ataa: Biyaadgiliny Mangashaa

Bakka Qoo'annaa: Buulchiinsaa Magaalaa Jimmaa, Kibba Lixa Itiyoophyaa

Kaffaltii Kan Raawwatuu: Ofiin

Kaayyoon Qoo'annoo: Qulqulinaa Tajaajila Balaa fi Sadarkaa Humna Balaa Dandamannaa Bulchiisa Magaalaa Jimmaa Kibba Lixaa Itiyoophiyaa Adda Baasuuf.

Faayidaan Qoo'annoo: faayidaa qoo'annoon akka armaan gadiiti dhiyeesuun ni dandaa'amaa

- Qoo'annon kun buulchiinsaa magaalaatiif muurtee saayinsii dhaan kan deeggaramee ni keennaa, qulqullinaa tajaajilaa foyyesuudhaaf kan nudandeesisani karooruudhaaf nifayyadaa
- Gabaasnii Qoo'annoo kana irraa argamuu bulchiinsaa magaalaatiif, tajaajilaa kanaan dura kennuu irraa kan foyya'aa ta'ee fi galtee saayinsii dhaan kan deeggaramee nihumaaf

Qoo'annoo Tartiibaa: odeeffannoo Qulqulinaa kenniinsa Tajaajila Balaa haala seera qabeesaan ni funaanamaa. Itti'aanee Humna Balaa Dandamannaa Bulchiisa Magaalaa Jimmaan ni murtaa'a

Midhaa: qoo'annoo kana keessaa deebisoonii midhaan kamiyyuu itti hin gahuu

Mirga Deebisootaa: deebisootnii yeroo gaafatamani gaafii kana hindeebisuu ykn gaafiloota kana irrattii inhirmaadhuu yoo jadhanii mirgii jaraa ni kabajamaa

Itti Fayyadamtoota: ittiin fayyadamaa qoo'annoo bulchiinsaa magaalaa Jimmaa yammuu ta'uu, fuundureetii akkam dandamannaa balaa jaraa fooyyeesanuu irraa argatuu

Kaffaltii: galata irraa kan darbee kaffaltiin deebiisootaf kan mijaa'ee hinjiruu

Hiciituumaa: qabxiin qoo'aannoo kana irraa argamuu maqaa ykn teesoo deebisootaa hin caqasamuu

Walii Galtee: deebiisoonii Qoo'annoo kana irratii gutumaan guutuutii ni hirmaatuu jadhamee Yaadamaa

Nama Waliittii Dhuufudhaaf Barbaaduu: qoo'annoo kana irrattii waan isiniif hintoolee yoo jiraatee tesoo dhuunfaa kootiin na argachuu danda'a: Biyaadgiliny Mangashaa: Bilbila: 0917481457 (biyadgilignm@gmail.com)

Appendix VI: Afan Oromo Version Questionnaire

Bulchiinsa Magaalaa Jimmaa Kibba Lixaa Itiyoophiyaa gaafilee qulqullinaa kenniinsa tajaajilaa bala a humna dandamachuu. Duraan durse, waan yeroo keessan naaf kennitaniif galateefataa, Maqaan ko o **Biyaadgiliny Mangashaa** jadhamaa. Universiitii Jimmaatti baruumsa kutaa saayinsii qulquliinaa f i teeknoolojii egumsa naannoo digrii 2^{ffa} yammuun ta'u. Qoo'annoon koo kan xiyyefatuu **Qulqulina a kenniinsa Tajaajila Balaa** fi **Sadarkaa Humna Balaa Dandamannaa Bulchiisa Magaalaa Jim maa Kibba Lixaa Itiyoophiyaa Adda Baasuuf.** Deeggarsi keessan odeeffannoo dhugaa fi amansiis aa ta'e argachuudhaaf waan nagargaaruuf deebii isin irraa argame kun yaada qoo'annoo kanaaf qofa oluu dha.

Gaafilee dhiyaatan hunda obsaan deebisuudhaan waan nadeeggartaniif irra deebii'ee isin galateefadh a. Deebii keessan mallattoo kanaan "√" naa deebisaa. Bulchiisa Magaalaa Jimmaa Kibba Lixa Itiyoophiyaa Qulqullina Kenniinsa tajaajilaa balaa fi sadarkaa humna balaa dandamannaa

Kutaa Tokkoo: Odeeffannoo Haala Dhuunfaa

1. **Umrii**

   ☐ Waggaa 18 - 25 ☐ Waggaa 26 - 35 ☐ Waggaa 36 - 45 ☐ Waggaa 46 - 60

2. **Saala**

   ☐ Dhiira ☐ Dubara

3. **Sadarkaa Barnootaa**

☐ Diipiloomaa ☐ Digrii Jalqabaa ☐ Digrii Lamaffaa ☐ Digrii Sadaffaa fi Ol

4. **Dhaabbataa kana keesatii Itti gaafatamumaan kessanii?** □ Hojii Gaggeessaa/tuu ☐ Ittiaanaa Ho jii Gaggeesaa/tuu ☐ Dursaa garee ☐ Bakka Bu'aa ☐ Ogeessa/tti

5. **Muuxannoo Hojii**

☐ Waggaa 0 – 5 ☐ Waggaa 6 – 10 ☐ Waggaa 11 – 20 ☐ Waggaa 20 ol

6. **Waggaa shanan darbee keessatti Jimmaan balaa cimaa itti qaqabeeraa?**

☐ Eyyee ☐ Lakki (Miti)

Kuutaa Lammaffaa: Safartuu Keniinsa Tajaajila Balaa Qulqullina isaa Eeggatee

Gaaffilee armaan gadii Bulchiisaa magaalaa Jimmaa kibba lixaa Itiyoophiyaa keniinsa tajaajilaa balaa qulqulinaa isaa eegate kan agarsiisuudha. Isin tajaajila turtii waajjira keessannin hundaa'uu dhaan safartuu dhiyaatan keessaaa sirritii naaf agarsiisaa (1= Baay'een Walii Hin Galu 2= Itti Walii Hin Galu 3= Yaada Hin Qabu 4= Ittin Walii Gala 5= Baay'een Ittin Walii Gala)

Table 21: Questionnnaires for DRM quality Afan Oromo Version

Lak .	**Bulchiinsaa Magaalaa Jimmaatti Safartuu Qulqulinaa Tajaajilaa Balaa**	**Safartuu Waligaltee**				
Bulchiinsaa		**1**	**2**	**3**	**4**	**5**
1.1	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi r akkoon walqabatuu hirisuudhaaf kan dandeesisuu tarkaanfi i maammataa jiruu fi haammataa karoora qabaa					
1.2	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf kan dandeesisuu danbii fi hoordoffi seera dirirsee jiraa					
1.3	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf madda qabeenyaa fi humna qaba					
1.4	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa misooma magaalaa wajjin walqabatee hojii hojjataa jiruu balaa hirissuu kan xiyyeffannoo ittii kenne dha					

1.5	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf seektaraa jala jiran akka humna jaraa haala ittin fayyadamu jiraa					
1.6	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf kutatuuma siyaasa qabaa					
1.7	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf seektarooni ummataaf ifto ominaafi hirmaachisuumaa ta'en akka dirirsanuu ni gargaaraa					
Qoo'annoo Balaa Gochuu		**1**	**2**	**3**	**4**	**5**
2.1	Jijirama qillensaa, balaa ibiddaa hanqina koosii gogaa fi dhangala'aa sirnakoo magaala Jimmaatii kan barameedha					
2.2	Bulchiinsi magaalaa balaadhaaf dhimmaan saaxilamani fi midhaa fiduu danda'u muxannoo adda baasanii beeku qabaa					
2.3	Bulchiinsii magaalaa ummata balaa dhaaf saaxilaman dursee hubanoo kenudhaan dursanii akka ofeggatanii ni godhataa					
2.4	Bulchiinsii magaalaa Jimmaa Ji'oograafidhaan kan degaram ee daataabeezii lafaa fakkii saatalaayiitii fi kaartaa taa'ichaa lafaa dandamanaa balaa fi hiridhisaa balaa dhaaf ni fayyadamaa, dabalataaniis teeknooloojii kana seektarootaaf ni beksiisa					
Beekumsaa fi Barumsaa		**1**	**2**	**3**	**4**	**5**
3.1	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu oddefannoo sasaabachuudhaan qaama ilaallatuuf geesisuudhaan ni bekama					
3.2	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatu seektarooni ummataaf akka gahaan, seektarootaaf muxxannoo kenninsaa baruumsaa fi lenjii qaba					

3.3	Sirnakoo magaalaa Jimmaatti bulchiinsi magaalaa balaa fi rakkoon walqabatuu seektarooni ummataaf akka hubannoo huumanuu ni goodhataa					
3.4	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoo walqabatuu hirisuudhaaf kandandeesisuu haala baruuleefi qoo'annoo ni fayyadama					
4 Bulchiinsaa Ittisa Balaa fi Saaxila Balaa Hirisuu		**1**	**2**	**3**	**4**	**5**
4.1	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf naannoo fi bulchinsa qabeenya uumamaan walqabsiisee raawwata					
4.2	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirisuudhaaf ummataaf jireenya ittifufinsaa qabu uumuuf ni hojataa					
4.3	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatu hordoofudhaan eegumsaa itti fufinsaa ta'e uummataaf ni godhataa					
4.4	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hirdhisuu kan dandeesisuu kan akka maallaqaa fi kkf ni karooraa					
4.5	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa balaa fi rakkoon walqabatuu hordoofudhaan kan akka ijaarsa fi leenjiwwanii akka tarkaanfiti ni fudhataa					
Too'annoo fi Qopha'insa Balaa		**1**	**2**	**3**	**4**	**5**
5.1	Balaa sirnakoo magaalaa Jimmaatti qaqabuu dandamachuuf seektarootaa fi qaama ilaallattuu hunda hirmaachisuu irratii bulchiinsii kaka'umsa sirrii ta'e qabaa					
5.2	Sirnakoo magaalaa Jimmaati qoophaa'insa dhabuu fi balaan akka hinqaqabnee dursanii karoorsuu dhisuun yeroo balaa qabeenya baay'ee mancca'uuf sababa ta'u danda'a					

5.3	Sirnakoo magaalaa Jimmaatti uummanii balaa irra gahee saffisaan akka dandamatuu taasifama					
5.4	Sirnakoo magaalaa Jimmaatti bulchiinsii magaalaa ogeessa gahumsa qabu balaa haambisuudhaaf fudhiinsa seektaroota gidduu ni eeyyamaa					

Kutaa Sadii: Safartuu Humna Dandamannaa Balaa

Gaaffilee armaan gadii Bulchiisa magaalaa Jimmaa kibba lixa Itiyoophiyaa dandamannaa balaa sadarkaa isaa eegate kan agarsiisuudhaa. Isiin kenniinsa tajaajila turtii waajjira keessanniin hundaa'uu dhaan safartuu dhiyaatan keessaa sirritii naaf agarsiisaa (1= Baay'een Walii Hin Galu 2= Itti Walii Hin Galu 3= Yaada Hin Qabu 4= Ittin Walii Gala 5= Baay'een Ittin Walii Gala)

Table 22: Questionnnaires for disaster resilience performance Afan Oromo Version

Lak	**Safartuu Humna Dandamannaa Balaa**	**Safartuu Waligaltee**				
		1	**2**	**3**	**4**	**5**
1.	Bulchiinsa Magaalaa Jimmaa kessatti ittisa balaa dandamannaa irratii waan bulchiinsaa gaarii qabuuf ittin amanaa					
2.	Bulchiinsa Magaalaa Jimmaa balaa dandamannaa irratii qo'annoo balaa fi sosochiin isaa ammana inta'in malee yeroo wajjin demuu dha					
3.	waa'ee humna balaa dandamachuu yeroo ka'uu sirnakoo magaalaa Jimmaa dandamannaa akka fakkeenyaatti magaalaa biraatiif nan kennaa					
4.	Bulchiinsa Magaalaa Jimmaa balaa dandamannaa irratii beekumsaa fi baruumsaa irrattii hundaa'uun isaa kan boonsisuu dha					
5.	Bulchiinsa Magaalaa Jimmaa balaa dandamannaa irratii sosochii Bulchiinsaa Ittisa Balaa fi Saaxila Balaa Hirisuu sodaa ummataa sirritii hirrisee jira					
6.	Bulchiinsa Magaalaa Jimmaa balaa dandamannaa irratii Too'annoo fi Qopha'insa Balaa irratti itti gammadeera					

Galatoomaa!!!

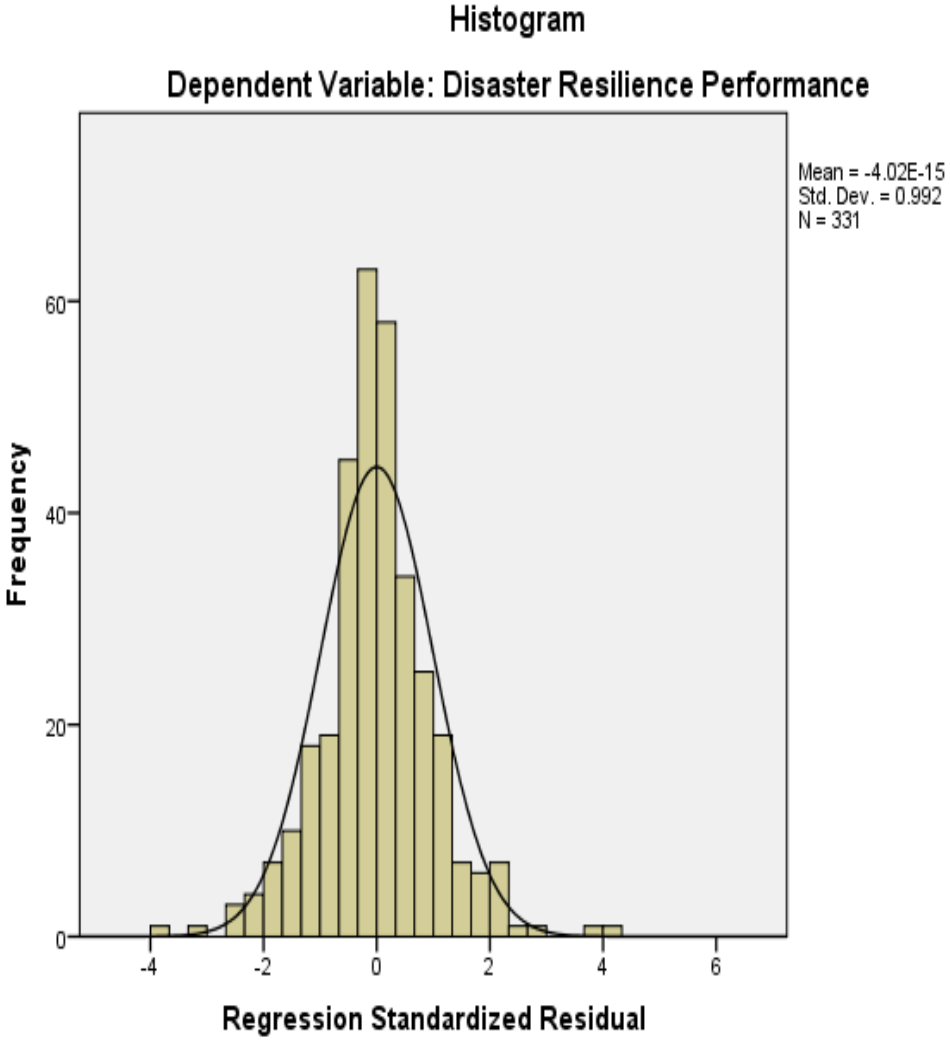

Figure 3: Normality Test Histogram

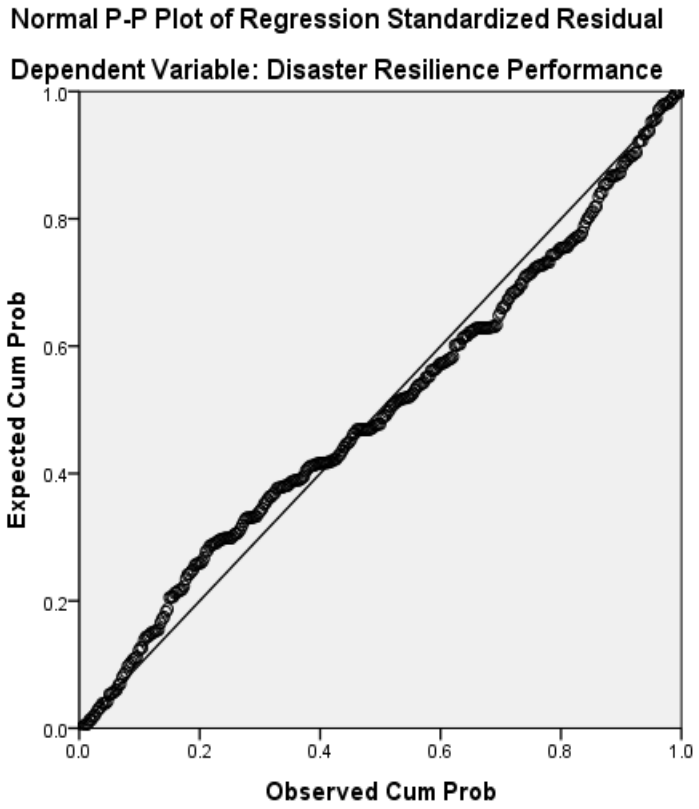

Figure 4: P – P Plot; Linearity Test Result

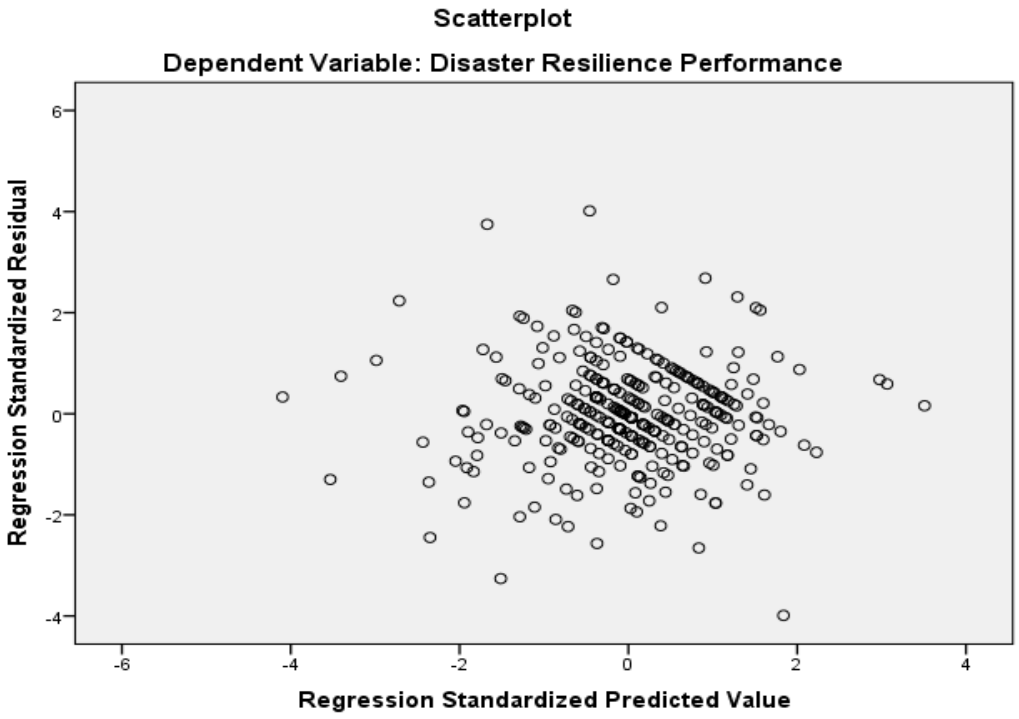

Figure 5: Scatter Plot Heteroscedasticity Test Results