

**DISASTER MANAGEMENT STRATEGIES AND BUSINESS CONTINUITY  
AMONGST PARASTATALS IN KENYA  
CASE OF KENYA POWER AND LIGHTING COMPANY**

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## **DECLARATION**

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

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### **Declaration by the Supervisor**

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

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## **DEDICATION**

I dedicate this project to my beloved wife Beatrice Githinji and son Erick Mwangi for their invaluable support, encouragement and love.

## **ACKNOWLEDGEMENT**

I thank the Almighty God for His guidance and providence which enabled me to undertake this project that was too involving in terms of time and resources. I wish to express my sincere appreciation to my family for their understanding and support during the project.

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## **ABBREVIATIONS AND ACRONYMS**

|                 |   |  |
|-----------------|---|--|
| <b>BC</b>       | - | Business Continuity                              |
| <b>BCM</b>      | - | Business Continuity Management                   |
| <b>BCP</b>      | - | Business Continuity Planning                     |
| <b>DR</b>       | - | Disaster Recovery                                |
| <b>DRP</b>      | - | Disaster Recovery Planning                       |
| <b>GM</b>       | - | General Motors East Africa                       |
| <b>ICT</b>      | - | Information Communication Technology             |
| <b>INTERCEP</b> | - | International Centre for Enterprise Preparedness |
| <b>KPLC</b>     | - | Kenya Power and Lighting Company Ltd             |
| <b>NSE</b>      | - | Nairobi Securities Exchange                      |
| <b>SP</b>       | - | Strategic Planning                               |
| <b>SPSS</b>     | - | Standard Package Statistical Software            |
| <b>WHA</b>      | - | World Health Assembly                            |

## **ABSTRACT**

Major emergencies, disasters and other crises is no respecter of national borders and never occur at convenient times. The magnitude of human suffering caused by these events is huge, and many aspects of people's lives are affected – businesses, health, security, housing, access to food, water and other life commodities, to name but a few. That is why it is vital to have emergency plans in place, so that the effects of disasters on people and their assets can be mitigated, and a coordinated response may be launched as effectively and efficiently as possible when disasters or other crises strike. The general objective of this study was to assess disaster management strategies and building business continuity amongst Parastatals in Kenya. The study specifically focused on Kenya Power And Lighting Company. Specifically, the study sought to analyze the influence of strategies adopted, response measures' efficiency, mitigation measures and disaster recovery mechanisms on business continuity of parastatals in Kenya.. A descriptive research design was adopted for the study. A sample size of 42 respondents from a target population of 412 staff members was selected using purposive sampling technique. Data obtained was organized, coded and analyzed using qualitative and quantitative methods using SPSS (Version 20). Primary data was collected using self-administered questionnaires. The data collected from this study was mainly presented through the use of summarized percentages, proportions and tabulations. Descriptive and inferential statistics were used in the study. The study concluded that there exists a direct relationship between strategies adopted on disaster management and disaster recovery mechanism on business continuity. The results were however inconclusive as to whether response measures' efficiency and mitigation measures influence business continuity. The study recommends that top level management pays more attention to helping raise business continuity management to a strategic level and support the existence of integrated framework for business continuity management.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the study**

According to a report by the Federal Office for Information Security (2009), Government agencies and companies are exposed more and more to risks that endanger productivity or the ability to provide their services to their customers promptly and continuously. Various developments and trends in society and the economy contribute to these risks, for example increasing globalization, terrorism, networking, centralization, automation, outsourcing, or off-shoring. Due to the increasing complexity of business processes and their rising dependency on information technology and external service providers, events such as fires, floods, or the loss of information technology, service providers, suppliers, or personnel can have a significant impact. Furthermore, the risk of pandemics, extreme weather conditions, and terrorism use of the internet is also increasing.

According to Gartner (2001) the aftermath of recent natural disasters, terrorism, and equipment breakdown, businesses have recognized more than ever the need for an organization to be prepared. KPLC is striving to meet the demand for continuous service. With the growth of e-commerce and other factors driving system availability expectations toward 24x365, the average time requirement for recovery from a major system outage now ranges between 2 and 24 hours. This requirement has pushed KPLC and other Parastatals' expectations on all sides. Some of these include customers' expectations that supplies and services will continue or resume rapidly in all situations, shareholders expect management control to remain operational through any crisis, employees expect both their lives and livelihoods to be protected, suppliers expect their revenue streams to continue in at least the short term, regulatory agencies expect their

requirements to be met, regardless of circumstances, and insurance companies expect due care to be exercised. In 2005, World Health Assembly (WHA) passed a resolution calling on the Organization to provide technical guidance and support to countries building their emergency response capacities, stressing a multispectral and comprehensive approach. The following year, another resolution called on Member States to further strengthen and integrate their response programs, especially at the community level, and emphasized interagency cooperation at the international level.

From this end, emergency preparedness has traditionally focused on stockpiling relief goods and providing urgent services to meet the public's basic needs. In most countries political commitment and financial and human resources are concentrated overwhelmingly on these short-term emergency contingencies. While building up capacities for humanitarian response continues to be a priority for all countries, it is now widely believed (perhaps influenced by the severity and frequency of disasters and conflicts in the past decade) that more should be done to reduce the social, economic and human consequences of these emergencies Weinschenk (2011). This translates into a need for placing much greater attention on the implementation of proactive strategies and a call for a more comprehensive approach to building national capacities in emergency preparedness and response as well as in risk reduction. Preparedness is essential in securing the right to life with dignity. States bear the primary responsibility for protecting their populations and ensuring a dignified life but the modern approach to preparedness extends well beyond those traditionally involved in relief efforts, such as civil protection forces, emergency offices and humanitarian organizations. In the same way organizations have a responsibility to ensure safety and security of their stakeholders. This therefore calls for strategies on disaster preparedness, an objective that this paper focuses on achieving. Communities need to work

closely with local authorities, public organizations and the relevant section of the private sector, in order to strengthen their own capacities to prepare for and manage the consequences of various risks.

Business continuity management has changed remarkably over the years and can be traced back to 1975 in France where there was intimidation through the reign of terror by the France government Smith, (1976). To date, terrorists continuously cause havoc and damage to organizations and individuals. There is a history of terrorists across the world ranging from gun attacks, road side bombing, suicide bombing, car bombs, improved explosive device, and even grenade attacks. This Happens every single day across the world and affects governments, corporate bodies and individuals (Follain & Emmanuel, 2015).

The East African region was also affected in July 11, 2010 when militants from al-Shabab terror group bombed Uganda's capital city, Kampala where seventy six people watching football world cup soccer final were killed Bariyo, (2010). This was apparently in retaliation for Uganda's decision to send troops to Somalia to fight the extremist insurgents. The same group upstaged their fight in Kenya on September 21, 2013, where gunmen used grenades and assault rifles to attack and upscale the Westgate Mall in Nairobi, killing 59 people and wounding 175 others Laura, (2013). Many corporate organizations, including Nakumatt supermarket, Barclays bank, Diamond Trust Bank, among others, had businesses within the mall. Most of these organizations had no alternative plans on how to serve their customers and most of the businesses have since been closed Tochia, (2013). In Feb. 2015 al-Shabab staged an attack on Garissa University killing 145 people most of them students and injured hundred others. This has seen the minister for education Dr. Fred Matiang'i ordering for biometric registration of students in all universities. The above scenarios and many others has become the turning point in Business

continuity management in Kenya, with corporate organizations including KPLC becoming more concerned with the continuity of their businesses in worse events of disaster. Although a KPLC have supported measures that mitigate against threats to its core resources and businesses, the whole concept of BCM is not well conceptualized and understood by all stakeholders in the organization.

### **1.1.1 Disaster Management**

According to Hiles (2003) a disaster can be defined as the loss or interruption of a critical service(s) or process for a period of time which threatens the ability of the enterprise to fulfill its mission. It is also an unanticipated incident or event, including natural catastrophes, technological accidents, or human-caused events, causing widespread destruction, loss, or distress to an organization that may result in significant property damage, multiple injuries, or deaths.

From a business standpoint, a disaster is serious disruption, distress, or destructive effect of a fatal event (such as bombing ,drought, flood, fire, hurricane, war stampedes, fires, transport accidents, industrial accidents, oil spills and nuclear explosions/radiation and deliberate attacks) of such scale that disrupts (or threatens to disrupt) critical or core business functions of an organization, society or system, for such a period long enough to significantly harm it or cause its failure. It is the consequences of a disastrous event and the inability of its victims to cope with them that constitute a disaster, not the event itself (Wallace & Webber, 2004).Disasters can be classified into two categories: namely, natural disasters and man-made disasters. Man-made disasters are always far worse than natural disasters. With the advent of science, various scientific experiments especially nuclear tests and human follies like oil spills, fire hazards, gas

leaks along with the much discussed global warming has heavily skewed the balance of the ecosystem Smith, (1976).

Disaster management is the organization, planning and application of measures preparing for, responding to and, initial recovery from disasters. Disaster Management focuses on creating and implementing preparedness and other plans to decrease the impact of disasters and build back better. Failure to create/apply a plan could result in damage to life, assets and lost revenue. However, it may not completely avert or eliminate the threats. According to S. Modh (2010) Disaster management essentially deals with management of resources and information towards a disastrous event and is measured by how efficiently, effectively and seamlessly one coordinates these resources. The ability to effectively deal with disasters has become a challenge to modern technology.

### **1.1.2 Business Continuity Management**

Business continuity is defined as a comprehensive managed effort to prioritize key business processes, identify significant threats to normal operation, and plan mitigation strategies to ensure effective and efficient organizational response to the challenges that emerge during and after a crisis. BC is not something implemented at the time of a disaster; it refers to those activities performed daily to maintain service, consistency, and recoverability. In an enterprise, the foundations of BC are the standards, program development, and supporting policies; it includes guidelines and procedures needed to ensure that it continues without stoppage, irrespective of the adverse circumstances or events. All system design, implementation, support, and maintenance must be based on this foundation in order to have any hope of achieving Business Continuity, Disaster Recovery, or in some cases, system support.



Business Continuity Management (BCM) is the development; implementation and maintenance of policies, strategies and programs to assist an entity manage a business disruption event, as well as build entity resilience. It is the capability that assists in preventing, preparing for, responding to, managing and recovering from the impacts of a business disruption event. 1 Disruption-related risks may be infrequent, but have severe consequences for critical services, and are not able to be resolved by routine management. Disruption-related risks include physical and non-physical events such as natural disasters, pandemics, significant loss of utilities, financial crises, accidents, and incidents that threaten our reputation.

### **1.1.3 Parastatals in Kenya**

According to a 2006 Handbook for Civil Service Staff induction, a Parastatal is a state corporations and agencies mainly established by a statute or an Act of Parliament in pursuance of Government policy. They are connected to the central Government by virtue of their functions and they work in close co-operation with appropriate Government departments. Parastatals are Quasi-Government agencies affiliated to Government operations. They are public enterprises. Their legal status varies from being a part of government into stock companies with a state as a regular stockholder. In Kenya, Parastatals are classified into three categories namely class A, class B and class C Parastatals. The categories are based on the revenue base, size and the ministry the Parastatals falls under. Parastatals are further classified in terms of industries they belong to. The sectors include: Financial sector, commercial/manufacturing sector, regulatory sector, public universities, training and research, service corporations, regional development authorities, and finally tertiary education and training. KPLC is a class A commercial Parastatal mandated with the supply / distribution of electricity in Kenya

In Kenya today, businesses need to take into consideration not just the IT infrastructure but also the work-areas where essential business functions occur. The work-area includes all the needed facilities, such as desks, chairs, telephones, office supplies, and so on. An equally important factor is the human resources factor since for a fact any recovery efforts would fail without having an adequate number of trained personnel on hand to actually perform the critical business functions.

#### **1.1.4 Kenya Power and Lighting Company**

The Kenya Power and Lighting Company Ltd is a key player in the electric power supply sub sector with the mandate to purchase bulk electricity supply, transmit, distribute and retail electricity to end use customers throughout Kenya. Its purpose, responsibilities and core functions as a commercial state corporation in Kenya are stated in its Vision and Mission Statements and are expressed in its relationships with other key players in the power sub-sector and in its contributions to the country's long term public policy and national development objectives. The Company's Mission statement gives the overall goal of KPLC to which all decisions and actions of the company are focused. Thus, it is the overall framework within which the company's strategies are formulated. The mission statement is: Powering people for better lives.

The Company's Vision statement that captures the medium to long term aspirations of the Company is: To provide world class power that delights our customers. The Company's Core Values are the ideals by which the company strives to carry out its operations and conduct its business. They are embodied in the following: Customer First, One Team, Passion, Integrity and Excellence. The following are the major agency functions performed by Kenya Power:

Participating in generation and transmission planning within an inter-organizational sub-sectoral committee to bi-annually produce the Least Cost Power Development Plan and a Medium Term Power Development Plan. Undertaking power generation project procurement for the power sub-sector and negotiating Power Purchase Agreements with power station developers. Coordination of Government owned Rural Electrification Schemes implementation, maintenance of Rural Electrification power lines and substations and billing and collection of revenue from Rural Electrification customers. Managing and operating seventeen off grid Rural Electrification power stations in eight counties not yet served by the national grid. Collaborate with Kenya Electricity transmission Company (KETRACO) in development, planning and implementation of new transmission line and substation projects. Conduct Maintenance of the transmission network, Revenue collection from the retail power market on behalf of the entire power sub-sector including power generators, the regulatory body Energy Regulatory Commission, Rural Electrification Fund and government taxes. Recipient of funding negotiated by the Government with international development partners such as World Bank , European Investment Bank and French Development Agency for power infrastructure development projects.

## **1.2 Statement of the Problem**

For a long time in Kenya, the thought of the possibility of disasters has been remote. However, the increasing incidences of manmade as well as natural disasters have put business continuity and contingency planning on the strategic agenda. Although the impact of disaster and business unexpected events can be fatal, it's only the organizations that have BCM that can survive and can carry on with their operations within hours after an unexpected event. It is reasonable to expect that top management teams in business organizations operating in Kenya increasingly recognize the threats to continuity and update their business strategies to include a well thought

out continuity plan. After the 21st September, 2013 on the Westgate mall, none of the businesses could resume business within hours apart from a few banks that referred clients to their nearest branches. Unfortunately, most of the businesses just closed down since then.

According to Gartner Group (1998) most large companies spend between 2% and 4% of their budget on disaster recovery planning. Most companies that had a major loss of computerized data without a disaster recovery plan: 43% never reopen; 51% close within two years; only 6% will survive long-term; Fires permanently close 44% of the business affected; The 1993 World Trade Center bombing, 150 businesses out of 350 affected failed to survive the event; The firms affected by the Sept. 11 attacks with well-developed and tested BCP manuals were back in business within days.

A research by Nyambura, (2005) on ICT aspects of disaster recovery among companies quoted at the NSE as well as Muoki, (2010) who carried out a research on business continuity planning for a global business operator in less developed economies, a case study of GM East Africa found out that most organizations have known about BCM and disaster preparedness but very few have gone the extra mile and implemented any of these more so in the public sector. The importance of business continuity, business continuity planning has not often been deemed a high priority. Instead, an alarmingly large number of companies have been “assuming” that their existing systems was adequate for emergency situations. This lack of preparedness is unwise for all, and it is definitely not an option for organizations public or private. It is in light of this that disaster recovery and business continuity has become relevant to many organizations thus forming the basis for this research which is aimed at finding out what business continuity strategies have been put in place by KPLC. Although KPLC have supported measures that

mitigate against threats to its core resources and businesses, the whole concept of BCM is not well conceptualized and understood by all stakeholders in the organization.

According to Weinschenk, (2011) some enterprises do not have a clear understanding of the critical areas of business that need to be secured because of their impact on continuity. He asserts that the reason for this gap is the failure by management to involve the business departments and have them identify the critical functions and processes. Another key challenge is placing excess focus on ICT recovery while forgetting other important business continuity areas such as supplies, facilities and human resources.

### **1.3 Research Objectives**

The general objective of this study was to assess the influence of disaster management strategies on business continuity amongst Parastatals in Kenya.

#### **1.3.1 Specific Objectives**

1. To analyze the influence of strategies adopted on business continuity of parastatals in Kenya.
2. To investigate the influence of response measures' efficiency on business continuity of parastatals in Kenya.
3. To assess the influence of mitigation measures on business continuity of parastatals in Kenya.
4. To analyze the influence of disaster recovery mechanisms on business continuity of parastatals in Kenya.

### **1.4 Research Questions**

1. To what extent do disaster preparedness influence business continuity of parastatals in Kenya?

2. How does response measures' efficiency influence business continuity of parastatals in Kenya?
3. To what extent do mitigation measures influence business continuity of parastatals in Kenya?
4. How does disaster recovery mechanism influence business continuity of parastatals in Kenya?

### **1.5 Significance of the Study**

Long term continuity of enterprises is the guarantee required for a stable economy. Thus the greatest value of the study is its contribution to the practice of management in the contemporary business environment. This study sensitizes Parastatals in Kenya to exercise cautious optimism at all times and institute strategies to cater for any major negative eventualities or threats to the long term sustenance of their businesses. The findings of this study can be useful to the following groups; managers; managers' of Parastatals in Kenya was made to understand and appreciate of the need for business continuity and disaster recovery. They'll also be made aware of the various disasters that their Parastatals are exposed to and the measures that can be adopted/ implemented to counter a disaster. To regulators and policy makers, the study provides insights on the strategies that can enhance the Parastatals sectors' growth, and hence guide in regulation and policy formulation. This therefore helps policy makers in government among others with the development and review of existing policies to achieve synergy with the existing circumstance. Researchers: The findings of this study on the other hand may come in handy for scholars. Those wishing to carry out further studies on this topic can use the study findings as the basis for further research.

## **1.6 Scope of the Study**

The study sought to review disaster management strategies and business continuity amongst parastatals in Kenya. The study specifically focused on Kenya Power, a state Parastatal with the responsibility of distributing electricity in Kenya.

## **1.7 Limitations of the study**

The study only focused on one Parastatal, Kenya Power (KPLC) and targeted the branch managers and staff at the head office. This would limit the generalization of the results of the findings. However, due to the strategic role played by Kenya Power in the economy, the findings offer important insights for both scholars and practitioners.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter discusses theories relevant to the study. Literature related to the study was also reviewed with the aim of identifying literature gaps. The literature review also guided the relevance of the study findings.

#### **2.2 Theoretical Review**

This section contains review of theories relevant to the study.

##### **2.2.1 Chaos Theory**

Chaos is the science of surprises, of the nonlinear and the unpredictable. The theory was summarized by Edward Lorenz (1965). It teaches us to expect the unexpected. While most traditional science deals with supposedly predictable phenomena like gravity, electricity, or chemical reactions, Chaos Theory deals with nonlinear things that are effectively impossible to predict or control, like turbulence, weather, the stock market, our brain states, and so on. These phenomena are often described by fractal mathematics, which captures the infinite complexity of nature. Small differences in initial conditions (such as those due to rounding errors in numerical computation) yield widely diverging outcomes for such dynamical systems, rendering long-term prediction impossible in general. This happens even though these systems are deterministic, meaning that their future behavior is fully determined by their initial conditions, with no random elements involved. In other words, the deterministic nature of these systems does not make them predictable. Many natural objects exhibit fractal properties, including landscapes, clouds, trees,



organs, rivers etc, and many of the systems in which we live exhibit complex, chaotic behavior. Recognizing the chaotic, fractal nature of our world can give us new insight, power, and wisdom. For example, by understanding the complex, chaotic dynamics of the atmosphere, a balloon pilot can “steer” a balloon to a desired location. By understanding that our ecosystems, our social systems, and our economic systems are interconnected, we can hope to avoid actions which may end up being detrimental to our long-term well-being. The operations of any are varied and dynamic. Some action and decisions made are situational. Whenever an interruption occurs this is an equal disaster and a strategy or a combination of strategies must have been put in place to help bring normalcy in the shortest time possible. The management must understand when a disaster is most likely to happen in order to know how to curb it.

### **2.2.2 Contingency Theory**

Contingency theory is a systems-management philosophy developed by Fred Edward Fielder (1967) the theory holds that the most effective organizational structural design is where the structure fits the contingencies. It may also be referred to more succinctly as structural contingency theory Pfeiffer, (1982) a challenge is that structural contingency theory is static and fails to deal with organizational change and adaptation Galunic and Eisenhardt, (1994). It is true to say the heart of structural contingency theory is statics, in the sense that it deals with how a static state of fit between structure and contingency causes high performance Woodward, (1965). However, structural contingency theory writings are within a functionalist tradition of social science Merton, (1968) that sees organizations as adapting to their changing environments Parsons, (1961). Therefore, organizations change from one fit to another over time. Structural contingency theory informs the theory of organizational design by providing a comprehensive

framework that relates variations in organizational design to variations in the situation of the organization (i.e. its contingencies). Many different aspects of organizational structure, such as formalization and decentralization are each related to contingencies such as size and diversification.

Myers (1993) asks a fundamental question which comes first, the chicken or the egg? Which comes first in contingency planning? Recovering lost technology or keeping the business running? The business continuity plan should come first. In fact when data processing, plans to recover technology are developed before a business continuity plan, it normally results in an excessive amount of resources committed to redundant computer processing capability. Williams (2002) suggests that being prepared is crucial to protecting your organization in case of a systems disaster. Likewise, lack of planning is the same as planning to fail hence the need to have the business continuity plan before disaster recovery. The technology used in disaster recovery is born out of having a good plan in place hence emphasize is on having the plan before the technology. An organization must be willing to adapt to the changing environment in order to survive.

### **2.3 Empirical Review**

Defining a disaster is fundamental to business continuity planning. According to Hiles (2003) defining a disaster, escalation procedures and service levels is important as it enables incidents to be analyzed based on an established criterion. According to Slater (2010) Disaster Recovery (DR) can be defined as the process by which you resume business after a disruptive event. The event might be something huge like an earthquake or the terrorist attacks during the 1997 bomb

blast in Nairobi or something small, like malfunctioning software caused by a computer virus. Disaster recovery is a subset of business continuity

### **2.3.1 Strategies Adopted and Business Continuity**

According to Janco (2012), the following are the best practices that should be incorporated in implementing business continuity: focus on operations - people and process that drive the enterprise are the primary issues that DRP and BCP are controllable; train everyone on how to execute the DRP and BCP - People are the front line when it comes to supporting the enterprise and any DR and BC Plans; have a clear definition for declaring when a disaster or business interruption occurs that will set the DRP and BCP process into motion; integrate DRP and BCP with change management; focus on addressing issues before they impact the enterprise; validate that all technology is properly installed and configured right from the start; and monitor the processes and people to know what critical processes are being omitted or not being implemented accordingly. This study sought to confirm whether this is true for KPLC.

### **2.3.2 Efficiency of Response Measures and Business Continuity**

According to Graham (2006), an organization needs first to analyze its business and understand the risk for it to design and implement an effective roadmap to business continuity management and then design as well as implement affective and efficient business continuity plans. Snedaker (2007) says directly that failing to plan is planning to fail. Every business should know how they will manage an emergency situation. Planning is best done before an event, not in the middle of it. Time spent planning is never wasted. How quickly a company gets back to business after an emergency often depends on the planning done.

According to Smith (2005), properly designed disaster management scheme should be effective and efficient for coordinating emergency response efforts. BCP focus on the specific content necessary to enable effective response and recovery activities. The BCP should also address the facilities and resources necessary to enable effective business continuity operations Mathenge (2011) ISO 22313 indicates the outcomes indicative of an effective BCM may include, An incident management capability that enables and provides an effective response, Regular exercising ensures that staff are trained to respond effectively to an incident or disruption The organization's reputation is protected Financial controls are maintained throughout an incident. This study was focused on confirming the effectiveness of disaster response mechanisms put in place by KPLC.

PricewaterhouseCoopers (2011) in a guide on business continuity management suggests that testing the chosen disaster recovery and continuity plans is an important act to ensure that they can actually work when the need arises. This is especially true for technical continuity solutions such as redundant systems and infrastructure. Testing the continuity of people or human resources would involve assessing their effectiveness in the roles allocated in the recovery scenario and assessing their effectiveness in those roles PricewaterhouseCoopers (2011)

### **2.3.3 Mitigation Measures and Business Continuity**

Williamson, J (2002) suggests that creating and maintaining a workable business continuity plan (BCP) is an essential factor in ensuring your organization's continued survival and prosperity. Although planning methodologies may vary among organizations, there are standards common to all. Likewise in Kenya, Parastatals need to critically plan as a mitigation strategy towards minimizing downtimes when disasters occur. Typically, the business continuity coordinator or

team facilitates the identification of risk and the development of risk mitigation strategies across business areas. It is important to use both prevention and mitigation techniques in tandem in your business continuity plan to complement each other and increase the overall benefit to the organization. Slater (2010) concludes that prevention and mitigation Planning helps to identify the sequence of steps that need to be taken to help prevent damage and restore business operations.

#### **2.3.4 Disaster Recovery Mechanisms and Business Continuity**

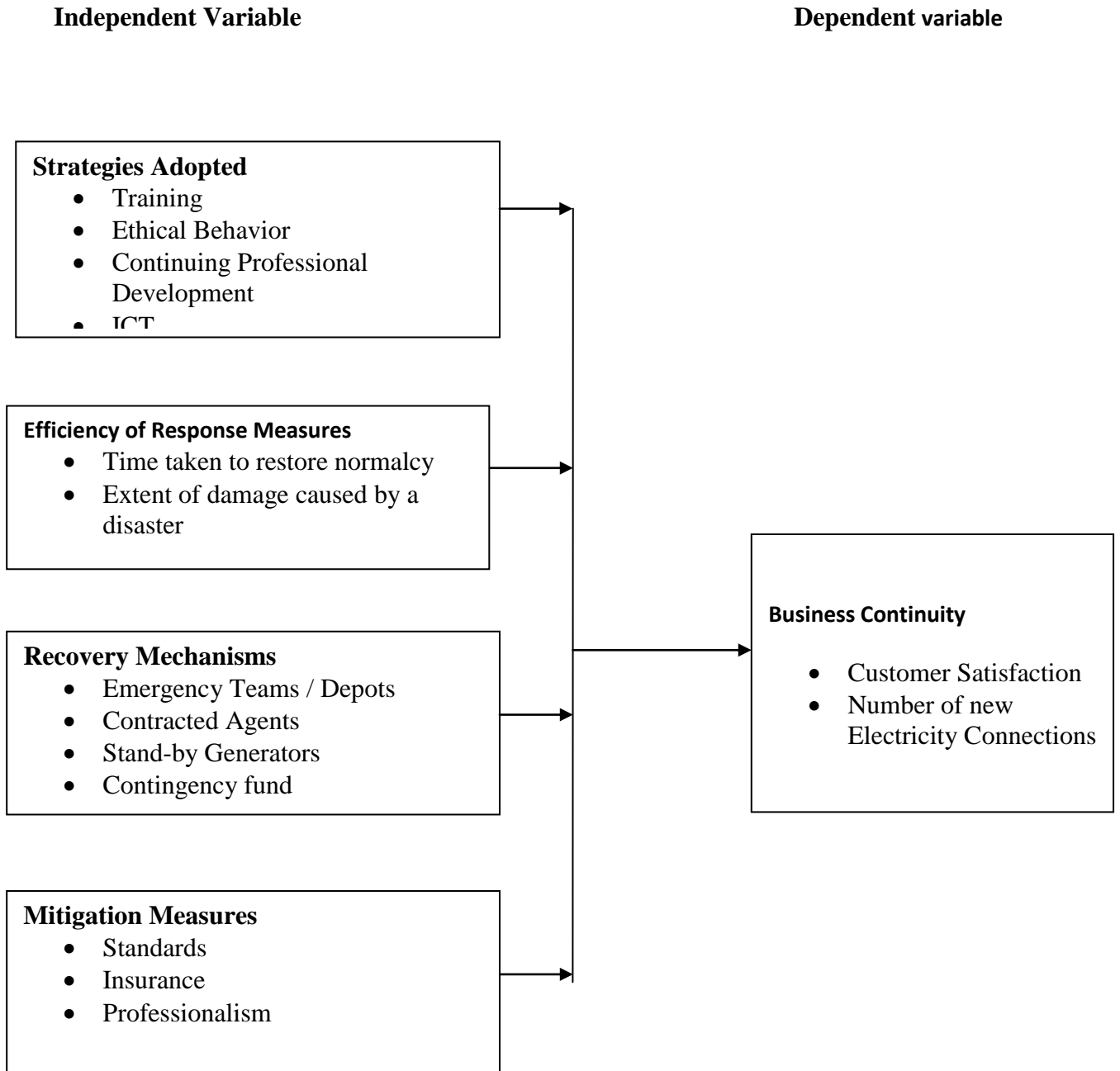
St. Paul Travelers Companies (2006) Disaster recovery deals with restoring buildings, equipment and processes when damaged in a large scale disaster. It mainly covers actions to be taken after the event has occurred. Disaster recovery is a part of business continuity planning. The disaster recovery strategy will involve the careful documentation of current procedures and the development of special procedures to be put into effect after a disaster. It will focus on the most critical functions, as identified in the previous steps. For example, you will need to consider how operations are being performed now (by hand, by machine, or by computer). For each method, you should consider alternative methods to be used during the recovery period St. Paul Travelers Companies (2006).

A research conducted by Nyambura (2005) on ICT aspects of disaster recovery among companies quoted at the NSE as well as Muoki (2010) who carried out a research on business continuity planning for a global business operator in less developed economies, a case study of GM East Africa. They found out that most organizations have known about BCM and disaster preparedness but very few have gone the extra mile and implemented any of these more so in the public sector. This study will establish the situation with regard to KPLC.

## **2.4 Conceptual Framework**

(Mugenda 2008) defines conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. It is a set of broad ideas and principles taken from relevant field of enquiry and used to structure a subsequent presentation. A Conceptual framework is a research tool intended to assist the study to develop awareness and understanding of the situation under scrutiny and to communicate this.

**Figure 2.1 Conceptual Framework**



**Source; Research Data (2016)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter forms the research methodology and discusses the methodological and research approaches that was used in the study. In particular, the chapter looked at the research design, the sample and sampling procedures, data collection instruments, data collection methods and techniques that was used to meet the research objectives.

#### **3.2 Research Design**

The study employed a descriptive research design. A descriptive study is used to describe or define, often by creating a profile of a group of problems, people or events, through the collection of data and tabulation of the frequencies on research variables or their interaction (Cooper and Schindler, 2011). Descriptive research design was chosen because it enables the researcher to generalize the findings to a large population. The descriptive research approach was appropriate due to the fact will allow analysis and relation of variables. According to Denscombe (1998) descriptive statistics involves a process of transforming a mass of raw data into tables, charts, with frequency distribution and percentages which are a vital part of making sense of the data.

#### **3.3 Target Population**

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated and then generalize the results. Parastatals in Kenya are categorized in classes namely Class A, B and C. The study



focused on KPLC Class A as they represent huge government corporations both in-terms of strategic importance, revenue and employees. The population of the study is 412 KPLC employees based at the head office in Nairobi.

**Table 3.1 Population Distribution**

| <b>Category</b>       | <b>Number</b> |
|-----------------------|---------------|
| Divisional Managers   | 21            |
| Departmental Managers | 47            |
| Functional Managers   | 55            |
| Sectional Heads       | 78            |
| Operational Staff     | 211           |
| <b>Total</b>          | <b>412</b>    |

**Source: Research Data (2017)**

### **3.4 Sample Size and Sampling Technique**

A sample is a sub-set of part of the target population; sampling is a process of selecting subjects or cases to be included in the study of the representative of the target population Mugenda and Mugenda (1999). For this study we employed the use of simple random sampling. It involves selecting a group of subjects known as a sample for a study from a larger group of subjects known as the population. Each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample. Every possible sample of a given size has the same chance of selection Department of Statistics, (2013). An important benefit of simple random sampling according to Stat Trek (2013) is that it allows researchers to use statistical methods to analyze sample results. Lund Research Ltd (2012) points out that the

aim of this approach is to reduce the potential for human bias in the selection of cases to be included in the sample and as a result sample provides us with a sample that is highly representative of the population being studied. According to Mugenda & Mugenda (2003), this random sampling allows for generalizability to a larger population with a margin of error that is statistically determinable. It also allows for the use of inferential statistics which allows us to draw a valid conclusion about a population based on the characteristics of a sample.

**Table 3.2 Sample Size**

| <b>Category</b>       | <b>Number</b> | <b>Percentage</b> | <b>Sample</b> |
|-----------------------|---------------|-------------------|---------------|
| Divisional Managers   | 21            | 10%               | 2             |
| Departmental Managers | 47            | 10%               | 5             |
| Functional Managers   | 55            | 10%               | 6             |
| Sectional Heads       | 78            | 10%               | 8             |
| Operational Staff     | 211           | 10%               | 21            |
| <b>Total</b>          | <b>412</b>    |                   | <b>42</b>     |

**Source: Research Data (2017)**

### **3.5 Data Sources and Collection Techniques**

The study collected primary data using a questionnaire with both open and closed ended questions. The close ended questions are considered appropriate since they conserve time and they are easy to fill as well as easy to analyze as they are in an immediate usable form. Open ended questions were used as they encourage the respondent to give in-depth response without feeling held back Mugenda and Mugenda (2003). The questionnaire was chosen as an instrument for the study due to its practicability and applicability to the research problem and the size of the

population. It is also cost effective and will give adequate time to the respondent to fill in and return to the researcher Mugenda and Mugenda, (2003). Secondary data was also collected from published financial reports and other available documents and journals from the KPLC among them books, journals, policy documents, dissertations, magazines and the internet.

### **3.6 Data Validity and Reliability of Research Instruments**

#### **3.6.1 Data Validity**

Mugenda and Mugenda (2003) asserted that the accuracy of the data to be collected largely depended on the data collection instruments in terms of validity and reliability. Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under study. Validity was ensured by having objective questions included in the questionnaire.

#### **3.6.2 Reliability of Research Instruments**

Reliability on the other hand refers to the measure of degree to which the research instruments yield consistent results Mugenda and Mugenda (2003). Data reliability was measured using Cronbach's alpha coefficient with ranges between 0 and 1 (Sekaran, 2003). In this study, reliability was ensured by pre-testing the questionnaire with a selected group of managers from KPLC. The managers who were involved in pilot study were excluded from the main study to avoid possibility of bias.

### **3.7 Data Collection Procedure**

The data collection instruments were left with the respondents to fill in at their won convenience and were collected later at an agreed date and time. An appointment was made the management of KPLC access their library to review secondary data.

### 3.8 Data Analysis and Presentation

Before processing the responses, the completed questionnaires was edited for completeness and consistency. Quantitative data collected was analyzed by the use of descriptive statistics such as mean, standard deviation, frequency and percentage and presented through frequency tables. The information was displayed by use of bar charts, graphs and pie charts and in prose-form. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of SPSS (Version 20) to communicate research findings.

Once the data has been collected, multiple linear regression analysis was used to assess the association between the four independent variables and the single dependent variable. The model below was used.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where

Y = Business Continuity

X<sub>1</sub> = Strategies adopted

X<sub>2</sub> = Response Measure

X<sub>3</sub> = Mitigation Measures

X<sub>4</sub> = Disaster Recovery

β<sub>0</sub>, β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub>, β<sub>4</sub> = Constants

The results were presented and formed the basis for the ensuing recommendations and suggestions.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

The study sought to assess the influence of disaster management strategies on business continuity amongst Parastatals in Kenya. The study focused on Kenya Power and Lighting Company. This chapter contains the findings and discussions of the study. The descriptive as well as the inferential statistics have been presented and interpreted.

#### 4.2. Response Rate

The samples for the study consisted of 42 employees of KPLC who are at different level of management. 38 questionnaires were returned which constitutes 90.5%. The response rate was considered very good. According to Mugenda and Mugenda (2003); 50% response rate is adequate, 60% good and above, while over 70% is rated very good.

**Table 4.1: Response Rate**

| <b>Response rate</b>       | <b>Sample size</b> | <b>Percentage (%)</b> |
|----------------------------|--------------------|-----------------------|
| Returned questionnaires    | 38                 | 90.5                  |
| Un-returned questionnaires | 04                 | 09.5                  |
| Total                      | 42                 | 100                   |

#### 4.3 Results of the pilot study

The importance of pilot study is to assess the reliability and validity of the research instrument (Cooper and Schindler, 2010). The pilot study tested the questionnaire on 4 respondents. This represented 10% of the 42 target respondents in the sample. According to Mugenda and Mugenda (2003), the number in the pre-test should be small, about 1% to 10% of the target population. The candidates of pilot testing were selected randomly among the employees of KPLC.

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trial (Kothari, 2005). To test reliability the Cronbach's alpha  $\alpha$  was used. The results are presented in table 4.2. The results showed that the value of Cronbach's Alpha for all constructs was more than 0.9 indicating that there existed reliability in the instrument. Finchilescu (2002), however, indicated that a reliability coefficient of .70 and above is adequate for research instruments. Mugenda and Mugenda, (2003) assert that a value of 0.80 and above is sufficient.

**Table 4.2: Reliability Test Statistics**

| <b>Constructs</b>   | <b>Cronbach's Alpha</b> | <b>No. of Items</b> |
|---------------------|-------------------------|---------------------|
| Strategies Adopted  | 0.988                   | 6                   |
| Response Measure    | 0.992                   | 6                   |
| Mitigation Measures | 0.989                   | 6                   |
| Disaster Recovery   | 0.995                   | 6                   |
| Business Continuity | 0.996                   | 3                   |

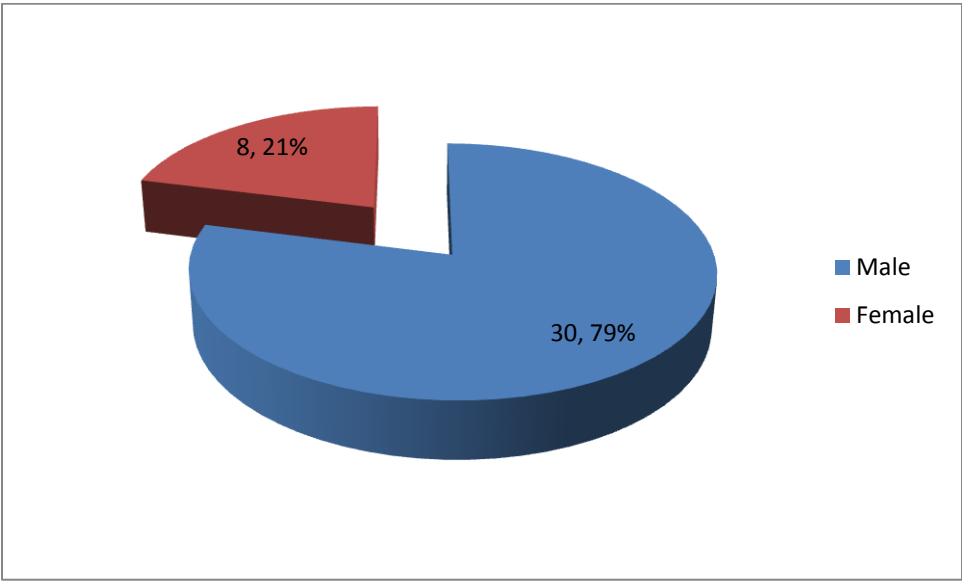
It was also important to evaluate the validity of the research instrument. According to Wiersman (2002), validity is the extent to which the instrument measures what it was designed to measure. Validity refers to the degree with which a measurement procedure or a questionnaire measures the characteristic it is intended to measure (Orotho, 2009). The validity was enhanced by restricting the questions to the conceptualized constructs and sub constructs and of the ensuring that the indicators of a particular variable fall within the same construct.

### **4.3 Demographic Profile of Respondents**

#### **4.3.1 Gender Distribution**

The gender of the respondents was sought. The results showed that majority (79%) of the respondents were male while the rest (21%) of the respondents were female as shown in figure

4.1. This indicates that male employees dominate the managerial level. Since majority of the responses for this study relies on the perceptual measures of the respondents, this gender distribution is expected to accommodate the opinions and views from both sides of the gender divide.



**Figure 4.1 Gender of the respondents**

**4.3.2 Age of the respondents**

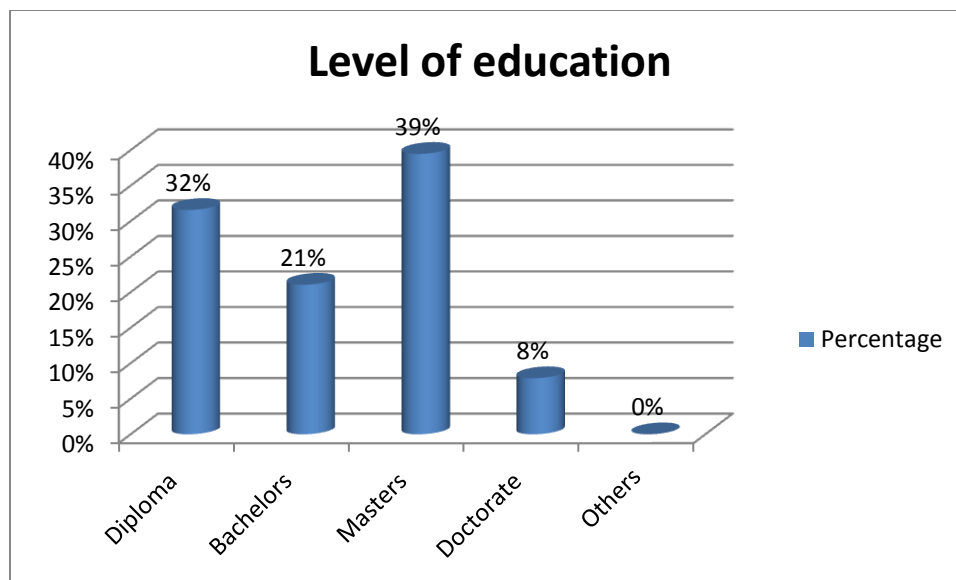
The study sought to reveal the age of the respondents and the results are presented in table 4.3. Majority (39%) of the respondents were aged between 31-40 years, 1n equal number (24%) were aged below 30 years and between 41-50 years. Minorities (13%) were aged over 50 years. This indicates a youthful managerial team in KPLC which may be informed by technological and technical demand of the job.

**Table 4.3: Age of Respondents**

| Age                 | Frequency | Percentage  |
|---------------------|-----------|-------------|
| Below 30 years      | 9         | 24%         |
| Between 31-40 years | 15        | 39%         |
| Between 41-50 years | 9         | 24%         |
| Over 50years        | 5         | 13%         |
| <b>Total</b>        | <b>38</b> | <b>100%</b> |

### 4.3.3 Level of education

The study sought to find out the highest level of education held by the respondents. The results are presented in figure 4.2. Majority of the respondents were holders of masters degree (39%) followed by diploma holders (32%) and bachelors degree (21%). Only 8% of the respondents were holders of doctorates. The results reveal a mix of qualifications which is informed by the nature of work undertaken by KPLC. Most technicians are diploma holders while other level of management attracts different academic qualifications. Generally, the study had well educated respondents who are well informed and thus able to provide more credible information.



**Figure 4.2: Level of education**



### 4.3.3 Working Experience of Respondents

In order to evaluate the extent of working experience, the study sought to find out the number of years each respondent had worked for KPLC. The results are presented in table 4.4. Majority (32%) of the respondents had a working experience of over 15 years, 24% have 10 to 14 years, 21% have between 5 – 9 years another 21% have between 2 – 4 years and a few (1%) have less than one year experience. The results indicate that the respondents adequate working experience with the KPLC and therefore posses the necessary knowledge and information for the purpose of the study.

**Table 4.4 Working Experience of Respondents**

| <b>Experience in years</b> | <b>Frequency</b> | <b>Percentage</b> |
|----------------------------|------------------|-------------------|
| Less than one year         | 1                | 3%                |
| Between 2 – 4 years        | 8                | 21%               |
| Between 5 – 9 years        | 8                | 21%               |
| Between 10 – 14 years      | 9                | 24%               |
| Over 15 years              | 12               | 32%               |
| <b>Total</b>               | <b>38</b>        | <b>100%</b>       |

## 4.4 Descriptive Analysis

### 4.4.1 Disaster Preparedness Strategies Adopted By KPLC

The study used a likert scale to evaluate disaster preparedness strategies adopted by KPLC. The results presented in table 4.5 indicates that majority of the respondents scored strongly agreed and agreed to each of the question posed. It is notable that no respondent strongly disagreed whereas very few respondents disagreed. The average score for the question were 4.16, 4.21, 4.32, 4.32, 4.25 and 4.24 respectively. This implies that the respondents largely agreed with the statement posed. This depicts that KPLC has adopted disaster preparedness strategies such as continuous sensitization to staff, frequent trainings and adoption of disaster preparedness as a

component of Continuing Professional Development on managerial staff. Additionally, KPLC have adopted information technology and ensured adequate and frequent back-ups as well as tracking systems to detect anomalies.

**Table 4.5 Descriptive Statistics on Disaster Preparedness Strategies Adopted By KPLC**

|  | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> | <b>Total</b> | <b>Mean</b> |
|--|-----------|----------|----------|----------|-----------|--------------|-------------|
| KPLC has a Continuous sensitization to staff on disaster preparedness  | 34%       | 53%      | 8%       | 5%       | 0%        | 100%         | 4.16        |
| KPLC conducts frequent trainings on disaster preparedness  | 42%       | 39%      | 16%      | 3%       | 0%        | 100%         | 4.21        |
| KPLC has adopted disaster preparedness as a component of Continuing Professional Development on managerial staff | 47%       | 37%      | 16%      | 0%       | 0%        | 100%         | 4.32        |
| KPLC have adopted information technology and ensured adequate and frequent back-ups                              | 42%       | 47%      | 11%      | 0%       | 0%        | 100%         | 4.32        |
| KPLC has adopted tracking system to detect anomalies in transmission system                                      | 39%       | 45%      | 16%      | 0%       | 0%        | 100%         | 4.25        |
| KPLC requires that all staff behave ethically in dealing with disaster preparedness equipment/items              | 42%       | 45%      | 8%       | 5%       | 0%        | 100%         | 4.24        |

#### **4.4.2 Efficiency of Response Measures Adopted**

The second variable was efficiency of response measures adopted. It is appreciated that response measures may be adopted but be inefficient meaning that they do not achieve that intended purpose. The average score for the questions were 4.24, 3.95, 4.05, 4.34, 4.13 and 4.26 respectively. These could be rounded off to 4 implying that the respondents agreed to the respective statement. This implies that response measures adopted are efficient based on the evaluation by the employees of KPLC.

**Table 4.6: Descriptive Statistics on Efficiency of Response Measures Adopted**

|  | SA  | A   | N   | D   | SD | Total | Mean |
|--|-----|-----|-----|-----|----|-------|------|
| The initial response to a disaster has the first priority being safety, followed by securing assets  | 42% | 42% | 13% | 3%  | 0% | 100%  | 4.24 |
| Strategic management response to a disaster aims to stabilize the situation and communicate with stakeholders to limit further deterioration                                     | 39% | 35% | 8%  | 18% | 0% | 100%  | 3.95 |
| KPLC has mechanisms in place for determining what and how much is at risk by identifying critical business functions and prioritizing them.                                      | 45% | 26% | 21% | 5%  | 3% | 100%  | 4.05 |
| Management has in place recovery priorities for business processes that identify essential personnel, technologies, facilities, communications systems, vital records, and data. | 50% | 34% | 16% | 0%  | 0% | 100%  | 4.34 |
| There's Enterprise-wide participation and interaction of internal and external management response teams with full involvement of external organizations.                        | 37% | 45% | 13% | 5%  | 0% | 100%  | 4.13 |
| There's a team leader to Provide direction to the disaster response Team to ensure an effective and efficient response and recovery.   | 39% | 47% | 13% | 1%  | 0% | 100%  | 4.26 |

#### 4.4.3: Mitigation Measures Put In Place

The study sought to assess the mitigation measures put in place to ensure normalcy is restored in presence of a disaster. Majority of the respondent either strongly agreed or agreed to the statements posed as shown in table 4.7. The results showed that 45% strongly agreed that the standards put in place by KPLC are strictly adhered to by all staff and contractors. 41% also strongly agreed that KPLC has insurance cover covering all possible losses that may arise as a result of a disaster. The same pattern where majority of the respondents either agreed or strongly

agreed was noted in all other questions. The average score were 4.24, 4.21, 4.26, 4.35, 4.13 and 4.32 respectively.

**Table 4.7: Mitigation Measures Put In Place**

|   | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> | <b>Total</b> | <b>Mean</b> |
|---|-----------|----------|----------|----------|-----------|--------------|-------------|
| Standards put in place by KPLC are strictly adhered to by all staff and contractors   | 45%       | 39%      | 13%      | 3%       | 0%        | 100%         | 4.24        |
| KPLC has insurance cover covering all possible losses that may arise as a result of a disaster  | 41%       | 35%      | 16%      | 8%       | 0%        | 100%         | 4.21        |
| KPLC Reduces dependency on single source suppliers, local vendors and other bottlenecks in product flow   | 44%       | 33%      | 21%      | 2%       | 0%        | 100%         | 4.26        |
| KPLC has Installed physical protection systems to mitigate loss, such as automatic sprinklers, hurricane shutters, flood control measures, emergency generators, etc. | 40%       | 52%      | 8%       | 0%       | 0%        | 100%         | 4.35        |
| There are procedures to alert all response staff and other employees to anticipated hazards   | 38%       | 48%      | 13%      | 1%       | 0%        | 100%         | 4.13        |
| There's a Call-up lists that contain the names, addresses, and telephone numbers of the people responsible for emergency operations.                                  | 42%       | 44%      | 14%      | 0%       | 0%        | 100%         | 4.32        |

#### **4.4.4 Disaster Recovery Mechanism**

The discovery mechanism adopted in case of a disaster is essential in determining the business continuity. The study sought to determine the extent to which KPLC adopts the discovery mechanism. Descriptive statistics are presented in table 4.8. The results showed that 42% strongly agreed that KPLC have in place contracted agents who are on standby and are called upon to help in case of an emergency. Similarly showed that 42% strongly agreed that KPLC have established emergency depots at all sub county offices to handle emergencies at sub county

level. The same pattern where majority of the respondents either agreed or strongly agreed was noted in all other questions.

**Table 4.8: Descriptive Statistics on Disaster Recovery Mechanism**

|   | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> | <b>Total</b> | <b>Mean</b> |
|---|-----------|----------|----------|----------|-----------|--------------|-------------|
| KPLC have in place contracted agents who are on standby and are called upon to help in case of an emergency | 42%       | 35%      | 23%      | 0%       | 0%        | 100%         | 4.42        |
| KPLC have established emergency depots at all sub county offices to handle emergencies at sub county level  | 42%       | 35%      | 22%      | 1%       | 0%        | 100%         | 4.29        |
| KPLC have in its annual budget set some funds to cater for unseen emergencies.                              | 45%       | 29%      | 21%      | 5%       | 0%        | 100%         | 4.16        |
| KPLC have a strategic plan which outline measures on how to handle emergencies                              | 45%       | 26%      | 21%      | 8%       | 0%        | 100%         | 4.34        |
| There are Procedures and minimum time for returning to normal operating mode                                | 39%       | 42%      | 18%      | 1%       | 0%        | 100%         | 4.32        |
| KPLC has in place standby generators to support critical installations                                      | 42%       | 40%      | 15%      | 3%       | 0%        | 100%         | 4.29        |

#### **4.5 Correlation analysis**

In order to assess the nature of association among the study variables, the study used Karl Person Correlation coefficient whose results are presented in table 4.7. The results show that there were positive significant correlation between business continuity and two independent variables; strategy adopted and disaster recovery. The correlation coefficient between business continuity and strategy adopted was 0.350 which depicts a weak positive correlation. Correlation between business continuity and two other independent variables; response measures and mitigation measures was non significant at both 5% and 1%.

**Table 4.9: Correlation analysis**

|                        |                 | Business<br>Cont | Strategies<br>Adopted | Response<br>Measure | Mitigation<br>Measures | Disaster<br>Recovery |
|------------------------|-----------------|------------------|-----------------------|---------------------|------------------------|----------------------|
| Business Cont.         | Pearson Corr.   | 1.000            | 0.350*                | 0.020               | 0.036                  | 0.355*               |
|                        | Sig. (2-tailed) |                  | 0.034                 | 0.909               | 0.830                  | 0.031                |
| Strategies<br>Adopted  | Pearson Corr.   |                  | 1.000                 | -0.104              | -0.053                 | -0.009               |
|                        | Sig. (2-tailed) |                  |                       | 0.541               | 0.754                  | 0.957                |
| Response<br>Measure    | Pearson Corr.   |                  |                       | 1.000               | 0.193                  | .529**               |
|                        | Sig. (2-tailed) |                  |                       |                     | 0.253                  | 0.001                |
| Mitigation<br>Measures | Pearson Corr.   |                  |                       |                     | 1.000                  | 0.017                |
|                        | Sig. (2-tailed) |                  |                       |                     |                        | 0.918                |
| Disaster<br>Recovery   | Pearson Corr.   |                  |                       |                     |                        | 1.000                |
|                        | Sig. (2-tailed) |                  |                       |                     |                        |                      |

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

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

#### 4.6 Regression Analysis

To evaluate the extent of the relationship between the study variables, the study adopted linear regression model. The model summary results are presents in table 4.8. The reported value of coefficient of determination was 0.308. This indicates that the model is able to predict 30.8% of the business continuity. Put differently, Strategies Adopted, Response Measure, Mitigation Measures and Disaster Recovery explain 30.8% of business continuity.

**Table 4.10: Regression Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the<br>Estimate |
|-------|-------------------|----------|-------------------|-------------------------------|
| 1     | .555 <sup>a</sup> | .308     | .222              | .38702                        |

a. Predictors: (Constant), Disaster Recovery, Strategies, Mitigation Measures, Response Measures

Analysis of variance (ANOVA) results are presented in table 4.11. The analysis reported an F value of 3.567 with a p value of 0.016. A p value less than 0.05 indicates that the model is statistically significant at 5%. This indicates that the independent variables captured in the model

(strategies adopted, response measures, mitigation measures and disaster recovery) jointly influence business continuity in parastatals in Kenya.

**Table 4.11: ANOVA**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
|       | Regression | 2.137          | 4  | .534        | 3.567 | .016 <sup>b</sup> |
| 1     | Residual   | 4.793          | 32 | .150        |       |                   |
|       | Total      | 6.930          | 36 |             |       |                   |

a. Dependent Variable: Business Continuity

b. Predictors: (Constant), Disaster Recovery, Strategies, Mitigation Measures, Response Measures

The regression coefficients of the model are reported in table 4.12. The first objective of the study was to analyze the influence of strategies adopted on business continuity of parastatals in Kenya. It can be observed the regression coefficient of strategies adopted was positive (0.597) and significant at 5% (p value =0.017). This implies that in increase in strategies adopted by 1 unit would increase business continuity by 0.597 units holding other variables constant. It is therefore concluded that strategies adopted have a direct effect on business continuity of parastatals in Kenya. Initially, Business Continuity Planning was a notion that was carried out by IT departments and was restricted to backing up, protecting, and providing redundancy of data (Glenn, 2006), however, currently, it has become a strategic planning aspect since it has a potential to influence business's very existence.

The second objective of the study was to investigate the influence of response measures' efficiency on business continuity of parastatals in Kenya. The regression coefficient in respect of

this variable was found to be 0.378 with a p value of 0.100 which is more than 0.05. This implies that the relationship between response measures and business continuity is not significant at 5%. The third objective of the study was to assess the influence of mitigation measures on business continuity of parastatals in Kenya. The regression coefficient in respect of this variable was found to be 0.110 with a p value of 0.665 which is more than 0.05. This implies that the relationship between mitigation measures and business continuity is not significant at 5%.

The fourth objective of the study was to analyze the influence of disaster recovery mechanisms on business continuity of parastatals in Kenya. The regression coefficient in respect of this variable was found to be 0.614 with a p value of 0.006 which is more than 0.05. This implies that there exists a positive relationship between recovery mechanism and business continuity in parastatals in Kenya. According to Karim (2011) the disaster management planning should not only involve the conventional disaster response planning, however, it must include disaster preparedness using Strategic management, Business risk management analysis, awareness and Information Life cycle managements for the development of a business continuity plan. Mwaiwa and Odiyo (2015) noted that disasters provided a big boost to business continuity management through giving companies experiences to plan and to be ready for any eventuality.



**Table 4.12: Regression Coefficients**

| Model               | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig.  |
|---------------------|-----------------------------|------------|---------------------------|-------|-------|
|                     | B                           | Std. Error | Beta                      |       |       |
| (Constant)          | 5.264                       | 1.718      |                           | 3.065 | 0.004 |
| Strategies Adopted  | 0.597                       | 0.237      | 0.373                     | 2.518 | 0.017 |
| Response Measures   | 0.378                       | 0.224      | 0.302                     | 1.692 | 0.100 |
| Mitigation Measures | 0.110                       | 0.252      | 0.066                     | 0.437 | 0.665 |
| Disaster Recovery   | 0.614                       | 0.210      | 0.511                     | 2.928 | 0.006 |

a. Dependent Variable: Business Continuity

### The Model

The resultant model derived from the study is as follows;

$$Y = 5.264 + 0.597X_1 + 0.378X_2 + 0.110X_3 + 0.614X_4$$

Where

|                |   |                     |
|----------------|---|---------------------|
| Y              | = | Business Continuity |
| X <sub>1</sub> | = | Strategies adopted  |
| X <sub>2</sub> | = | Response Measure    |
| X <sub>3</sub> | = | Mitigation Measures |
| X <sub>4</sub> | = | Disaster Recovery   |

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1: Introduction**

The study sought to assess the influence of disaster management strategies on business continuity amongst Parastatals in Kenya specifically focusing on KPLC. This chapter presents the summary of major findings of the study, conclusions and the necessary recommendations. The summary is done in line with the objectives and research hypotheses of the study. Policy recommendations based on the conclusions drawn are provided. Finally, areas for further study are given.

#### **5.2 Summary of the Findings**

The first objective of the study was to analyze the influence of strategies adopted on business continuity of parastatals in Kenya. The study found out that that strategies adopted have a direct effect on business continuity of parastatals in Kenya. The study revealed that KPLC has adopted disaster preparedness strategies such as continuous sensitization to staff, frequent trainings and adoption of disaster preparedness as a component of Continuing Professional Development on managerial staff. Additionally, KPLC have adopted information technology and ensured adequate and frequent back-ups as well as tracking systems to detect anomalies.

The second objective of the study was to investigate the influence of response measures' efficiency on business continuity of parastatals in Kenya. The study found out that there exists no significant relationship between response measures and business continuity of parastatals in Kenya. It shows that KPLC has a policy to prioritize safety followed by securing assets.

Additionally, the strategic management response to a disaster aims to stabilize the situation and communicate with stakeholders to limit further deterioration.

The third objective of the study was to assess the influence of mitigation measures on business continuity of parastatals in Kenya. The study found out that there exists no significant relationship between mitigation measures and business continuity of parastatals in Kenya. However, the study found out that standards put in place by KPLC are strictly adhered to by all staff and contractors. Further the study revealed that KPLC has installed physical protection systems to mitigate loss, such as automatic sprinklers, hurricane shutters, flood control measures, emergency generators, etc.

The fourth objective of the study was to analyze the influence of disaster recovery mechanisms on business continuity of parastatals in Kenya. The study found that there exists a positive relationship between recovery mechanism and business continuity in parastatals in Kenya. The study revealed KPLC have in place contracted agents who are on standby and are called upon to help in case of an emergency. Additionally, KPLC have established emergency depots at all sub county offices to handle emergencies at sub county level

### **5.3 Conclusion**

The study sought to assess the influence of disaster management strategies on business continuity amongst Parastatals in Kenya. The first objective of the study was to analyze the influence of strategies adopted on business continuity of parastatals in Kenya. The study concluded that there exists a direct relationship between strategies adopted on disaster management and business continuity.

The second objective of the study was to investigate the influence of response measures' efficiency on business continuity of parastatals in Kenya. The study concludes that there exists no significant relationship between response measures and business continuity of parastatals in Kenya.

The third objective of the study was to assess the influence of mitigation measures on business continuity of parastatals in Kenya. The study concludes that there exists no significant relationship between mitigation measures and business continuity of parastatals in Kenya. The fourth objective of the study was to analyze the influence of disaster recovery mechanisms on business continuity of parastatals in Kenya. The study concluded that there exists a positive relationship between recovery mechanism and business continuity in parastatals in Kenya.

#### **5.4 Recommendation**

The study recommends that top level management pays more attention to helping raise BCM to a strategic level and support the existence of integrated framework for BCM. Parastatals should more specifically focus on risk, disasters, crises, and business interruptions, by placing BCM in the context of strategic planning and by focusing on the strategic and the enterprise-wide sides of BCM in order to build safer and more secure futures. This is because business continuity management practices are dedicated to helping organizations safeguard and optimize the long-term value of the business.

The study also recommends that an information life cycle managements for organizing the stream of an information system's data from creation to the time when it turns into outdated.

## **5.5 Suggestion for Further Research**

The results of the study were inconclusive as to whether response measures' efficiency and mitigation measures influence business continuity in the case of KPLC. Future studies may focus on other parastatals to find out whether similar results would be exhibited. Future studies may also focus on the relationship between business continuity management and financial performance of parastatals in Kenya.

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## APPENDIX

### APPENDIX I: INTRODUCTION LETTER

**Dear Respondent.**

#### **RE: PERMISSION TO CARRY OUT RESEARCH**

I am a Business Administration student at Kenyatta University. As a requirement for the award of my master's degree, I am supposed to carry out a research intended at solving a problem and building on knowledge in my field of specialty. I am therefore carrying out a research on **“disaster management strategies and business continuity amongst parastatals in Kenya. Case of KPLC”** I kindly request you to participate in my study and your responses to the items in the questionnaires was treated with utmost confidentiality, and will not be used for any other purposes except for this study.

Yours Faithfully

Samuel K. Mwangi

## APPENDIX II: QUESTIONNAIRE

This questionnaire is aimed at collecting data regarding disaster management strategies and business continuity amongst parastatals in Kenya. You have been selected to participate in this study. Your responses to the questions below was confidential. Kindly give the most correct response to all the questions as requested.

### SECTION A: GENERAL INFORMATION(Tick where appropriate)

1. Gender

- i. Male  ii) Female

2. Your age bracket

- i. Below 20 yrs  ii. 21 – 30 yrs   
iii 31 – 40 yrs  iv. 41 – 50 yrs   
v Over 50 yrs

3. Kindly indicate you current level of education

- i. secondary  ii. College   
iii Graduate  iv. Postgraduate   
v Others

4. What is your designation at KPLC?

- i. Senior Manager  ii. Middle Level Manager   
iii Low Level Manager  iv Technician

5. How long have you been working in this department?

- i. Less than one year  ii. 2 – 4 years   
iii 5 – 9 years  iv. 10 – 14 years   
v Over 15 years

**SECTION B: DISASTER MANAGEMENT STRATEGIES AND BUSINESS**

**CONTINUITY**

This section covers the implementation aspect of the Disaster Management and Business

Continuity Plan

**DISASTER PREPAREDNESS STRATEGIES ADOPTED BY KPLC**

1. To what extent do you agree with the following statements on strategies adopted by KPLC to ensure continuity of operations after a disaster? Kindly provide the rating where 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5 = strongly disagree.

| <b>Statement</b>   | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> |
|--|-----------|----------|----------|----------|-----------|
| KPLC has a Continuous sensitization to staff on disaster preparedness  |           |          |          |          |           |
| KPLC conducts frequent trainings on disaster preparedness  |           |          |          |          |           |
| KPLC has adopted disaster preparedness as a component of Continuing Professional Development on managerial staff |           |          |          |          |           |
| KPLC have adopted information technology and ensured adequate and frequent back-ups                              |           |          |          |          |           |
| KPLC has adopted tracking system to detect anomalies in transmission system                                      |           |          |          |          |           |
| KPLC requires that all staff behave ethically in dealing with disaster preparedness equipment/items              |           |          |          |          |           |

**EFFICIENCY OF RESPONSE MEASURES ADOPTED**

2. To what extent would you rate efficiency of the following disaster response measures associated with KPLC? Kindly provide the rating where 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5 = strongly disagree.

| <b>Response Measure</b>  | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> |
|--|-----------|----------|----------|----------|-----------|
| The initial response to a disaster has the first priority being safety, followed by securing assets  |           |          |          |          |           |
| Strategic management response to a disaster aims to stabilize the situation and communicate with stakeholders to limit further deterioration                                     |           |          |          |          |           |
| KPLC has mechanisms in place for determining what and how much is at risk by identifying critical business functions and prioritizing them.                                      |           |          |          |          |           |
| Management has in place recovery priorities for business processes that identify essential personnel, technologies, facilities, communications systems, vital records, and data. |           |          |          |          |           |
| There's Enterprise-wide participation and interaction of internal and external management response teams with full involvement of external organizations.                        |           |          |          |          |           |
| There's a team leader to Provide direction to the disaster response Team to ensure an effective and efficient response and recovery.   |           |          |          |          |           |

**MITIGATION MEASURES PUT IN PLACE**

3. Please indicate if your organization has derived any of the benefits listed after implementation of DP and BCP. Kindly provide the rating where 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5 = strongly disagree.

|   | <b>SA</b> | <b>A</b> | <b>N</b> | <b>D</b> | <b>SD</b> |
|---|-----------|----------|----------|----------|-----------|
| Standards put in place by KPLC are strictly adhered to by all staff and contractors   |           |          |          |          |           |
| KPLC has insurance cover covering all possible losses that may arise as a result of a disaster  |           |          |          |          |           |
| KPLC Reduces dependency on single source suppliers, local vendors and other bottlenecks in product flow   |           |          |          |          |           |
| KPLC has Installed physical protection systems to mitigate loss, such as automatic sprinklers, hurricane shutters, flood control measures, emergency generators, etc. |           |          |          |          |           |
| There are procedures to alert all response staff and other employees to anticipated hazards   |           |          |          |          |           |
| There's a Call-up lists that contain the names, addresses, and telephone numbers of the people responsible for emergency operations.                                  |           |          |          |          |           |

## DISASTER RECOVERY MECHANISM

4. To what extent do you agree with the following statements the extent to which KPLC has implemented disaster recovery mechanisms? Kindly provide the rating where 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5 = strongly disagree.

| Statement   | SA | A | N | D | SD |
|---|----|---|---|---|----|
|   |    |   |   |   |    |
| KPLC have in place contracted agents who are on standby and are called upon to help in case of an emergency |    |   |   |   |    |
| KPLC have established emergency depots at all sub county offices to handle emergencies at sub county level  |    |   |   |   |    |
| KPLC have in its annual budget set some funds to cater for unseen emergencies.                              |    |   |   |   |    |
| KPLC have a strategic plan which outline measures on how to handle emergencies                              |    |   |   |   |    |
| There are Procedures and minimum time for returning to normal operating mode                                |    |   |   |   |    |
| KPLC has in place standby generators to support critical installations                                      |    |   |   |   |    |

**Others** .....

- Emergency Teams / Depots
- Contracted Agents
- Stand-by Generators
- Contingency fund

## BUSINESS CONTINUITY

5. To what extent do you agree with the following statements relating to business continuity by KPLC? Kindly provide the rating where 1= strongly agree, 2 = agree, 3 = neutral, 4= disagree, 5 = strongly disagree.

Customer Satisfaction  
No of new electricity connections

| Statement   | SA | A | N | D | SD |
|---|----|---|---|---|----|
|   |    |   |   |   |    |
| KPLC has in the recent past received significant positive responses from customers relating to response to a disaster |    |   |   |   |    |
| There has been an increase in the number of yearly connections of new customers                                       |    |   |   |   |    |
| Immediate recovery in presence of a disaster has positively influenced the financial performance of KPLC              |    |   |   |   |    |
|   |    |   |   |   |    |



## **APPENDIX III: NACOSTI RESERCH PERMIT**