Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.5, No.27, 2014

Business Continuity Planning: An Empirical Study of Factors that Hinder Effective Disaster Preparedness of Businesses

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Abstract
In a disaster, lives can be lost, property and equipment destroyed and business operations come to a standstill. According to the Insurance Information Institute, 40% of small businesses never reopen after a disaster; only 26% of small-to-medium size businesses have a disaster plan, and 75% of the largest segment of business does not have a disaster plan. Disaster preparedness describes measures that minimize the adverse effect of a hazard on life, property and livelihoods. The study revealed that real-world events increase awareness and impel businesses to act; disaster threat on businesses has not translated into a plan; measures taken have mostly focused on data storage and Internet security. Perception of high cost, lack of staff, inadequate information, apathy and low priority accounted for the reasons why businesses fail to plan for a disaster. There exist barriers to effective disaster preparedness which has significant effect on business continuity.
Keywords: Business continuity planning, Disaster, Disaster preparedness, Disaster preparedness plan, Disaster risk reduction**.**

2.0 INTRODUCTION

2.1 General Introduction

Every year, disasters such as flood, fires, electrical outage, severe storm, acts of terrorism strike in one form or the other, often resulting in loss of life and property, disruption of livelihoods, relocation of businesses or temporary closure of operations, and economic and personal hardships. The Insurance Information Institute (2010) indicated that 40 percent of small businesses which are forced to close after a disaster never reopen. Disasters today, are inherent risks of all businesses. Businesses of all sizes therefore, which operate successfully in Africa must incorporate emergency preparedness and planning into their daily activity to ensure continuity. The research studied 120 publicly listed companies across Africa about their preparedness for disaster as a way of improving business continuity planning.

How prepared are businesses for the consequences of a disaster? To what extent are businesses identifying and adopting the essential elements of Disaster preparedness? What factors hinder effective disaster preparedness of businesses? These and many other questions in this document formed the basis of the research.

2.2 Statement of the problem

If effective disaster preparedness enhances the continuity of businesses, then businesses must embrace it.If businesses are not embracing disaster preparedness then there must be factors that hinder their capacity or ability to do so. In a disaster, lives can be lost and property destroyed; equipment can be destroyed; power goes out in and around the surroundings, roads can be rendered unusable; on-premise infrastructure sustain damage; telecommunication providers' equipment, internet connectivity, land-line and mobile-communication networks can be destroyed; stored files and document are damaged.

2.3 Research Questions

To achieve the purpose of the study, the research questions were intended to reveal the level of awareness and apparent barriers to effective disaster preparedness by businesses, hence the formulation of the following research questions:

1. To what extent are businesses prepared and ready for any potential disaster?
2. What factors influence business disaster preparedness?
3. What are the barriers to effective disaster preparedness of businesses?
4. Does disaster preparedness have any impact on business continuity?

2.4 Delimitations

The research studied disaster preparedness for for-profit publicly listed businesses in Africa. It did not study disaster preparedness for Small and Medium scale enterprises, not-for-profit organizations, government and para-governmental institutions. Due to the large number of potential participants in the study population, the sample in the current study focused on 120 publicly listed businesses randomly selected across many sectors of businesses from within Africa.

2.5 Theoretical Framework

According to the Chaos theory, chaos prevents a stable strategy of problem solving (Klaus Mainzer, 1994).This theory has led to an understanding of both the nonlinearity of the world in which we live and of the functional aspects of instability as a means for adapting to new situations. Disaster and emergency situations epitomize the nonlinearity of human events; generate three distinct types of behaviours such as convergence to stability or equilibrium, stable oscillation and chaos, and hence require management practices and strategies that are dynamic and fluid.

Vulnerability is a concept that is directly related to the social construction viewpoint which is prevalent in disaster management discourse. According to the Cannon (1993) disaster arises from a "combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk."

Normative theories provide frameworks to specify actions that needed to be taken in relation to disasters. One of these theories, "comprehensive emergency management" stipulates common managerial functions in mitigation, preparedness, response, and recovery (Lindell and Perry 1992, Drabek 2004). Specific steps in building a community risk reduction program have been formulated with such models as the incident command system (ICS) and the National Incident Management System (NIMS).

Substantive theories were formulated to explain and predict human behavior. Among these theories are Dynes (1970; application of structural-functional theory to interpret community responses to disaster events); Quarantelli (1957, the Behavior of Panic Participants); Barton (1969, interpretation of the rise of the post-disaster altruistic community using collective stress theory). These theories provide perspectives, frameworks, and broad theoretical orientations that have become foundations for disaster management.

Micro theories have specific concepts that have been organized into multivariate theoretical models that appear to have relatively good predictive power for narrow ranges of behavior. One of these theories is behavior when disaster warnings are issued; the social factors that constrain some people to respond in one way, while others behave differently. Typical ones are hurricanes (Cutter, S.L., Boruff, B.J, and Shirley, W.L, 2003).

3.0 LITERATURE REVIEW

3.1 Purpose of the Literature Review

A lot of research has been done on business continuity planning and disaster preparedness with many revelations of increase in awareness about the issues in recent times. However many of the researches and surveys concluded that the awareness of business continuity is not translating into disaster preparedness plans. Typically the Insurance Information Institute (2010) indicated forty percent (40%) of small businesses never reopen after a disaster; Symantec (2012) showed that only 26 percent of medium-size businesses have a disaster preparedness plan, whilst 75 percent of the largest segment of business, do not have an emergency plan.; Business Continuity Management Survey (2006) showed that, less than fifty percent(50%) of UK organizations have business continuity plan in place and Swartz (2003) revealed that only twenty percent (20%) of businesses have a plan which they believe will be effective in the event of an emergency. From this array of studies the review of literature is presented in an effort to determine the need for further study in the area of factors that hinder effective Business Continuity Planning.

3.2 Sources of Material

Internet searches (on www.google.com,www.scholar.google.com,www.bing.com,and databases from EBSCOhost.com,Disaster Journal Recovery,) using combinations of key search terms such as *disaster, business continuity, disaster preparedness, disaster risk reduction, community disaster resilience and disaster recovery* were done. Textbooks and journal reports were also consulted. Disaster management researches have often been organized around four areas: mitigation, preparedness, response, and recovery, hence the focus of the review also on those areas.

3.3 Organization of the Literature Review

The literature review was organized around key concepts such as disaster, business continuity, business continuity planning and disaster preparedness. The review also explored effective disaster risk reduction and the concept of community resilience as a measure to mitigate the effect of disaster on communities in which businesses operate. It also explored recognized standards and accreditations that seek to make business continuity planning and disaster preparedness a profession. The latter part of the review looked at the future of Business continuity planning, and if there are factors that hinder effective business disaster preparedness.

3.4 Description of Key Concepts

3.4.1 Disaster. According to ASIS International (2006), "a disaster is 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".

Wallace & Webber (2004) also defined disaster "as anything that can cause a disruption in the normal operation of a business".

3.4.2 Business Continuity. Business Continuity refers" a comprehensively 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 surface during and after a crisis" (ASIS International,2006). According to Haddow and Bullock (2006), the ultimate goal of business planning for disaster preparedness and recovery is "to ensure the survival of an organization".

3.4.3 Business Continuity Planning. In recent years, Business Continuity Plans (BCP) have become key components of corporate risk management initiatives in order to "allow business operations to continue under adverse conditions, by the introduction of appropriate resilience strategies, recovery objectives, and business continuity and crisis management plans" Bajgoric (2006). Croy and Geis (2005) defined Business Continuity Planning as 'the proactive discipline of identifying vulnerabilities and risks, and planning in advance how to mitigate, accept, or assign them in the event of a business disruption'

3.4.4 Disaster Preparedness. ASIS International (2006), defined "Disaster preparedness are measures that minimize the adverse effects of a hazard through effective precautionary actions, rehabilitation and recovery to ensure the timely, appropriate and effective organization and delivery of relief and assistance following a disaster". According to FEMA (2000),"disaster preparedness is the leadership, training, readiness and exercise support, technical and financial assistance to strengthen citizens, communities, state, local, governments, and professional emergency workers as they prepare for disasters, mitigate the effects of disasters, respond to community needs after a disaster, and launch effective recovery efforts". Disaster Risk Reduction is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid or to limit adverse impact of hazards, within the broad context of sustainable development (UN/ISDR, 2007).

3.4.5 Building Community Resilience. UN/ISDR (2007) defined resilience as "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner". Resilience is a potential of a system to remain in a particular configuration and to maintain its feedbacks and functions, and involves the ability of the system to reorganize following a disturbance driven change. Business continuity planning cannot ignore the external environment of businesses and requires that businesses coordinate their resilience planning with other stakeholders.

3.4.6 Disaster Recovery. The Federal Emergency Management Agency of the United States (FEMA, 2000) defined disaster recovery as "those non-emergency measures following disaster whose purpose is to return all systems, both formal and informal, to as normal a state as possible". Disaster recovery plan provides detailed strategies on the steps that an organization must follow during, and immediately after a disaster. The business continuity plan takes the disaster recovery plan one step further by outlining how the business will continue its operations after the disaster.

3.4.7 Disaster Preparedness and Business Continuity Planning as Professions. The Disaster Recovery Institute International and the Business Continuity Institute (in the U.K.) are defining the boundaries of the business continuity planning profession and the base of knowledge that indicates competence. NFPA 1600 is a widely recognized standard on disaster/emergency management and business continuity programs. Nicholson (2005) indicated that the NFPA 1600 "recognizes ways to exercise plans and makes available a list of resources within the fields of disaster recovery, emergency management, and business continuity planning"

3.4.8 The Future of Business Continuity Planning. Business professionals believe there is need for more collaboration to create the most effect on Business Continuity Planning. Haddow and Bullock (2006) indicated a number of changes in business continuity planning, including: terrorism as a real threat to the survival of business; concern for the physical safety of employees; decentralization of business operations; regional impacts of disaster in the area where a business is located; human relationships on which businesses depend for their survival and protection for critical data backup systems as well as adopting disaster preparedness as strategic business role.

3.4.9 Conclusion. Never before has the Hyogo Framework for Action 2005-2015 which stipulate "to substantially reduce the impact of disasters and to make risk reduction an essential component of development policies and programmes" been more compelling, yet many firms still justify their lack of preparedness to high cost, staff resources, lack of information, and low priority (Office Depot/Business Wire, 2008). Emergency planning and preparedness efforts face apathy and resistance, lack of support, reluctance to allocate limited resources and conflicts among organizations responsible for planning preparedness activities (Lindell and Perry, 2006).With all the advantages of disaster preparedness, why are many businesses not undertaking it?

4.0 RESEARCH DESIGN & METHODOLOGY

4.1 Type of study, Population and Sample

The study is a quantitative research, involving descriptive, correlational and survey methods. Survey using a

structured and standardized questionnaire was used to collect data. The research found relationship between some barrier factors and business continuity planning using statistical correlation. In the research, the population is companies listed on various stock exchanges and operating in Africa. The sampling covered 120 businesses in various sectors. A probabilistic method of stratified random sampling was used in selecting the sample by grouping the companies into ten (10) business sectors and selecting twelve companies from each sector.

4.2 Research Hypotheses

Based on the research questions, the following hypotheses were carried out;
Ho1: There is no impact of disaster preparedness on improving business continuity.Ha1: There is an impact of disaster preparedness on improving business continuity.
Ho2: There is no impact of high cost on improving business continuity.Ha2: There is an impact of high cost on improving business continuity.
Ho3: There is no impact of lack of staff on improving business continuity.Ha3: There is an impact of lack of staff on improving business continuity.
Ho4: There is no impact of lack of information on improving business continuity.Ha4: There is an impact of lack of information on improving business continuity.
Ho5: There is no impact of low priority on improving business continuity.Ha5: There is an impact of low priority on improving business continuity.
Ho6: There is no impact of apathy on improving business continuity.Ha6: There is an impact of apathy on improving business continuity.

4.3 Definition of Variables.

A complete table outlining the conceptual, instrumental, and operational definitions of variables can be found in Table 1 below:

Variable	***Concept***	***Instrument***	***Operationalization***
Business Continuity planning (Dependent)	An iterative process that involve measures to allow business operations to continue under adverse conditions, using appropriate resilience strategies, recovery objectives, business continuity plans and crisis management strategies. Kirschenbaum (2006)	*Open for Business,* developed by the Institute for Business and Home Safety (IBHS) and the Public Entity Risk Institute (PERI) outlines a step by step process designed to help businesses prepare for disaster response, recovery and ensure business continuity.	The processes involved in minimizing the adverse effect of disasters on businesses and allow business operations to continue after a disaster. To be measured on the Likert-type scale.
Disaster preparedness (Independent/ Dependent)	The leadership, training, readiness, exercise, technical and financial support to strengthen citizens, communities, and governments to minimize the adverse effects of a hazard. ASIS International (2006)	ASIS Business Continuity Guideline Checklist for comprehensive disaster management will be used to measure disaster preparedness.	Measures put in place to minimize the adverse effects of disasters. To be measured by how prepared businesses are towards disasters using the Likert-type scale.
Perception of high Cost (Independent)	Belief that BCP involves high costs and implementation expense is too great. Russell, Goltz, & Bourque (1995). Office Depot Survey(2008)	*Emergency Management Guide for Business and Industry* (EMG) provides a step-by-step approach to emergency planning	A high recognition of costs, that affects the intention to participate in disaster preparedness. To be measured on the Likert-type scale.
Lack of Staff (Independent)	Absence of internal staff dedicated to BCP issues or has BCP expertise.Office Depot Survey(2008)	*Emergency Management Guide for Business and Industry* (EMG) provides a step-by-step approach to emergency planning	Lack of resources or expert staff tasked with disaster preparedness Likert-type scale.
Inadequate Information (Independent)	Not having sufficient information on or confused regarding what steps to take about BC or not knowing who should make the decision. Office Depot survey (2008), Perry & Lindell, (2003).	Business Executives for National Security (BENS) help senior business executives to use educational materials and information to plan for disaster response and recovery business continuity.	Information is a catalyst to disaster preparedness, therefore lack of information and awareness affect disaster situations. To be measured on Likert-type scale.
Low Priority (Independent)	Factors or events that are improbable events or have low probability of occurrence. Barton (1969)	*Emergency Management Guide for Business and Industry* (EMG) provides a step-by-step approach to emergency planning.	Activity that is not urgent and is procrastinated until crisis is reached. Measured using the Likert-type scale.
Apathy (Independent)	Lack of awareness, Underestimation of risks, false sense of security from technology, and poor attitude towards disaster preparedness. Drabek (1987)	*Open for Business,* developed by the Institute for Business and Home Safety (IBHS) and the Public Entity Risk Institute (PERI) to help businesses prepare for disaster.	Belief that every disaster is unique that effective planning is not possible, excuse to neglect or discount the need for preparedness using the Likert-type scale.

4.4 Instrumentation

The Primary method used was survey data collection using questionnaires adapted from the following instruments: 1. Open for Business 2. ASIS Business Continuity Guideline Checklist 3. Business Executives for National Security (BENS) and 4. Emergency Management Guide for Business and Industry (EMG).The questionnaire was divided into 3 sections. The first section provided 10 questions that concentrated on the assessment of the responding company about disaster preparedness. The second section focused on 10 questions that relate to business continuity planning. The third section found out the factors that hinder effective disaster preparedness for any potential threats. The respondents were provided with a list of 25 questions; 5 questions on the perceived high cost, 5 questions on lack of staff, 5 questions on inadequate information, 5 questions on low priority and 5 questions on apathy. The questionnaire was administered to 120 respondents by email, and 101 responses received achieving a response rate of 84 percent.

4.5 Data Analysis

Each item of the variable was scored on a five-point Likert-type item with responses 1=strongly disagree, 2=disagree, 3=uncertain, 4=Agree, and 5=strongly agree and overall scores for each dimension calculated translating it to an interval data for parametric testing.

Descriptive Statistics was used to show the mean and standard deviation of the variables. The Pearson correlation coefficient was used to determine the strength and direction of the linear relationship among the seven variables. The result was presented in a matrix showing, the Pearson correlation coefficient, the significance value and the sample size.

Linear Regression analysis was carried out further to study the extent to which the independent variables influence the dependent variables. For any of the above comparisons that revealed a statistical significance of 0.05 or less, the null hypothesis was rejected, and an appropriate description of the relationship provided, whilst comparisons that revealed a statistical significance above 0.05, the null hypothesis was retained.

5.0 FINDINGS AND ANALYTICAL RESULTS

5.1 Descriptive Statistics

The following descriptive statistics were established about the seven variables: Perception of high cost(M=3.776, N=100, SD=0.302), Lack of staff (M=3.597, N=100, SD=0.487), Inadequate Information (M=3.566, N=100, SD=0.400), Low priority (M=3.816, N=100, SD=0.335), Apathy (M=3.189, N=100, SD=0.540), Disaster preparedness (M=3.593, N=100, SD=0.589) and Business continuity planning(M=4.301, N=100, SD=0.488).

5.2 Correlation Test

The Pearson correlation coefficient illustrates the strength and direction of relationship that exist among the seven variables measured on an interval scale. Studies stressed that prior to the regression testing; the correlations between variables (Coakes and Steed, 2007) should be achieved. The correlation test results of this research are illustrated in table 2.

Table2: Correlation Test Results

		BCP	DP	PHC	LS	II	LP	AP
BCP	Pearson cor.	1.000	0.663	0.550	0.490	0.717	0.498	0.153
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.128
	N	100	100	100	100	100	100	100
DP	Pearson cor.	0.663	1.000	0.675	0.622	0.579	0.623	0.162
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.107
	N	100	100	100	100	100	100	100
PHC	Pearson cor.	0.550	0.675	1.000	0.676	0.624	0.609	0.109
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.282
	N	100	100	100	100	100	100	100
LS	Pearson cor.	0.490	0.622	0.676	1.000	0.551	0.619	0.205
	Sig.(2tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.040
	N	100	100	100	100	100	100	100
II	Pearson cor.	0.717	0.579	0.624	0.551	1.000	0.608	0.063
	Sig.(2tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.535
	N	100	100	100	100	100	100	100
LP	Pearson cor.	0.498	0.623	0.609	0.619	0.608	1.000	0.150
	Sig.(2tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.137
	N	100	100	100	100	100	100	100
AP	Pearson cor.	0.153	0.162	0.109	0.205	0.063	0.150	1.000
	Sig.(2tailed)	0.128	0.107	0.282	0.040	0.535	0.137	0.000
	N	100	100	100	100	100	100	100

Notes: BCP=Business Continuity Planning, DP=Disaster Preparedness, PHC=Perception of High Cost, LS=Lack of Staff, Inadequate Informational=Low Priority, AP=Apathy.

The results which show symmetry along the up-down diagonal line are presented in a matrix (table 2) showing, the Pearson correlation coefficient, the significance value and the sample size. The data showed no violation of normality, linearity or homoscedasticity. There was a strong correlation results for Perception of high cost ($r=0.675$, $n=100$, $p < 0.05$), Lack of staff ($r=.0.622$, $n=100$, $p < 0.05$), Inadequate Information ($r=0.579$, $n=100$, $p < 0.05$), and Low priority ($r=0.623$, $n=100$, $p < 0.05$) and weak correlation for Apathy ($r=0.162$, $n=100$, $p > 0.05$) which are all clearly correlated to disaster preparedness. It also showed that disaster preparedness ($r = 0.663$, $n = 100$, $P < .05$) is strongly correlated to business continuity planning.

5.3 Regression Test

For further analysis, Linear Regression was carried out to study the extent to which the independent variables influence the dependent variable. Table 3 summarizes the results of the Linear Regression analysis.

Table 3: Regression Analysis Results

Dependent Variable	Independent Variable	Standard Beta	T value	Alpha(α) Value	Sig(*p*)	Hypothesis Testing
Business Continuity Planning	Disaster Preparedness	0.663	8.771	0.05	0.000	Rejected
Disaster Preparedness	Perception of High Cost	0.675	9.060	0.05	0.000	Rejected
Disaster Preparedness	Lack of Staff	0.622	7.874	0.05	0.000	Rejected
Disaster Preparedness	Inadequate Information	0.579	7.027	0.05	0.000	Rejected
Disaster Preparedness	Low Priority	0.623	7.889	0.05	0.000	Rejected
Disaster Preparedness	Apathy	0.162	1.626	0.05	0.107	Accepted

The results of the regression in the coefficients table (table 3) exposed that Perception of high cost ($t= 9.060$, sig $=0.000$), Lack of Staff ($t=7.874$, sig $= 0.000$), Inadequate Information ($t= 7.027$, sig $=0.000$), and Low priority ($t=7.889$, sig $=.000$) significantly affect business continuity planning and that, overall, the model applied is significantly good enough in predicting the outcome variable. On the other hand Apathy ($t= 1.626$, sig$=0.107$) showed a weak correlation with disaster preparedness, and at the 5% significance level the null hypothesis was retained. The results also showed that Business Disaster preparedness ($t=8.771$, sig $= 0.000$) significantly affect Business Continuity Planning and that, overall, the model applied is significantly good enough in predicting the outcome variable.

Based on the above discussion, it seems that there is a highly significant relationship and effect between (Perception of high cost, Lack of staff, inadequate information, and Low priority) with effective disaster preparedness whilst Apathy has less significant effect on disaster preparedness. It also indicated that, overall, the model applied is significantly good enough in predicting the effects of hindrance factors on effective disaster preparedness which intend affects Business continuity planning.

6.0 CONCLUSION

Effective disaster preparedness of businesses is affected by four key factors of perception of high cost, lack of staff, inadequate information, low priority, whilst surprising, apathy had less effect on effective disaster preparedness contrary to many belief. Further research will be required to analyze the Apathy factor in Disaster preparedness and obtain an appropriate explanation. Addressing these four important factors would provide a good basis for an effectiveness disaster preparedness of businesses. Effective disaster preparedness is strongly correlated with Business continuity planning which is important to be undertaken. From the above discussion, it is evident that businesses need to prepare for disasters or threats whether external or internal, in order to protect employees, property and equipment, data, products and profitability and to guarantee continuity of business processes.

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