

**BUSINESS CONTINUITY MANAGEMENT
FOR AN AGRIBUSINESS COMPANY: A CASE
STUDY FROM WEST AFRICA**

by

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ABSTRACT

The overall objective of this research is to develop a business continuity plan for a relatively large livestock company located in Francophone West Africa. This is very important in an environment when both internal and external risks can lead to significant disruptions in the business processes. The research, thus, focuses on developing a process that can be applied to establish a business continuity management process in this firm and provides the framework for implementing such a plan successfully.

The livestock company, let us call it Livestock Co. to protect its identity, wants to define strategies for recovery, resumption of business and other key activities under the potential scenarios. Its managers desire to formulate crisis response strategies that would be implemented quickly when these disasters hit. The thesis envisages the potential conditions that may trigger these crises and develops the management systems to mitigate them, returning the business to its activities as quickly as possible. Some of the natural disasters that may be considered are fire, accidents and political upheavals. Some technical disasters that may be imagined may be related to infrastructure, labor crisis, and grain dust explosions. Unlike natural disasters, which often are uncertain, technical disasters can be *predicted* based on careful assessment of the environment or the assets. The research evaluates the process for developing a business continuity management plan and offers an implementation process to ensure its smooth execution.

TABLE OF CONTENTS

List of Figures.....	iv
List of Tables	v
Acknowledgments.....	vi
Chapter I: Introduction	1
1.1 Introduction	1
1.2 Presentation of Livestock Co.	2
1.3 Research Objective.....	3
Chapter II: Business Continuity Management.....	5
2.1 BCM Literature Review	5
2.1.1 Management Information Systems.....	7
2.1.2 Business Continuity Management Definition and Standards	9
2.1.3 Crisis Management and Risk Management.....	13
2.2 BCM Theory.....	15
2.3 Factors Influencing BCM.....	16
Chapter III: Case Study.....	21
3.1 Livestock Co. Business Process Description.....	21
3.2 Process for BCM at Livestock Co.	22
3.2.1 Rethinking Business Continuity Management for Livestock Co.	28
3.3 Recommendations	30
3.3.1. ISO 22301 Certification.....	30
3.3.2 Taining and Exercise.....	31
3.4 Conclusion.....	33
Works Cited.....	35

LIST OF FIGURES

Figure 2.1: Representation of Business Process.....	8
Figure 2.2: Business Continuity Management’s Lifecycle’s Representation.....	11
Figure 2.3: Business Continuity Management’s Relationship Representation	12
Figure 2.4: Business Continuity Conceptualization Framework (Adapted from Sapriel, 2007)	14
Figure 2.5: Factors Influencing BCM Operations.....	17

LIST OF TABLES

Table 3.1: Management Perceptions about Triggering Event at Livestock Co.....25

**Table 3.2: Management Perceptions about Livestock Co.’s Infrastructure and
Capacity to Endure Disruption.....25**

**Table 3.3: Management Perceptions about Livestock Co.’s Business and Capacity to
Endure Disruption.....26**

Table 3.4: Alternative Scenario Considerations for BCM Decision-Making Process .30

Table 3.5: Responsibilities and Accountability for Plan Currency33

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CHAPTER I: INTRODUCTION

1.1 Introduction

The unexpected can happen to any organization, at any time. While a company cannot control the unexpected, it is possible to control how to respond. A large silo at the Livestock Co., a livestock company located in Ivory Coast, bursted on April 3, 2010. The silo -- Compartment 52 (C52) – had been refurbished few days before the incident. It resulted in the spill of 850 tons of feed grains. Fortunately, there was no loss of life or physical injuries and only one of the silos 53 compartments was destroyed. According to experts who investigated the incident, the breaking of C52 was due to a combination of three factors:

- Resurfacing of the inner walls of the cell have been redone a few days before the accident, with a smooth/non-rough wall, which modifies the efforts required to concrete walls;
- An eccentric cell emptying: the accident occurred while the drain of the cell had begun the employee responsible for starting this drain had opened one of four doors;
- The age of the silo – approximately 50 years – contributed to the weakness of the structure to withstand the pressure of its contents

In general, grains stored in silos often emit flammable dust causing three main types of hazards: the phenomenon of self-heating, fire and explosion. Although these types of accidents are known in the industry, Livestock Co. had no processes in place to deal with the incident when it happened. As result, spilled feed grains was loaded unto trucks the morning after the incident. However, Livestock Co. did not have any other storage facility within the vicinity of its current silos, causing management to reload the spilled feed grains into other compartments in silos on site. The potential risks of this solution were apparents but there was little choice

given the situation Livestock Co. found itself in. The extra amount of spilled feed grains was stored at competitor's facilities, creating costs for Livestock Co. beyond mere accounting costs.

The size of the spill was not large enough to disrupt Livestock Co.'s milling activities in any major way. Yet, it could have been worse; it could have been more than one compartment and a lot more than 850 tons. What if the situation had been more critical than what prevailed that morning of April 3, 2010? How could Livestock Co. have responded to meeting customer needs on time and without any loss of flow? There was no business continuity plan in place that would help the company deal with business disruption that often accompanies major accidents in manufacturing facilities.

1.2 Presentation of Livestock Co.

Livestock Co. is part of one of the three largest African entities of an International Group. With a turnover of over 50 billion CFA francs and nearly 250 employees, Livestock Co. plays a leading role in the Ivorian economy.

Livestock Co. has been created in 1963, shortly after the independence of Côte d'Ivoire, and constitute the first animal feed company of the city of Abidjan. Originally, Livestock Co. had a production capacity of 30,000 tons of feed per year. To meet the growing needs of the market, it increased its total daily capacity to about 1,200 tons of feed from its factory located in Abidjan. The annual feeding production is between currently 150,000 and 200,000 tons. Livestock Co. has made many investments over the years to meet the Ivorian market needs and to modernize the factory with the latest technologies. For many years, Livestock Co. has successfully maintained the exploitation of feed grains processing and all the benefits it generates in Côte d'Ivoire.

Feed grains are the principal raw material used by Livestock Co. in the manufacture of its animal feed, importing it from Europe, United States and Canada.

The company's principal grain supplier, ensures the purchase of grain according to Livestock Co.'s specifications. grains are transported by bulk vessels and unloaded at the Port of Abidjan and then transferred to the company's silos for storage. Livestock Co. stocks grain in 53 silos with a capacity of 850 tons each.

Livestock Co. has two mills, each with a daily milling capacity of 600 tons. The company has organized to produce the same quality of animal feed from both mills. The milling process produces animal feed. The feed is sold to the West Africa feedmills for use in animal feed manufacturing while the pelleted feed is sold for oversea feedmills companies.

Rigorous quality control is applied continuously through the production line and the sales department ensures the right distribution of the company products, applies trade policy "proximity" of the overall market, and ensures continuous recovery of all business information. The General Manager refers regularly to different directions through the managers and heads of department in the decision-making process for the company's success.

1.3 Research Objective

The purpose of a business continuity plan is the minimization of the adverse effects of any disruption to an organization's activities and to ensure a rapid return to normalcy of operations. A business continuity management plan helps the local management to know exactly what is needed to be done to safeguard employees, secure buildings, and protect customer information in the event of a catastrophic incident. Customers should be reassured and their confidence in the company's ability to meet their needs protected.

There are certain resources of the organization that are critical to its ability to maintain resiliency in the face of an adverse event or to recover quickly from such adverse events. The question that this research started with is defined as following:

How can Livestock Co. be prepared to continue operations in an adverse event that affects the company?

The event can be internal or external to the company. The overall objective of this thesis is to identify and document Livestock Co.'s business continuity planning process by specific identification of the organization's infrastructure that have the most effect on its resiliency. The research will provide a framework for developing business continuity plans for agribusiness firms to enhance their ability to recover from accidents that have serious effects on their ability to continue their operations.

This research is a case study of business continuity management and planning. We employed direct interviews with Livestock Co.'s management as well as review of their documentations on disaster management and recovery plans. We also conducted literature review of BCM subject area to develop a framework for a broader application of the results from the Livestock Co. case information. The literature review covers the challenges of business disruption and the need for continuity management and planning as well as disaster recovery. The results of the interviews are employed in this thesis section to develop an appreciation of Livestock Co.'s preparedness for business disruption and the protocols that are in place or not.

CHAPTER II: BUSINESS CONTINUITY MANAGEMENT

Probably because of the cost associated with failure risks, large companies were the first to realize the importance of managing risks and implementing business continuity management. Despite the overwhelming evidence of its importance, many companies do not have well-defined business continuity management protocols in place to minimize the costs and risks that may be engendered by adverse events internally or externally to the company. More generally, many companies do not look at the specific sources of potential risks, e.g., information systems, processing lines, storage facilities, employee accidents, etc. This poor appreciation of this important business activity has contributed to significant challenges for many food and agribusiness companies in understanding, first how to go about developing and implementing business continuity management, and second, organizing to minimize the risks of interruption events occurring in the first place.

This section focuses on providing a review of the literature on business continuity management to provide a context of the problem and the solutions. It then provides a theoretical framework for conducting the research. In this sense, the section provides the context for looking at Livestock Co.'s activities and how lessons from its business continuity management protocols may be used across the food and agribusiness sector in Africa.

2.1 BCM Literature Review

The food and agribusiness sector is fraught with risks. These risks emanate from the very nature of the sector's activities. For example, production agriculture is confronted with diseases and pests that can create significant sanitary and phytosanitary events that can disrupt trade and customer confidence. The event of BSE in the United States in December 2003 is one example of how a single sanitary event led to a significant redesign of a whole country's

beef industry because its major customers lost confidence or became scared of potential health risks. Also, processing segment of the food and agribusiness sector suffer from natural or man-made catastrophies which can adversely affect supply and ability to meet customer needs. The discovery of food safety hazard – such as microbial contamination – has also been seen to affect retailers and resturants in the chain.

Despite these obvious risks in the sector, there is a very low awareness of strategies to minimize risks associated with these events. For example the BSE event seemed to have caught the US beef industry by surprise and the reaction from Japan and South Korea were unanticipated despite known events and responses that have occurred in the UK half a decade earlier. Similarly, despite the frequent events of microbial contamination of fresh vegetable produce and processed meat products, firms are often caught flat-footed in how they deal with these events and how they respond. It is possible that these challenges are embedded in the nature of the agribusiness system.

According to John H. Davis and Ray Goldberg (Goldberg 1974) “Agribusiness is an economic concept which takes into account all the operations involved in the manufacture and distribution of agricultural products.” Regarding this definition of agribusiness, there are several operations related to production, storage, distribution and processing of agricultural raw materials and finished products. The agribusiness sector is one of the leading generators of jobs and income in the world (Gabor Konig 2013) , especially in developing countries that depend on agriculture as their main source of livelihood.

The majority of agricultural raw materials is perishable. Therefore, they become extremely susceptible to infestation by macrobes and microbes. Therefore, rigorous and regular checks to food safety, product quality and environmental protection are necessary to

ensure consumer confidence and minimize business risks. As a relatively low margin business, because of the demand elasticity inherent for most agricultural commodities, it is important that organizations in the sector focus on reducing their operations costs wherever and whenever possible (Bryceson 2006).

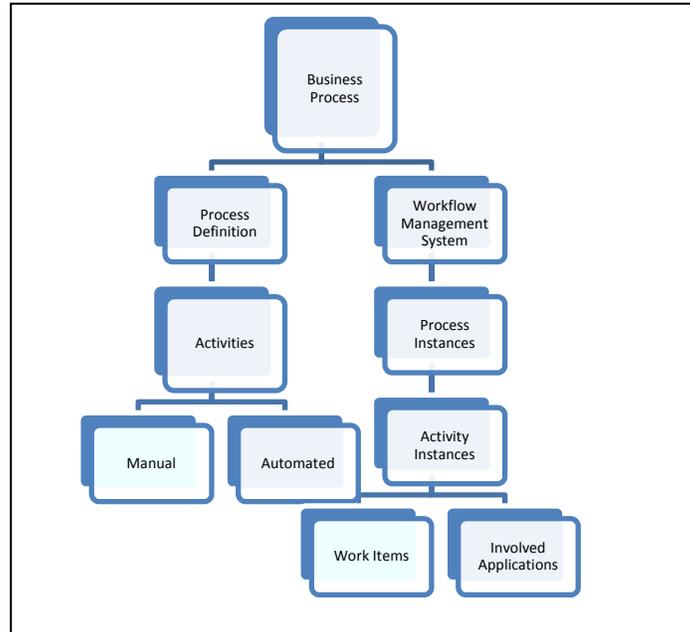
The Agri Industry Sector is large and includes:

- Input supplier and service providers
- Producers and traders
- Processors and manufacturers
- Retailers and logistics
- Supports companies

2.1.1 Management Information Systems

Processes, people and technology represent three basic building blocks for any successful business. Managers must ensure compatibility of needs and requirements across all three to create an effective business model. Moving an agribusiness company toward technology is not different from any other business process. In today's global marketplace, the internet and associated electronic business practices are becoming increasingly available in business practices. Figure 2.1 represents Business Process Diagram, showing the manual and automation characteristics of workflow management system. Manual systems involve human intervention while "automated" systems do not involve human intervention.

Figure 2.1: Representation of Business Process



(Bryceson 2006) p. 14

An essential resource for management activities is information, and Management Information Systems (MIS) provide the input to support management activities. Davis and Olson (1985) define Management Information Systems (MIS) as “an integrated user-machine system for providing information to support operations, management and decision making functions in an organization” (Olson 1985) Designed to facilitate the acquisition and use of information resources, MIS is an interrelated set of tools, processes and procedures designed to facilitate the acquisition and use of information resources. An electronically enabled agribusiness company can reach new markets, lower transaction costs, reduce delivery times and improve customer service. Furthermore, managers of agribusiness firms face management information system related problems. In addition, problems differ across agribusiness firms by size and type and MIS provides tools to

support management activities. Various types of MIS exist. However, Mason and Swanson (1981) describes four categories:

- Databank information system,
- Predictive information system,
- Decision-making information system
- Decision-taking information system

Information systems give a fundamental level of support in the process of decision making. Managers make their decisions based on MIS and use the information at various levels such as the number of personnel employed by category, their training requirements, career development plans, job descriptions, budgets, forecasts, benchmark surveys, reports on socioeconomic conditions of people served, and facilities. (A. Ramesh Babu 1997)

2.1.2 Business Continuity Management Definition and Standards

Business Continuity is the business specific plans and actions that enable an organization to respond to crisis event in a manner such that business functions, sub-functions and processes are recovered and resumed according to a predetermined plan, prioritized by their criticality to the economic viability of the business. According to the British Standards Institution Code of practice for business continuity management, business continuity is “an holistic management process that identifies potential threats to an organization and the impacts to business operations that those threats if realized might cause, and which provides a framework for building organizational resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities” (Woodman, 2010). The British Standards Institution (BSI) describes a standard as an agreed, repeatable way of doing something. It is a published document that contains a

technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition.

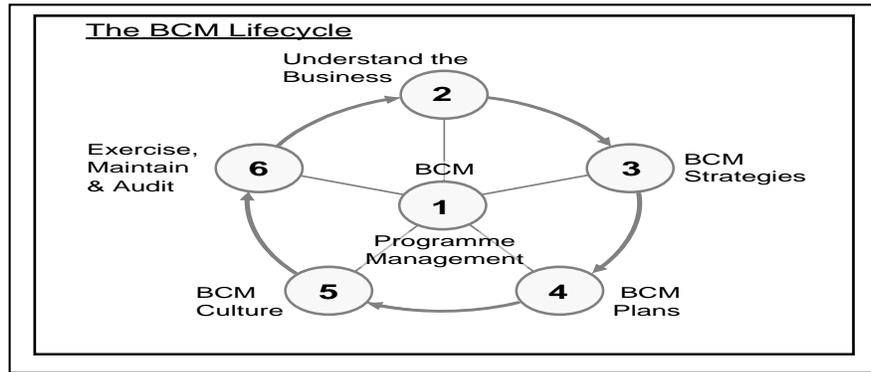
The International Organization for Standardization (ISO) has been actively working on global standards for business continuity for several years. Two documents in particular are worth mentioning: the ISO's Publicly Available Specification Guideline for Incident Preparedness and Operational Continuity Management and the ISO/IECD (International Electro-technical Commission) Information and Communications Technology Disaster Recovery. These two documents provide the foundation documents for the new global standard. (FBI 2002) ISO 22301.

Business continuity management understands and prioritizes the threats to a business using the international standard for business continuity. The ISO 22301 provides guidance on how to develop a management system to protect the business from risks associated with disruption. The typical standard used in the U.S. is one from the U.S. National Fire Prevention Association (NFPA) 1600 standard, referred to as the Z1600. Another common standard used The U.S. NIST 800-34 Contingency Planning Guide for Information Technology Systems identifies seven critical steps in developing contingency plans. (FBI 2002).

The Business continuity management's lifecycle model represented by Figure 2.2 suggests the establishment of a business continuity management program to manage the ongoing activities as the starting point. The natural point of starting the lifecycle analysis is understanding the business and its operations, followed by the conceptualization of business continuity management strategies. The translation of these strategies into plans and the nurturing of a business continuity culture follow therefrom. Thereafter, it becomes a matter of implementation, maintaining the protocols and auditing them to ensure they are effectively

applied over time. In developing this, Scholz (2009) provides benchmarking questions to facilitate appreciation of excellence in practice.

Figure 2.2: Business Continuity Management's Lifecycle's Representation

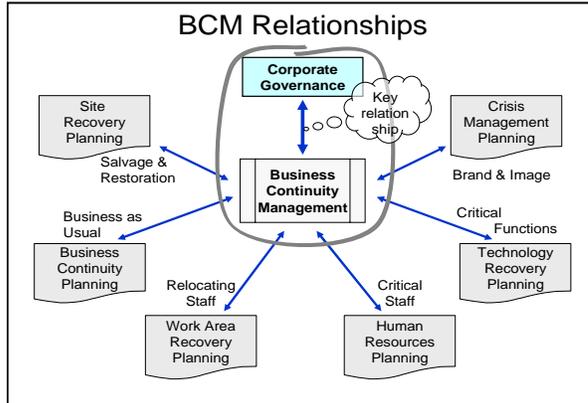


(D. Smith 2003)

The business continuity management requires planning across many facets of an organisation and depends upon the adoption of holistic approach. Figure 2.3 shows the relationships among the various aspects of business continuity management. The figure illustrates the close link between corporate governance and business continuity management.

(Burtles 2005)

Figure 2.3: Business Continuity Management's Relationship Representation



(Burtles 2005) p. 4

Three levels of strategic planning can be described in the development of business continuity management:

1. Organizational level BCM strategy encompasses defining the overall approach to protection, resilience and recovery across the whole firm.
2. Operational level BCM strategy is about organizing the recovery of the key operational processes and controlling the effects of an emergency.
3. Resource Recovery BCM strategy is about preparing, recovering and restoring facilities and resources for use in an emergency.

Sholz (2009) suggests that the strategic planning effort should include one or more of the following basic recovery strategies:

1. Functional Backup: involves relocation of the Mission Critical Activities (MCAs) to a dormant site in an emergency.
2. Split Operations: involves redirection of the workload in an emergency.

3. Alternate Site: involves relocation to an active site in an emergency.
4. Contingency Arrangements: involves the adoption or development of alternate methods of operation for mission critical activities in case of emergency

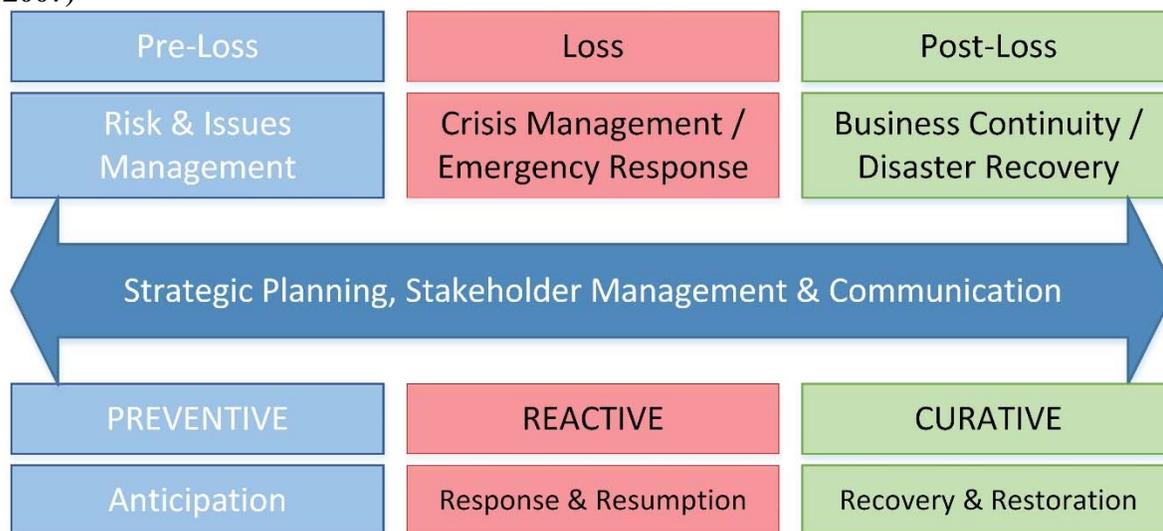
According to Jackson (2002), (Carl B. Jackson CISSP 2002) the continuity planning profession continues to evolve from the time when disaster recovery planning (DRP) for mainframe data centers was the primary objective. During the last ten years, the industry moved from a focus strictly on computer operations and communications recovery planning to one where business functionality and processes formed the start and end points for proper enterprise wide availability.

2.1.3 Crisis Management and Risk Management

It is essential to discuss the terms “Crisis Management” and “Business Continuity Management.” In the current literature, it appears that these two concepts work together in the overall management of the company. Business Continuity Management appears to be a process of unification under which multiple support functions, including crisis management and business continuity operations, are discussed. The Business Continuity Institute’s Business Continuity Management: Good Practices Guidelines and United States-based organizations such as Disaster Recovery Institute International (DRII 2004), ASIS International (ASIS 2004), and the Association of Contingency Planners (ACP 2004) recognize BCM as an umbrella including crisis management. The following definition highlights the link between the two terms:

“The business management practices that provide the focus and guidance for the decisions and actions necessary for a business to prevent, mitigate, prepare for, respond to, resume, recover, restore and transition from a disruptive (crisis) event in a manner consistent with its strategic objectives.” (Harrald 2004)

Figure 2.4: Business Continuity Conceptualization Framework (Adapted from Sapriel, 2007)



In the integrated model represented by Figure 2.4, issues and risk management are viewed as loss-prevention functions; emergency response and crisis management planning focus on training to handle adversity, minimize impact and facilitate the management process during chaos; and business continuity planning concentrates on post-loss recovery. Risk Management is the synthesis of the risk assessment, business area analysis, business impact analysis, risk communication and risk-based decision making functions for strategic and tactical decisions on how business risks should be treated – whether ignored, reduced, transferred, or avoided. Crisis Management is the coordination of efforts to control a crisis event consistent with strategic goals of an organization. Strategic communication planning runs through the full process and provides the glue that facilitates more effective results (Sapriel 2007). It must be emphasized that the BCCM framework, as presented, is in no way intended to prescribe a model organization chart for any business. It is merely the representation of multiple functions that require integration and coordination for the sake of program effectiveness and efficiency. Definitions for each function represents a common point of understanding since differences exist in the various glossaries of Business Crisis

Management and Business Continuity Management found in sources such as NFPA 1600, The Business Continuity Institute, Disaster Recovery Institute International, and the Business Contingency Planning Group (Business Crisis and Continuity Management and Planning n.d.).

Figure 2.5 (Storkey, 2011, p. 11) presents a similar delineation of boundaries for risk management, crisis management and business continuity management. Storkey argues that risk management is about preventative actions while emergency response or crisis management is about tactical response. Incident management is considered a strategic response while business continuity management falls under operational response. He argues that risks emerge when preventative actions that were taken were ineffective in preventing the risk from occurring.

2.2 BCM Theory

Our goal in this section will be to describe the appropriate theory for BCM to develop a conceptual model based on the literature review and in relation to the research objectives. The literature does not show a formal or systematic approach for studying BCM practice. Overall, BCM practice requires a commitment to an ongoing set of activities. In an attempt, (Koch 2001) focused on the groups of people who should be responsible for BCM, the involvement of different business areas in BCM, the comprehensiveness of BCM, the approach to BCM, which includes: performing risk analysis and BIA, developing backup strategies, developing recovery and continuity plans, testing and updating these plans. Pitt and Goyal (Pitt M 2004) explained in their empirical study some key aspects related to the practice of BCM and highlighted the significance of having a multidimensional approach. They investigated the following six steps:

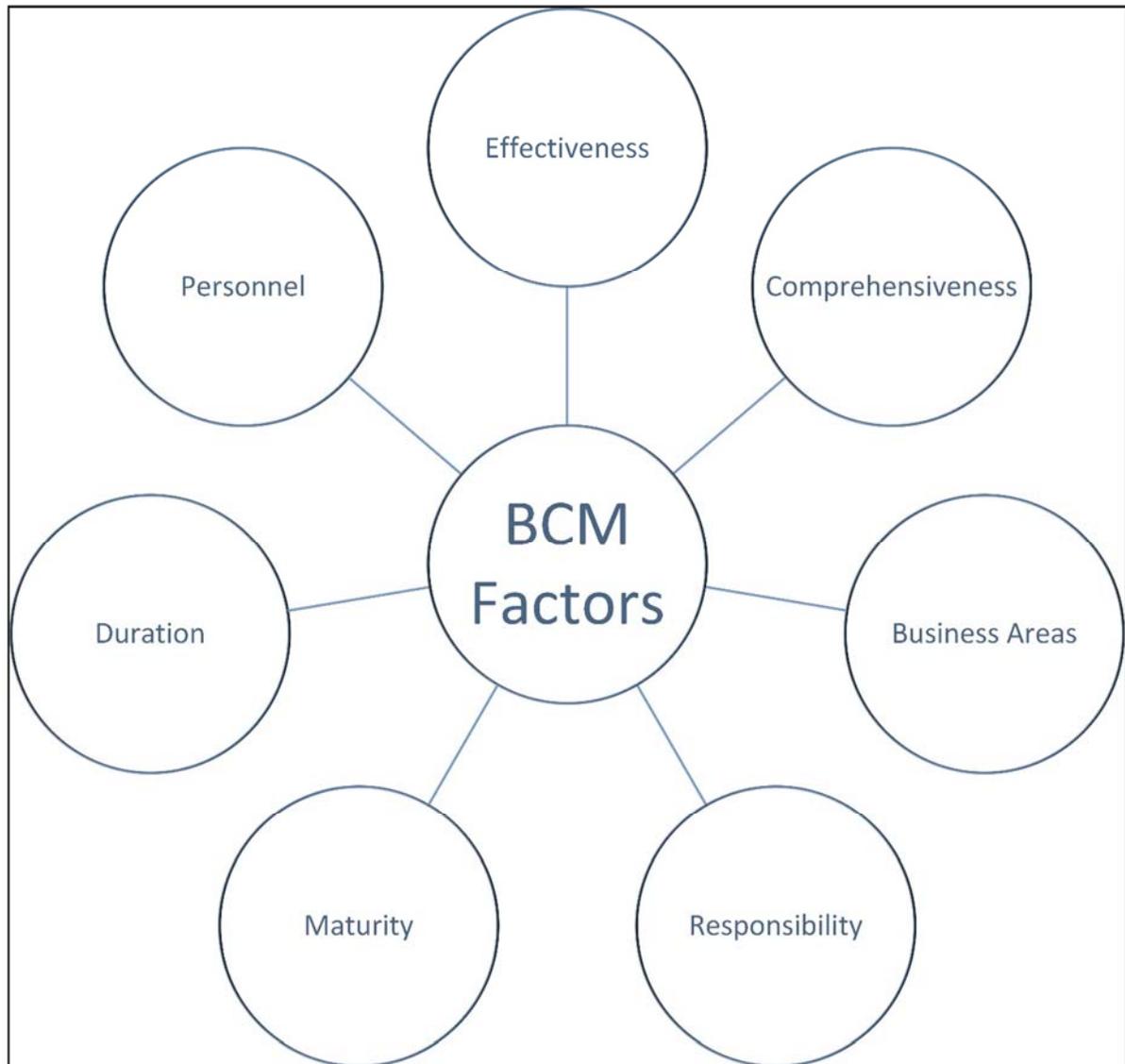
- First, the existence or not of BCM in several organizations
- Second, the duration for which BCM has been practiced
- Third, the approach to BCM by examining the frequency of testing, reviewing and updating of the business continuity plans.
- Fourth, the comprehensiveness of BCM to determine if BCM was designed in order to prevent/reduce impacts of disasters and crises on different elements of an organization including: Information Technology, buildings and facilities, equipment, processes and employees.
- Fifth, the business areas involved in BCM (i.e. the participants involved in BCM).
- Sixth, the person or groups of people who were responsible for BCM.

The comprehensiveness of BCM, its maturity levels, and key personnel conducting BCM were also described in studies such as Herbane et al. (2004) (Swartz E. Herbane B. 2004), and Msezane and McBride (2002) (Msezane 2002). Therefore, a comprehensive review of such studies allowed identifying the key aspects that can help to examine the practice of BCM in Agribusiness Organizations.

2.3 Factors Influencing BCM

There are seven factors identified in the literature as influencing BCM practice (Figure 2.5). The state of these factors in the organization has a direct impact on the organization's ability to effectively manage its BCM protocols. We provide an overview of these seven factors and how they influence BCM operations in the next several sections.

Figure 2.5: Factors Influencing BCM Operations



A BCM plan can be implemented and conducted using staff from inside the organization, or by using external consultants, or by using both. (P. 2008) Using in-house staff provides the organization an opportunity to link BCM and the rest of the organization's activities, such as testing, training, maintenance and updating activities. The use of external consultant is also significant because the organization may benefit from their experience, bringing new and potentially different perspective to the facilitation process. External consultants is also bring a certain level of integrity to the plans because they bring a

different set of eyes to review the technical, business, or organizational aspects of the plans is likely to detect weaknesses that may not be obvious to internal staff. (Chow 2000). The involvement of a combination of in-house staff and outside consultants to develop and conduct the plans is usually effective because it will provide the opportunity to capitalize on outside expertise.

How long the organization has practiced BCM influences the organization's ability to implement effective BCM plans. New adopters have steeper learning curves and cultural challenges because of the need to change how people do things (Marsh 2008). It can also help as an indicator for the level of maturity and comprehensiveness of BCM. In fact, the longer BCM is practiced, the higher the maturity level of the practitioners and the personnel, leading to a more comprehensive program.

The level of BCM maturity in an organization provides an indication of the operational form under which it is being implemented. A mature BCM would have evolved from technical-operational level to a strategic-oriented level. (Gallagher, The road to effective Business Continuity Management 2005). Other researchers, such as (M. 2003) or (Swartz E. Herbane B. 2004) studied the maturity levels of BCM in an organization and classified them into four levels based on two factors: orientation of activity and scope of activity:

- First level, BCM covers only the technical and operational aspects of an organization (i.e. crisis response), which provides a low capability to respond to disasters and crises, since at this level, business continuity has less capacity to anticipate risk, and therefore, limit potential losses.

- Second level, BCM is one step ahead towards planning for all technical interruptions across the entire organisation (Disaster Recovery Planning).
- Third level, BCM covers all the technical and social interruptions that may possibly occur across the entire organization (Business Continuity Planning).
- Fourth level, which represents the highest level of maturity, BCM is seen as a strategic-oriented process which has the capacity to cover a wider range of disasters and crises across the entire organization.

The question of who should take responsibility for BCM rests at highest level of management within the organization most of the time senior management (P. Woodman 2007-2008). Empirical studies showed that the senior management in many organizations was responsible for BCM and argued that senior management should take responsibility for BCM because crisis-related decisions have a direct influence on the long-term survival of an organization-are usually taken by senior managers (T. Gill 2006). Furthermore, senior managers have higher control over rapid resource deployment which is often more critical when BCM is being executed.

Information technology has become a central focus of BCM because of the increasing digitization of business operations. As such, the information technology department's role in BCM in many organizations has been increasing. It is becoming more clear that participation of all business areas is crucial to the overall success of BCM since the main purpose of BCM has evolved to ensuring the continuity of all critical business functions during disasters and crises. (Gallagher, Business Continuity Management: How to Protect your Company from Danger 2003). In fact, a number of researchers (P. a. Woodman 2010), (Swartz E. Herbane B. 2004), (P. Woodman 2007-2008), (Msezane 2002), have highlighted

that the involvement of different business areas and a cross-functional effort are required in BCM. Increasing, organizations are including their IT, finance, risk, security, human resources, health and safety, public relations and marketing in their BCM activities. Indeed, the department-level business continuity measures are significant to the overall BCM effort since they keep BCM plans up to date with all the frequent changes occurring at that level (Lindstrom 2010).

Including all the different business units in a BCM program bolsters its comprehensiveness. It allows the different risks of the different business areas to be reflected in the plan so that it is managed in a holistic manner instead of in pieces from a departmental perspective. When viewed within this context of comprehensiveness, then Forster's (2005) argument for senior management taking the primary responsibility for BCM operations becomes sensible in that they are able to facilitate the transformation of BCM into resiliency enhancing programs for the whole organizations. Indeed, they begin to bring the foundational dimensions of BCM into the risk and issue management segments, helping the organization improve its preventative preparedness instead of being ensconced in a curative mindset.

Although there are several approaches to BCM, there is no commonly accepted one (Gallagher, Business Continuity Management: How to Protect your Company from Danger 2003) (Koch 2001) (Swartz E. Herbane B. 2004). The literature also explains on the extent to which these activities facilitate embedding BCM in the organization's culture and encourages people from all management levels to be involved in BCM through periodic testing, updating, maintenance and training.

CHAPTER III: CASE STUDY

The purpose of the case study is to answer the problem of this research:

How can Livestock Co. be prepared to continue operations in an adverse event that affects the company?

The case study will verify whether Business Continuity Management Process is implemented within Livestock Co. based on a Risk Assessment or Business Impact Assessment.

The verification for the implementation of a “Good Practice” is accomplished by interviewing the company’s management and collecting information about the standing management processes that assures continuous availability of business processes for the daily operations. The information collected from different business areas within the company is integrated as major findings.

3.1 Livestock Co. Business Process Description

Livestock Co. Business Process consists on the following operations:

- (i) Feed grains importation and storage
- (ii) Feed grains processing to animal feed
- (iii) Animal feed distribution

Livestock Co. is the main animal feed supplier in Ivory Coast and other West African countries. Despite its critical place in the animal feed industry in West Africa, the company has never had a formal BCM in place, that is until now. As a result, the silo explosion caught the company by surprise and without and plan on how to effectively recover. The 850 tons of feed grains that spilled with the explosion was significant, amounting for about 71% of the company’s 1200 tons average daily production. The implication is that until the

silo is fixed, this proportion of daily output was either not going to take place or take place at a higher cost. Unfortunately, the fact that the silo has still not been repaired and brought back to operation after nearly four years is indicative of the immense cost of not having an effective BCM in place.

Lack of BCM in Livestock Co. has contributed to very deep disruptions in its supply chain. A business continuity plan can cover, for example, aspects related to the same environment of the establishment of one or more sites, the organization as a whole, a department in case of temporary or permanent unavailability of the service users. Livestock Co.'s efforts were evaluated by focusing on the company's investment in conducting study of its operations and the underlying risks and their extent in disrupting business operations, developing a plan and piloting its implementation, and assessing the level of resources that are required to effectively implement a full plan.

3.2 Process for BCM at Livestock Co.

The BCM process undertaken at Livestock Co. followed a set of well-defined steps (Figure 3.1). It started with consultation with the management contact person to develop a context for the project. What is making BCM an important need at this time? This was followed by a development of the the gaps in the current operations and identifying of critical control points and the processes in place to deal with potential risks at those points. After each of these exercises, management is consulted for clarity and confirmation of authenticity before proceeding to the next step. The final stage involves the identification of the resources (human, material and financial) that would be allocated to the pilot process and the installation of the BCM program itself.

The basic information for Livestock Co. was gathered using a structured questionnaire that was used in interviews with the company's senior managers: the Chief Executive Officer; the Secretary General; the Chief Operating Officer; the Chief Financial Office; Operations Manager; Head of Quality Control and Assurance; and Head of Information Technology. The information encompassed managers' appreciation of the operating environment, the risks and the mitigating effects as well as the company's system's ability to effectively deal with the identified risks. This is the components referred to as Assessment. The specific components of the Assessment – made up the questions that were used to gather the requisite information – are as follows:

A. Triggering Event

- a. Did any major incident happen in Livestock Co.? If Yes, how did it materialize?
- b. What were the main causes? Were they caused by human error, hardware failure , lack of resources, internal and/or external technological challenge, etc.
- c. What were the impacts? Financial loss, loss of work unit, delays in delivery and penalties, inability to submit a tender, compromising ability to expand market reach or serve new customers, etc.
- d. Solutions that have already been proposed or implemented?

B. Infrastructure Business

- a. What are the number and location of sites: headquarters, administrative centers and production centers?
- b. How is the supply chain dispersed?
- c. How are customers dispersed?
- d. What are the suppliers and customers capacity to endure the disruption?

C. Business Elements

- a. Are there any contractual obligations of creating continuity with suppliers?
- b. Are there any contractual obligations of creating continuity with customers?
- c. What are activities identified as strategic?
- d. Awareness of the development of BCM ?

The results of the assessment interviews are presented in Table 3.1 to Table 3.3. The assessment Analysis is about different datas collected from seven (7) Managers at Livestock Co.. Regarding the triggering event, silo C52 explosion has been identified as major incident by the managers. Fortunately, the damaged where only materials and no human injury was documented at the company's factory. The main cause was an external failure according to five of the seven managers. Both, loss of storage and reporting delay have been cited as principal impacts to the company. Two solutions have been implemented after many meetings: First, 3 Silos rented from a logistic company operating in the same area as Livestock Co. and second, isolation of the affected area for any activity until completes reparation of Silo C52.

Regarding infrastructure business, Livestock Co. headquarter is in Abidjan. There is another location in the city of San Pedro but it is not operational since the 2011 political crisis. The feed grains suppliers are located in Europe and America because, in Ivory Coast, these raw material do not grow. Livestock Co. customers are from Ivory Coast and some West African countries. In case of disruption, customers will looking for Livestock Co. competitors to have their Animal feed supply.

Table 3.1: Management Perceptions about Triggering Event at Livestock Co.

Issue	CEO	CFO	SECRETARY	INDUSTRY	PRODUCTION	QUALITY	IT
Major Incident	Silo C52 Bursting	Silo C52 Bursting	Silo C52 Bursting	Silo C52 Bursting	Silo C52 Bursting	Silo C52 Bursting	Silo C52 Bursting
Main Cause	External Failure	External Failure	Human Failure	External Failure	Under Investigation	Under Investigation	External Failure
Impact	Loss of Storage	Reporting Delay	Reporting Delay	Loss of Storage	Loss of Storage Reporting Delay	n/a	Reporting Delay
Solution	Silos Renting	Silos Renting	Silos Renting	Isolation of affected area	Isolation of affected area	Isolation of damaged area	Isolation of affected are

Table 3.2: Management Perceptions about Livestock Co.'s Infrastructure and Capacity to Endure Disruption

Issue	CEO	CFO	SECRETARY	INDUSTRY	PRODUCTION	QUALITY	IT
Livestock Co. Existing Location	Abidjan	Abidjan	Abidjan	Abidjan	Abidjan	Abidjan	Abidjan
Supply Chain	Oversea	Oversea	Oversea	Oversea	Oversea	Oversea	Oversea
Customers	West Africa	West Africa	West Africa	West Africa	West Africa	West Africa	West Africa
Capacity to endure Disruption	Compe-titors	Compe-titors	Competitors	Competitors	Competitors	Compe-titors	Compe-titors

Table 3.3: Management Perceptions about Livestock Co.’s Business and Capacity to Endure Disruption

Issue	CEO	CFO	SECRETARY	INDUSTRY	PRODUCTION	QUALITY	IT
Suppliers Contractual Obligations	Yes						
Customers Contractual Obligations	Yes						
Strategic Activity	Feed Grains Processing						
BCM Culture	n/a	Proposal	n/a	n/a	n/a	n/a	n/a

Regarding Business elements, Livestock Co. must respect its contractual obligations for its suppliers as well as its customers. Livestock Co. strategic activity is feed grains processing. The raw material is buying from suppliers and after transformation selling to customers for animal feed. Any major event is critical for the continuity of Livestock Co. strategic activity.

The company does not have BCM plan in place for any crisis. Currently, emergency management is done through a “Crisis Management Committee” set up only upon the occurrence of critical events. Therefore, it is a “reactive committee.” According to Production Director, Business Continuity Management project turns out to be very interesting. According to Finance Director, Business Continuity Management project’s implementation will be the first at Livestock Co. and should be useful at any time.

Currently, Livestock Co. has an Internal Operation Plan (IOP) (CI 2012). This plan is the regulatory emergency plan designed to focus only for the control of “significant and representative” accidents that may occur, type’s fire, explosion, spreading of liquids, atmospheric dispersion of toxic substances. Unlike Business Continuity Management, the IOP does not focus on a strategy of continuity for the company after the advent of the crisis. Additionally, it should be added that Livestock Co. is working on the certification ISO 22000 (Food safety management systems — Requirements for any organization 2005). It is an international standard specifying the requirements of the Management System of Food Safety. This standard includes elements generally recognized as essential, which ensure the Food Safety at all levels of the food chain consumption up to the final stage of consumption. This means that unlike the Business Continuity Management, ISO 22000 is not a solution of

operational emergency facing disaster scenarios identified to ensure the continuity of critical business operations.

With a Business Continuity Management, Livestock Co. will be protected from any loss of activity in order to strengthen its image for customers, suppliers and partners whatever the disastrous situation. A Business Continuity Management proposal is proving to be a real business plan that will find its effectiveness only through Livestock Co. leadership.

3.2.1 Rethinking Business Continuity Management for Livestock Co.

The BCM model considers number of scenarios to address any event at Livestock Co. This phase is important to formalize the requirements of the BCM regarding Livestock Co. needs.

In any event, BCM should be used to check the relevance of the crisis and verify acceptability and realistic requirements. Each steps should be explained in the body of the Business Continuity Management and subjected to formal communication with available documentation.

As priority issues and requirements have been validated, it may be appropriate to illustrate the interaction between services. The specified items should be explained in the body of the Business Continuity Management and subject to formal communication with available documentation.

Livestock Co. should be committed to continuously maintain operational continuity of Critical Operating Units and essential operational services for its employees and customers. The application of BCM in essence addresses several entities of an organization so it is necessary to describe and illustrate the interactions between the various departments involve in decision making and operational level. This plan is divided into steps which

identify the critical actions to be taken by Livestock Co. if an emergency occurs and affects the operations of a department. It also identifies day-to-day proactive steps to be taken by this department to ensure that critical systems are backed-up and available with limited to no interruption. Livestock Co. should act through an Emergency Operations Plan which identifies different levels of emergencies.

This system is designed to assist in the decision making process during a crisis. The levels as applied to this plan are as follows:

Level 1- Isolated emergency affecting one or two individuals within the department which does not impact the delivery of service.

ACTION- No activation of this plan necessary

Level 2- Localized emergency affecting a number of individuals within the department which may shut down operations for one to two hours.

ACTION- No activation of this plan necessary but continuously monitor situation. Notify Department Supervisor

Level 3- A major departmental emergency which affects delivery of service for up to 8 hours.

ACTION- Partial or full activation of this plan. Notification up to Department Head

Level 4- A disaster which affects the delivery of service for more than 8 hours.

ACTION- Full activation of Business Continuity Management Plan

The following tables characterize real strategies for implementing Business Continuity Management at Livestock Co.

We will describe and illustrate interactions between different entities involved in decision making process upon the crisis event. Livestock Co. should plan to implement its

BCM Decision Making Process based on different scenarios. Each scenario provides step by step instructions for developing an Operational Business Continuity Plan that meets the Company needs and assures the security of its employees, valuable assets, suppliers, customers.

Table 3.4: Alternative Scenario Considerations for BCM Decision-Making Process

Production Accident (E.g. Silo Bursting) Scenario						
Emergency Detected	Activity Compromised? Problem Resolution statement	BCM Proposal	BCM Execution	BCM Control and Progress	Primary Conditions Restoration	BCM Closing Statement
Fireoutbreak Scenario						
Fire Detected	Malfunction? Return to business as usual	Crisis Management Unit Meeting	BCM Activation Decision	Emergency Process	Primary Conditions Restoration	BCM reporting Statement
Political Crisis or Natural Disaster Scenario						
Crisis Detected	Evaluation Form Completed? Return to business as usual	Executive Committee Appointed	BCM Activation Decision	Executive Committee Report	Activities Restoration	BCM Reporting Statement

3.3 Recommendations

To answer the central research question we, firstly, described the business process system for Livestock Co. Secondly, we identified and analyzed an appropriate mitigation measures to be taken. Thirdly, we considered elements and characteristics to be included in the control model framework for the establishment and auditing of Business Continuity Management in Livestock Co.

3.3.1. ISO 22301 Certification

The Business Continuity Management plan can be effective at Livestock Co. if implemented as recommended by ISO 22301 « Code of practice for Business Continuity Management ». It provided the best practice framework to minimize disruption and

maximize recovery time during unexpected events that could bring business to a cessation.

All elements of the code of practice are clearly outlined, including:

- Scope and Policy
- Identifying critical business functions
- Developing and managing a business specific continuity plan
- Monitoring and maintaining performance
- Embedding a culture of business continuity awareness in your organization.

By adopting a standard approach to Business Continuity Management as set out in ISO 22301, organizations like Livestock Co. can offer their customers and clients greater assurance that they will be capable of maintaining continuity of operations if they suffer disruptive incidents. (Sharp 2012) The international standard for BCM, ISO 22301 specifies requirements for setting up and managing an effective Business Continuity Management System. (Sharp 2012)

We would recommend Livestock Co.'s Managers to implement a Business Continuity Management based on the British Standards Institution BS22301 Standards for Business Continuity Management. This code of practice with specification for Business Continuity Management is intended to provide assistance to the person responsible for implementing Business Continuity Plan within an organization. It describes a framework and process for the Business Continuity Manager to use and offers a range of good practice recommendations.

3.3.2 Training and Exercise

The following overview completes action prescribed previously. In addition to the Decision Making Process Execution, Livestock Co. should accomplish testing and exercising

to evaluate effectiveness of Business Continuity Management in case of disaster. The Company wants to make sure its employees will know exactly what to do under any emergency circumstances.

The Training, Exercises and Maintenance is the key to a successful Business Continuity Management implementation. All staff must be aware of the protocols and their roles in them. It is important to ensure each staff member goes through the BCM training within 60 days of the adoption of the plan. This training must be repeated on an annual basis to ensure staff is in top shape to execute should the need arise. It is also important to conduct mock crisis events so that the company's preparedness can be tested and beefed up.. This is like undertaking fire drills to ensure people understand and are able to do what is expected of them in case of a fire breakout.

It is critical to document all the training and drill activities so that there is a record of outcomes. These can be compared against expectations so that the necessary changes can be made. These could be in material, financial or personnel resources. The responsibility location for each of these changes must also be appropriately cataloged so that accountability can be maintained.

Like all plans, it is critical that the BCM once developed be kept current as the business environment changes. This implies that management should make it a point to discuss the changing risks that confront the business and determine their potential impacts on both the internal and external supply chains. They must also identify the critical control points and how these potential risks can affect operations at those points and how those feed into other points within and outside the organization. The documentation to go with the updates of the plan may be as presented in Table 3.5.

Table 3.5: Responsibilities and Accountability for Plan Currency

Responsibility	Position
Update BCM plan annually.	Division Head, Standards and Planning Division
Update telephone rosters monthly.	Communications Specialist, Standards and Planning Division
Review status of vital files, records, and databases.	Records Specialist, Standards and Planning Division
Conduct alert and notification tests.	Communications Specialist, Standards and Planning Division
Develop and lead BCM training.	Training Specialist, Standards and Planning Division
Plan BCM exercises.	Training Specialist, Standards and Planning Division

3.4 Conclusion

Risks are normal to business and some of them can be catastrophic even if they happen very infrequently. Astute businesses are careful to have business continuity plans in place to deal with the off-chance that something debilitating happens to the business. This project focused on developing a business continuity model for a large agribusiness firm in Africa and help prepare it to deal with any major business disruption event. We found that the firm did not have a BCM plan in place, leading to believe that many organizations have not planned to deal with such disruptive events.

The process developed for the firm was straight-forward. It focused on identifying potential risks that the firm faced and how those risks may affect its ability to continue performing its primary functions should those risks manifest. It built a process for assessing the risks and simulating the potential outcomes on business continuity. It, finally, provided an execution model for implementing the BCM. Commitment and diligence to the plan are critical for its effectiveness in ensuring that the firm is able to maintain its operations capability in the event of a major catastrophic event. This commitment emanates from senior managers making resources available even as they communicate the importance of all

employees understanding the process and their role in its execution. This, we indicated, is possible when the company makes resources available for training and drills to keep critical personnel on their toes.

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