

DISSERTATION TITLE

BUSINESS CONTINUITY MANAGEMENT MATURITY MODEL FOR BANKS IN UAE

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ABSTRACT

Context

Organizations have gone international. They are faced with increasing levels of global competition, demanding customers and employees, shrinking product lifecycles and decreasing acceptable response times (Lockamy & McCormack, 2004)

They have employees and deal with clients, suppliers & vendors from all over the world. They use modern data processing systems to provide their customers with superior services. Realizing that these electronic systems have been, the major factor distinguishing competitors in today's demanding business environment, organizations are taking steps to protect themselves from system failures. But, protecting against such system failures is not enough. Organizations have to be more concerned about the risks that threaten the operational continuity of their businesses as well. Methods as security and disaster recovery are no longer enough to fulfill the continuity needs of the organization.

Also, there is increasing pressure that is forcing organizations to take measures to assure the continuity of their business. This includes pressure from customers who enforce requirements to their main suppliers and also by supervising & regulatory bodies. Any event, catastrophe or disaster in any part of the world has direct or indirect influence on organizations. In UAE, many organizations suffered loss of key staff who had gone back home for vocation when the Israel-Lebanon war broke out. This led to temporary disruptions in certain areas of organizations that did not have a defined succession plans in place. Now, UAE Central Bank has mandated all Banks to comply with BASLE II requirements (The Basel II Accord – How it may benefit banks that comply, 2004), which also has a domain on Business Continuity Management.

Business Continuity Management (BCM) addresses operational continuity by concentrating on mission critical business processes. Although the awareness that something should be done to assure business continuity is present in many organizations, they often do not know how to implement BCM processes properly and integrate it through their entire set-up (end-to-end). According to a BCM survey conducted by KPMG (2006), same is the case with organizations in UAE, where only 20% of the organizations have an integrated organization-wide BCM. Details are available on KPMG, UAE website: <http://www.ae-kpmg.com/index.shtml/>. Therefore, organizations require an analysis tool which can be used to analyze an organization's BCM process in terms of where they stand and what they should do to improve it. Such an analysis tool has to be based on a maturity model (as evident from the Literature review in Chapter 2)

Currently, no standard maturity model exists for BCM implementation (something like CMM, CMMI etc.). Organizations have no way to assess where they are in terms of maturity of their BCM processes, how far they have to go and what they need to get there. This research aims to develop a maturity model for Banks in UAE that can serve as the basis for such an analysis tool, using both existing literature and the data collection from local market. This will help to have an in-depth knowledge of an organization's BCM process; comparing themselves with other similar organizations and provide insight on how to enhance their Business Continuity Management processes. This model will cover all stages an organization goes through, before Business Continuity process becomes an integral part of its culture.

The Maturity Model for BCM

The BCM model developed is based on the inputs from the following existing maturity models –

- Business Continuity Model for Banks in India (Mohan & Rai, 2006)
- Maturity Model for the implementation of Software Process Improvement (Wilson, Noazi & Zowghi, 2003)
- Business Process Orientation (BPO) Maturity Model (SEI, 2002)
- CMM & CMMI models for Software Process Improvements
- GPIS Model (Alshawi & Saleh, 2005)

The model developed works on an organization's maturity across two dimensions – BCM process quality on Y axis and the BCM process scope X axis (Fig. 1). The different levels in the model were identified and characterized based on the analysis of the data collection from surveys and the theoretical framework developed from literature review. This characterization is to help organizations assess their current status and help them chalk out their strategy to reach the intended maturity level. The final model is validated by applying it to an existing organization and through a focus group session to determine whether all its objectives are met or not.

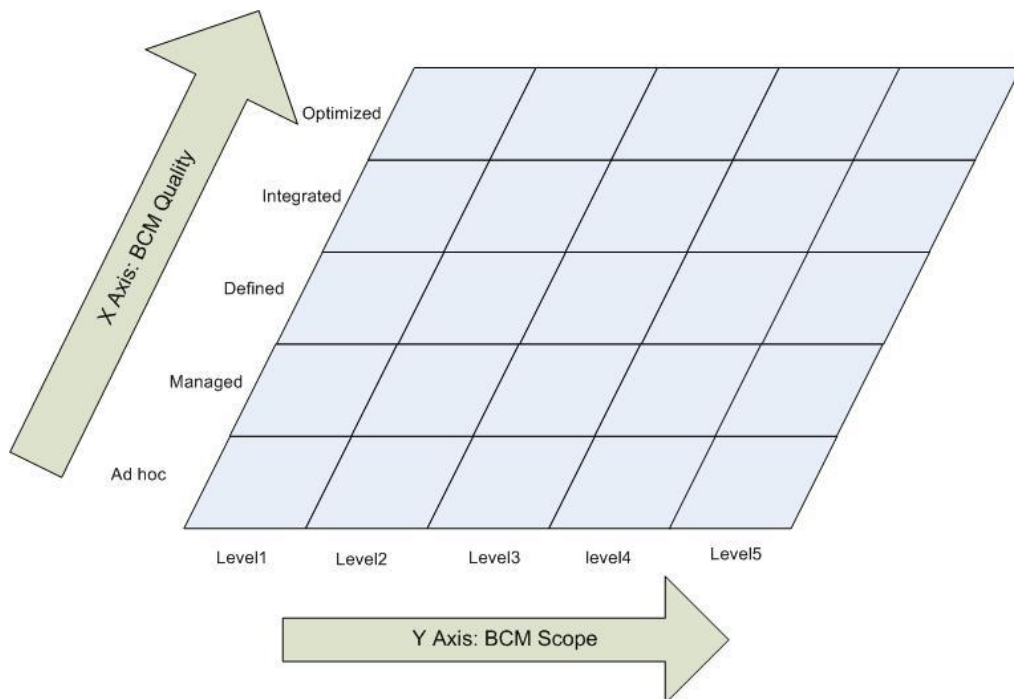


Figure 1: BCM Maturity Model

By defining maturity on both Axes, the model is divided into boxes, named SQBs (Scope Quality Boxes). The model, as shown in figure 1, gives the maturity level based on the covered area of SQB's for which an organization meets the goals. Each SQB is described by specific Process Areas, and each Area is specified by a specific Goals. Each Goal has certain generic practices associated with it, which provides a roadmap on how to enhance the maturity levels. This research is limited to defining the goals of each process area but the detailed generic practices & requirements under each goal is out of the scope and can be taken up as a part of future research.

ACKNOWLEDGEMENT

This dissertation is a result of months of research, which has been a grand learning experience. I am confident of using the leanings of this research both on a professional and personal level, not just to obtain the M Sc. Qualification.

I would not have been able to complete and do justice to this research without the support of few people around me. So, I take this opportunity to start his thesis with a word of gratitude.

To start with, I'd like to express my thank to my supervisor, Dr. Kasim for his continuous support and advise. Without his guidance, my research would have never been of the quality level as it is now. He always provided his valuable help and feedback.

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Last but not the least, I certainly must thank the person who proof read my research as independent reviewer and gave valuable comments. This includes my immediate reporting line in the organization I work for – Mr. Nalin Wijetilleke.

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1 Introduction

1.1 Context

This chapter is an introduction to this thesis on development of a maturity model for Business Continuity Management in Banks across United Arab Emirates (UAE). We will first begin by highlighting the need for Business Continuity Management processes within Banks followed by the problem statement relevant in the United Arab Emirates, which prompted me to initiate this research. We will then formulate the objectives & Aims of the research and the approach used to accomplish this work. Subsequently, we shall focus on defining the exact scope of this thesis, any assumptions, constraints and limitations. Finally, we shall give an outline of how the various chapters are structured, which can be used as a reading guide.

1.2 Need for ‘BCM’ in Banks

Existence of Banks in the society dates back to over 200 years. Post industrialization era, they became the hub of economic activity (Rai & Mohan, 2006). This was vastly true in the commercial sector in the form of B2B (Business-to-Business), where Banks play a very important role in the development of society. Today, banks cater to the varied needs of diverse portfolio of customer in the society and business such as youth, working people, retired people, small & medium size organizations, corporate organizations, rural organization, charities, etc. Each segment has unique demands, which have led Banks to provide customized products at low costs and minimal profit margins. Ability of Banks to continuously provide services to these varied segments under all circumstances is a challenge.

Simultaneously with the evolution in technology particularly computerization & data communication, modern data processing systems came into use to provide customers with superior services in the form of these customized products. This brought in undisputed dynamism in the banking business,

where banks began to explore various options of using technology in serving their customers effectively & efficiently. Investments in IT, which were earlier considered expenditures, are today viewed as long term strategies to maximize wealth and attain high levels of advancement. For many financial organizations, the information flowing through its data centers is its life blood and any interruption to its online transactions can cost thousands or even millions of dollars. An IT failure or disaster could, therefore, have serious consequences for an organization (IBM Global Services, 2000)

Realizing that these electronic systems have been, the major factor that differentiates between competitors in today's demanding banking business environment, banks are moving to protect themselves from system failures. But, protecting against such system failures is not enough. Banks need to be more concerned about the **risks** that threaten the operational continuity of their businesses as well. After all what good is a computer system, when there are no business processes to use them? Or when there are no people to use these systems?

There is a continuously increasing pressure that forces Banks to take steps to address the continuity of their business. This includes the demanding customers who enforce requirements (of uninterrupted and continuous service) and by supervising bodies (regulatory institutions, compliances, BASEL II etc.). Further, ensuring business continuity has become more difficult because of increasing threats, supply chain integration & dependency on complex information systems (Noakes-Fry & Diamond, 2001).

Information possessed by Banks is no longer only used by employees, but by customers and partners as well on real time basis (on the internet). These users expect continuous availability of and instantaneous access to organizational information (McAnally *et al*, 2000). Protecting their information is essential to ensure that the business has a competitive edge and maintains cash flow and commercial image (BSI, 1999, p.1). In order to ensure that a bank maintains

its competitive edge, the information must be kept confidential, accurate and continuously available.

All the issues highlighted in the preceding paragraphs cannot be addressed by methods as security and disaster recovery; they cannot fulfill all continuity requirements. Security & Disaster recovery mainly focus on the continuity of IT systems, which does not ensure continuity of the business. To achieve operational continuity, there is a management process which addresses the processes and people that are critical for the survival of the organization. This approach of ensuring continuity of critical processes is called **Business Continuity Management**.

The Business Continuity Institute (BCI, 2007) defines BCM as:

'A holistic management process that identifies potential impacts that threaten an organization and provides a framework for building resilience with the capability for an effective response that safeguards the interests of key stakeholders, reputation, brand & value creating activities.'

It is just not a professional specialist discipline but a business owned and driven issue that unifies a broad spectrum of business and management processes as shown in the Figure 2. In particular, BCM provides the strategic and operational framework to both review and where appropriate redesign the way an organization provides its product and services whilst increasing its resilience to disruption, interruption or loss.

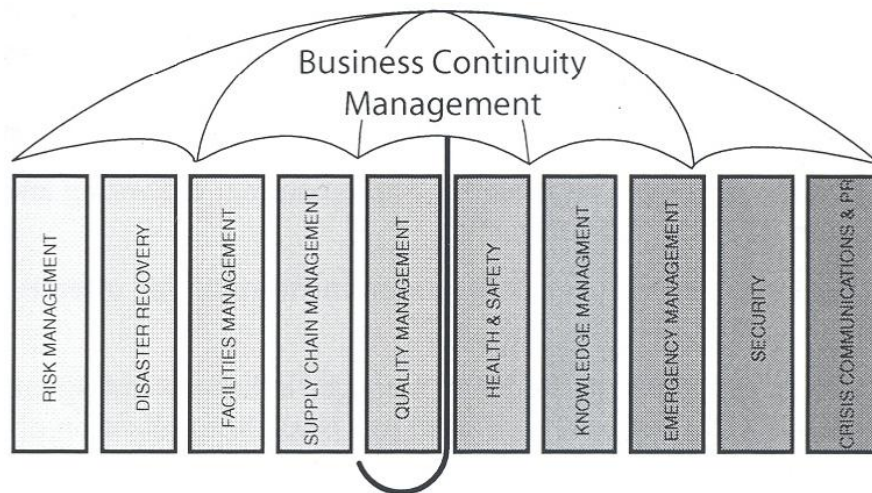


Figure 2: BCM Umbrella (BCI)

1.3 Broad Problem Statement

Although many Banks in UAE have the intention to do something for assuring their business continuity, they often do not know how to implement BCM processes properly and integrate it through their entire set-up end-to-end (BCM survey conducted by KPMG in 2006). The survey result showed that only 20% of the organizations have an integrated organization-wide BCM (Details are available on KPMG, UAE website). Other 80% of the organizations in UAE have BCM processes in place in some form or the other and do not know how to take these processes forward.

Usually, organizations consider BCM as a new and complex process. So, they hire specialized external advisors and consultants to develop a BCM program without understanding their own existing processes, where they stand as of today and where they want to be. Therefore, organizations require an analysis tool which can be used to analyze an organization's BCM process in terms of where they stand and what they should do to improve it.

A number of different Business continuity management best practices & methodologies exist but their contents do not vary much. These best practices & methodologies speak about how to implement BCM process but do not

provide any mechanism to decide / measure the extent to which an organization should implement the BCM process. Therefore, if research should result in something useful to the existing BCM knowledge base, it needs to focus on something else than just a methodology. The current methodologies do not offer a way to assess where an organizations stands (Jordan & Verzuu, 2005) in terms of BCM maturity, how far they have to go and what they need to get there. So, organization need some sought of analysis tool to achieve this.

Such a tool must be based on a model. The problem is the non existence of such a standard model (BCI has just released a new BCM standard called BS25999 in 2007, which does not provide any kind of ranking/stages for organizations to evaluate their current status). This model should cover all stages an organization goes through, before Business Continuity process becomes an integral part of its culture with continuous optimization. The model will help organizations to have an in-depth knowledge of their existing BCM process and provide an insight on how to enhance their Business Continuity Management process from the current position.

Such a model can be formulated from existent maturity models (This has been validated in the second chapter). Maturity models are based on the fact that a target maturity level can be achieved only after going through several phases step by step. One of the best known examples of maturity models is the software development Capability Maturity Model (CMM), (Paulk, 1995).

Hence, the development of a maturity model which could be used as a BCM self analysis tool, would be a significant addition to the BCM knowledge base.

1.4 Scope & Aim of the Research

As described in the preceding section, the direction of this research would be towards fulfilling the need for an analysis tool for BCM. Based on this tool, an organization should be able to assess the current state of its BCM, to communicate it, to benchmark it and to determine the steps to take to improve its BCM. This tool will be based on a maturity model (the need to base this tool on a maturity model will be discussed and evaluated in chapter 2), which we will develop during this research. The main deliverables from this research would be

- The maturity model with the goals of the various levels. The development process and the model itself shall be exhaustively discussed in the thesis.
- Validation of the maturity model by applying it to an organization and a focus group session. The maturity of the organization will be determined using the maturity model and recommendations shall be made based on the target maturity level
- Determining a general growth strategy of an organization based on their maturity level from the model. Some general actions (i.e. goals) shall be recommended based on practical application of the model as mentioned in the 2nd deliverable.

The detailed actions / practices to achieve the target maturity fall outside the scope of this thesis. To determine the detailed step-by-step action list, this model has to be applied to a number of organizations and this will be a separate thesis. Therefore, our main **AIM** for this research therefore can be defined as:

To develop a maturity model for Business Continuity Management (BCM) based on which the current state of BCM within BANKS in UAE can be assessed and recommendations to improve this state can be given; and then to validate the practical application of this model through a case study

1.5 Objectives of the Research

Now, we have formulated the AIM of the Research. But, in order to achieve this aim, there should be some steps or ways to achieve this aim. These are what we call **Objectives** of the Research

- To provide a review on how the concept of BCM and the need for a Maturity Model has developed throughout history.
- To analyze the several elements that are included in the concept of Business Continuity Management
- To describe some existent BCM maturity models that have been developed, and determine the need of a new model
- To develop a new model based on the input from the existent models, related literature review, existing market surveys and conducting individual surveys in Banks in UAE.
- To investigate the application of this theoretical model in organizations in UAE by applying the theory to a case study of an existing company and through a focus group session

1.6 Assumptions made regarding the research problem

The Research focuses on a maturity model for Business Continuity Management process. In defining the research problem, an assumption made is:

- A more mature Business Continuity Management process will result in better Business Continuity capability/results. If an organization have a better control on their BCM process, it is considered to have a higher maturity.

Reason: BCM capability is a vague term and it would be difficult to judge its maturity level. However, the BCM process can be measured based on the activities executed in its implementation. Therefore, it is ideal to calculate the maturity of the BCM process than the maturity of its capability.

Further, it is simpler to recommend the improvement path of the BCM process than its capability. Maturity models usually focus on the process maturity instead of the final outcome of that process. But, it is assumed that a more mature process will have a higher probability of a positive outcome.

- The quality of the BCM Process and the scope of the BCM process as a direct impact on the performance of the BCM program within the organization.

Reason: Aim of thesis includes the capability to evaluate the current status / performance of an organization's BCM program. This evaluation will be based on the measurement of the BCM process quality and the scope of the BCM program. BCM process quality can be measured using the concept of process maturity (Lockamy & McCormack, 2004) whereas the Process scope can be measured by looking at the various areas addressed by the BCM in the organization.

1.7 Proposed Methodology of Research

Since the aim of this research to develop a model that serves as the basis for a practically usable self analysis tool, this model should be based on the way BCM appears to be organized in practice in UAE. For this purpose, input will be taken from the field experts working in UAE. This would be done through **surveys**. This will provide all the practical information needed to design the model.

But before that, it is necessary to develop a framework based on the existing literature review. BCM is not an entirely new research area and a lot of information exists on maturity models, BCM best practices & methodologies and even some of the existing BCM maturity models. We need to look at all this information to develop an initial framework of the model which shall serve as an **INPUT** to the development of survey / Interview questions.

After the initial framework is developed using the literature review, it shall be finalized using surveys, where the elements would be put under examination and necessary changes shall be made. Basically surveys will serve as a quality assurance for the research project.

This will lead to the development of a final maturity model. Having developed the final model, our last step is to validate whether the model is correct and whether it meets the formulated objectives. This will be done by putting it to test to evaluate the BCM status of an existing organization in Dubai and provide necessary recommendations.

In a nutshell, the following figure gives the methodology that shall be used for this research:

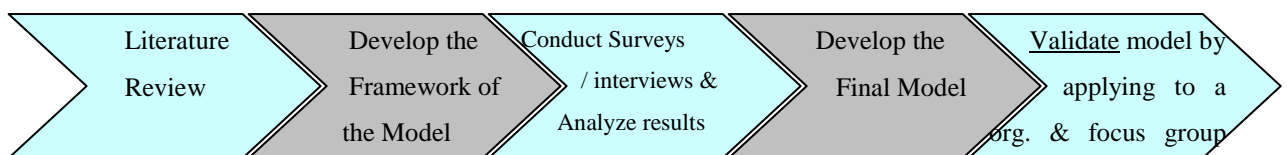


Figure 3: Research Methodology

The above methodology is best suited for this research thesis considering the amount of time and scope of the project.

1.8 Reading Structure

The flowchart below gives an outline of this thesis:

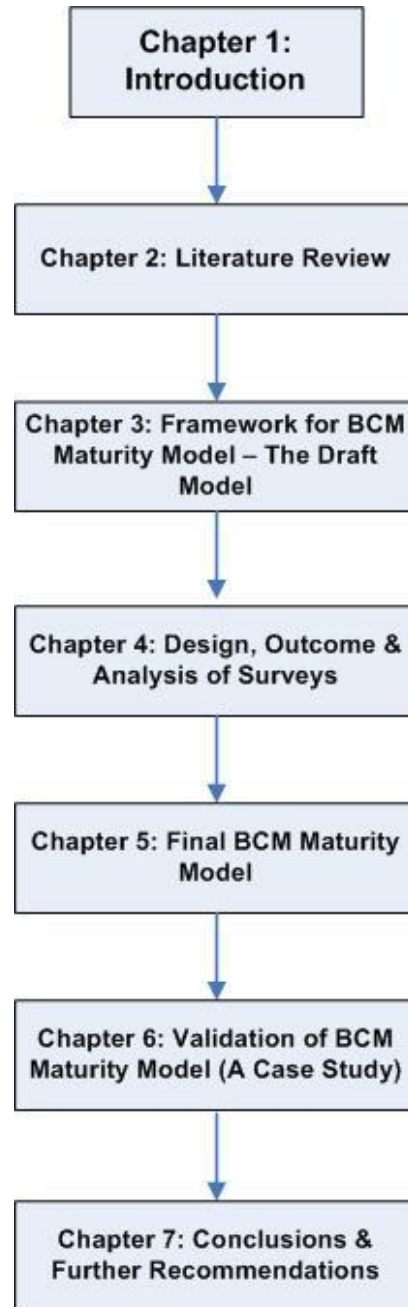


Figure 4: Reading Guide of the thesis

1.9 Conclusion

In this chapter we introduced the need for this research, its scope, aim, objectives and the approach to achieve these objectives. Also, we have provided a reading guide for this thesis in the form of a flow chart. The coming chapters shall give the literature review, survey results and the process of researching itself, as described in the previous section.

2. Literature Review

In the preceding chapter, we had defined the objectives of the research. In this chapter will provide a detailed review of the existing literature on the subject of this research, which would then be used as an input for meeting the mentioned objectives and to the development of the Framework for the BCM Maturity model i.e. the draft BCM Maturity model

In order to facilitate the reader’s understanding of the literature review in the following sections, figure 5 represents the logical flow to the topics covered in this chapter along with the deliverables.

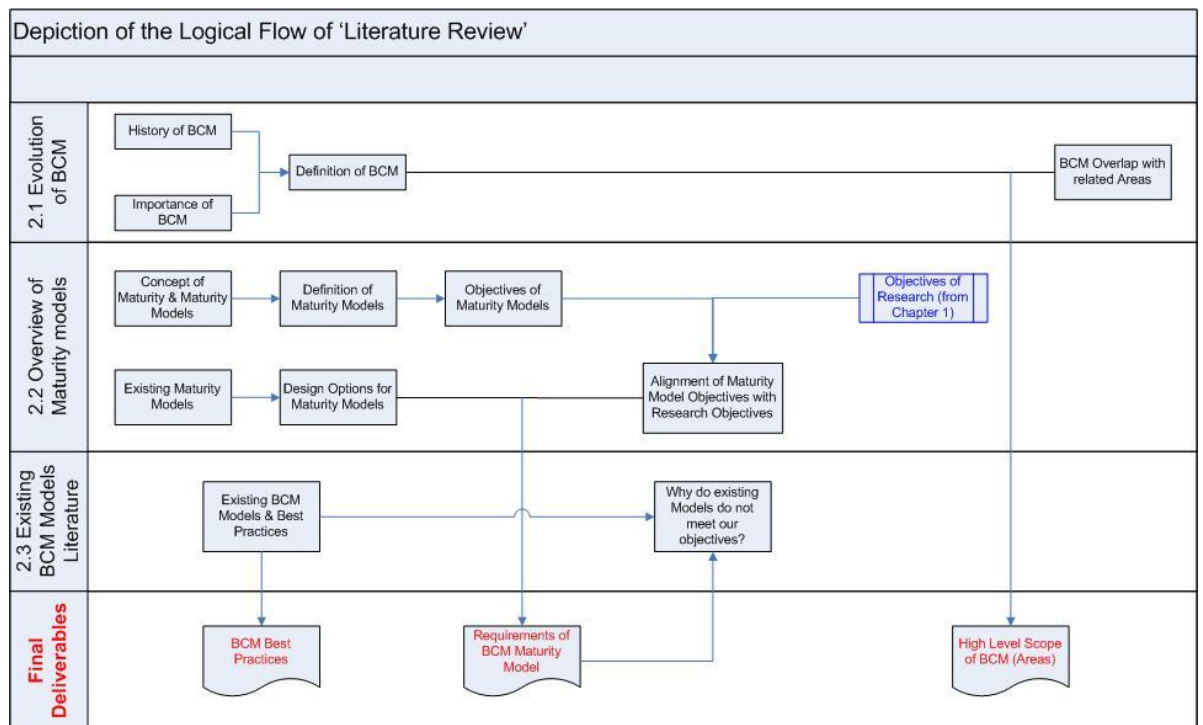


Figure 5: Logical flow of the Literature Review

The aim of the literature review is to aid the development of a framework of the model called a “draft model” in the next chapter. This framework shall be the foundation of the final maturity model.

2.1 Overview of BCM

2.1.1 History of BCM

(http://www.businessresiliency.com/evolution_history.htm).

Business continuity has its roots in disaster recovery, which emerged in the 1950s and 60s as companies began to store backup copies of their critical data, paper or electronic, at alternate sites. At first merely periodic, file backup and offsite storage procedures became more frequent and regular by the 70s, when a handful of third-party regional storage facilities created what would become the alternate site, or “hot site,” market. Disaster recovery came into its own in the 80s, when the alternate site market grew considerably. The hot site became a very popular disaster recovery solution for data-dependent financial firms with large, centralized mainframe computers.

In 1983, the federal Office of the Comptroller of Currency (OCC) mandated that financial institutions develop documented recovery plans. With non-specific guidelines, the directive was largely seen as pertaining only to database backup and recovery. Compliance for the most part came in the form of transporting backup tapes to off-site storage locations. It was not until 1989 that better documentation, maintenance, and testing of recovery plans were required by the Federal Financial Institutions Examinations Council (FFIEC).

The 1990s saw perhaps the greatest revolution in computing to impact the disaster recovery industry, as computer systems moved from the data center, or “glass house,” and into the field. PCs became ubiquitous, and most companies moved from one centralized mainframe to vast networks of servers and desktop PCs distributed throughout the organization. This changed the game for disaster recovery, as the decentralized computing environment opened the door for recovery issues covering a much larger set of possible hardware and software combinations.

By the mid to late 1990s, the term business continuity became a popular replacement to the term disaster recovery, as recovery planners sought to mitigate a new host of vulnerabilities, from human error to network downtime and intrusion to communication failures, that resulted from this decentralized computing/operational environment. The term disaster recovery came to be used to describe the traditional IT-specific issues involving data backup and recovery, while business continuity became the term to describe the need to maintain continuity across the entire enterprise, from facilities to people to communications.

Business Continuity Management was first introduced in the end of the 1990's. However, BCM has only recently gained significant recognition within organizations. Recent incidents like the Y2K threat (Koch, 2001) and the event on 9/11 (Yankee Group, 2001) have made an important contribution in this rise of awareness.

As year 2000 approached, the issue of Y2K became prominent and organizations across the world began planning to a 'KNOWN' disaster. Y2K planning included contingency plans of continuing business in case the systems fail at midnight on 31st December 1999.

Finally the BIG disaster – 'Bombing of World Trade Center' on 9/11 2001 was a turning point which led organizations to realize the importance of Business Continuity Planning. Organizations which had a plan in place during this disaster, could resume operations very quickly whereas those who did not have any plan went bankrupt soon after.

Post 9/11, Business Continuity was no longer considered a project, but an ongoing program which needs to be nurtured and evolved. The next session will highlight the reasons on why such a program is very important.

2.1.2 Importance & Need for BCM

The term “Business Continuity Management” itself depicts its need i.e. Organizations implement BCM to assure the continuity of their business. Business Continuity has developed from its predecessor - disaster recovery, which was born in the 1960's paired with the rising computerization and later contingency planning (as mentioned in the last section)

Interest in BCM came up in the 1990's, but actually has only gained real momentum over the last several years. In this section, let us put some light on the reason behind this significant rise in BCM over the last few years.

The need for organizations to create formal BCM systems is discussed by Ericson (2001), who points out that there has been a significant increase in perceived importance by management for implementing BCP. For example, Digital Research Inc. (2002) reported that three in four companies with plans in place to deal with such disruptions have reviewed the adequacy of their plans in light of the events of 11 September 2001. Initially, the focus of BCP has been on information technology (Savage 2002). However, writers are increasingly recognizing that one of the most critical activities inherent in managing risk (Barnes 2002, Gilbert and Gips 2000) is ensuring the flow of inbound products and services as inputs to production (Burt et al. 2003).

The subsections below stresses on the importance of BCM:

2.1.2.1 Supply Chain Disruptions

As per Zsidisin, Melynk & Ragatz (2005), supply chains are increasingly susceptible to unplanned disruptions. With the implementation of the practices of lean systems, total quality Management, time-based competition and other supply chain improvement initiatives, managers now realize that their supply

chains are fragile, particularly to environmental disruptions outside their control. Several recent events have emphasized the risk in business and the increasingly fragile nature of supply chains. On 14th August 2003 electrical power in the American Midwest and Ontario disrupted, the resulting power outages lasting from minutes to days (www.macnn.com/news/20654). The effects of this disruption were felt as far as California where Apple Computer was preparing to launch its much awaited G-5 computer. This launch was affected by the fact that IBM in New York manufactured all the microprocessor chips required by Apple. The power disruption resulted in large-scale losses of production.

Therefore, it is becoming very important to address the continuity of Supply Chains. No Organizations operate in isolation and have a major dependency on its supply chain. It is very critical to look into the capability of the vendor's ability to provide services in case of disruptions and also to plan internally to continue operation in an event of supply chain issues.

In order to address supply risk, many managers are now adopting an approach for dealing with these specific types of disruptions—disruptions that are difficult to predict, have a small probability of occurring but that, when they occur, have an immediate and significant impact on the ability of the supply chain to meet customer demands. This approach is business continuity planning or Business Continuity Management (Zsidisin, Melynk & Ragatz, 2005)

2.1.2.2 High competition and demanding customers (Naomi, 2005)

Amidst rising competition, customer expect 24/7 uptime of E-commerce services. It is important for organizations to take the extra step in assuring the continuity of their IT systems supporting these services. Any disruption may lead to severe financial loss as well as loss of brand image and credibility of the organization. If organizations are not able to meet these expectations,

customers always have an opportunity to go to competitors. So, customers are explicitly demanding the assurance of the continuity of the services from their suppliers.

2.1.2.3 Increasing regulatory requirements (Naomi, 2005)

Not only businesses themselves and their customers acknowledge the need for continuity assurance. The increase in rules and regulations regarding continuity can be seen as another major driver for paying attention to BCM. Regulatory requirements force organizations to pay more attention to the continuity of their (business) processes. The requirements of 'DNB' (De Nederlandsche Bank) regarding Dutch financial institutions, BASLE II, the Health Insurance Portability and Accountability Act (HIPAA), the Sarbanes-Oxley Act (SOXA) and the regulations for municipalities regarding the municipal base administration (GBA) are examples of such regulatory requirements.

2.1.2.4 Increasing threats (Naomi, 2005)

The threats that endanger the continuity of a business are increasing. Incidences of terrorism, disasters, fraud and commercial espionage have increased in recent years. (CCTA, 1995-1) Besides an increase of the threats themselves, we can also observe an increase in the visibility of the threats and their consequences. This is largely caused by the extensive media attention. This extra visibility reinforces the effect that the increasing threats have on the awareness within organizations.

2.1.2.5 Increasing supply and demand chain integration (Naomi, 2005)

Organizations choose to focus more and more on their core activities and outsource non-core activities. This is due to the rising competition, which leads to a need for cost efficiency. This extension of the supply and demand chains accompanied by the high demands regarding delivery time, quality and price obliges chain partners to cooperate more intensively. As chain partners increasingly integrate their processes with each other, the consequences of discontinuity also get extended. The effect of discontinuity is not limited to one party but can also have consequences for the entire chain. This has to be taken into account when planning for continuity.

2.1.2.6 Increasing dependency on complex information systems (Naomi, 2005)

Organizations depend more and more on their information systems and underlying infrastructures, including (data) communication facilities. This rising dependency on IT and other technologies makes organizations more vulnerable to disruptions in these technologies. An obvious example of this dependency can be seen in the Y2K threat that caused great commotion within many organizations and was followed by a substantial rise in BCM activities.

2.1.2.7 Advent of process based approaches (Naomi, 2005)

The need for more continuity played a major role in the development of BCM. Besides that, an important change in organizational thinking also has to be mentioned. As opposed to concepts like disaster recovery and information security, BCM focuses on (critical) processes instead of business functions. This process focus has been enabled by the advent of the process-based approaches, like Business Process Reengineering/Redesign (BPR), Business Process Improvement (BPI) or Total Quality Management (TQM) and led to an important shift in organizational thinking. Organizations started to realize

they should focus not only on business functions but also, and maybe even mainly, on business processes, since processes create the value organizations aim for.

2.1.3 Definition of BCM

Having visited the history and the need for BCM in organizations, it is important to review the various definitions of BCM which will serve as a baseline to list down the scope covered by BCM. So, let's review some of the existing definitions on BCM.

The Business Continuity Management: Best Practices Guidelines document (2002) as adapted in Publicly Available Specification (PAS 56) Guide to Business Continuity Management (2003) portrays Business Continuity Management as an umbrella activity (Figure 3) “that unifies a broad spectrum of business and management disciplines in both the private and public sectors, including crisis management, risk management and technology recovery, and should not be limited to information technology disaster recovery (PAS 56 2003).”

The CCTA (1995-1) states that 'BCM is concerned with managing the risks to ensure that at all times an organization can continue operating to, at least, a predetermined minimum level'.

Zsidis, Melynk & Ragatz (2005) states that Business Continuity is a system that has been developed by practitioners to minimize the effects of unanticipated events on the firm's ability to meet customer requirements.

Elliott et al. (1999) view business continuity planning, from a finance market perspective, as 'Planning which identifies the organization's exposure to internal and external threats and synthesizes hard and soft assets to provide

effective prevention and recovery for the organization, whilst maintaining competitive advantage and value system integrity' (p. 48).

More recently, Shaw and Harrald (2004) recognize that BCP is an essential facet of business continuity management, which consists of business practices that provide focus and guidance for the decisions and actions required for a firm to prevent, mitigate, prepare for, respond to, resume, recover, restore, and transition from a crisis event.

According to Wilson (2000), Business Continuity Planning involves developing a collection of procedures for the various business units that will ensure the continuance of critical business processes while the data center is recovering from the disaster

BCP can also be defined as a complete process of developing measures and procedures to ensure an organization's disaster preparedness. This includes ensuring that the organization would be able to respond effectively and efficiently to a disaster and that their critical business processes can continue as usual (Business Contingency Preparedness, 2002)

The Business Continuity Institute (BCI, www.bci.org) defines BCM as: 'A holistic management process that identifies potential impacts that threaten an organization and provides a framework for building resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value creating activities.'

Spring Singapore (2005) uses the following definition: 'BCM is a holistic management process of identifying potential incidents that threaten an organization and the development of plans to respond to such incidents. It covers a broad spectrum of business and management disciplines, including risk management, disaster recovery and crisis management.'

Having reviewed so many different definitions of BCM, we can identify some important features relevant to BCM in all these definitions which have to be taken into consideration while identifying the areas for the maturity model. These features include:

- The objective of BCM is to ensure the continuity of the organization's business (Processes, people and systems) at the minimum acceptable level
- BCM activities should be prioritized with major attention towards mission critical business processes
- BCM covers both the prevention of disasters / disruptions and reducing the impact to business in case of a disaster / disruption. Hence, it has preventive, repressive and corrective actions.
- BCM is an iterative management process – Not a one off project. BCM becomes obsolete if not maintained or tested.

2.1.4 Related areas of expertise

Having discussed the definition of BCM, let us now look at other domains related to BCM which would help in clearly defining high level scope of BCM. These concepts include: disaster recovery and contingency planning and (information) security.

2.1.4.1 BCM in relation to disaster recovery and contingency planning

Botha & Solms (2004) have very clearly given the relation between BCM, Disaster recovery & contingency planning. The aim of contingency planning is to make provision for continuing business processes in a disaster situation while recovery is taking place (Glenn, 2002). It can be defined as the process of examining an organization's critical functions, identifying the possible disaster scenarios and developing procedures to address these concerns

(Rubin, 1999, p. 73). Disaster recovery originally intended for operations established to minimize data center downtime. Today, disaster recovery is seen as an active component of BCM and focuses mainly on the recovery of the IT department and all related functions (Hassim, 2000)

The inter-relationship of these three processes is depicted in Figure 8. The smaller circles labeled A to I represent various business processes. These processes are all dependent on services and infrastructure provided by the IT department, depicted by the innermost circle in the figure. Some of the processes are also dependent on others, as depicted by adjacent circles. The outermost circle represents a combination of the disaster recovery plan for the IT department and the contingency plans for these various business processes.

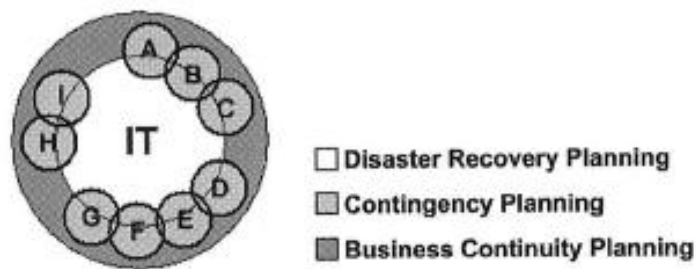


Figure 6: BCP, CP & DR Relationship (Botha & Solmes, 2004)

2.1.4.2 BCM relationship with information security (Naomi, 2005)

Information security and BCM partially overlap. Not all BCM measures concern information security and not all information security measures are part of BCM.

Information security ensures the availability, integrity and confidentiality of information. Information security measures are mostly preventive. BCM encompasses not only preventive measures, both also corrective and repressive measures. Preventive BCM measures can concern information security,

however, not necessarily all preventive business continuity initiatives are related to information security. They can also focus on resources other than IT, for instance on the building itself (physical security).

In addition, not all information security measures are taken solely for the continuity of only the critical business processes. Information security has a broader scope than only those preventive IT-related measures that are part of BCM. The integrity of the salary administration is not necessarily critical for the business continuity, but eventually it has to be assured. This is part of IT security, but obviously does not belong to the scope of BCM.

Graphically we can show the overlap of BCM and IT security like this:

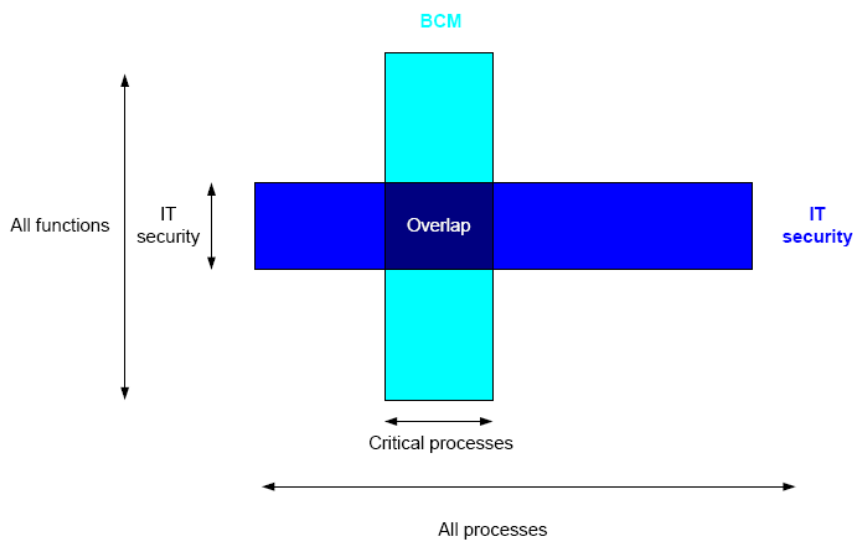


Figure 7: Overlap of IT Security & BCM (Naomi, 2005)

2.1.5 Scope of BCM

In the last two sections, we looked at two aspects:

- Definitions of BCM which gave us certain elements relevant to BCM
- Areas closely related to BCM and what BCM addresses in those areas.

These two aspects will serve as inputs to this section to have a transparency over the scope of BCM which will enable us to determine which areas fall inside or outside its boundaries.

Based on the definitions of BCM and the related areas to BCM, following points give the high level scope of BCM:

2.1.4.1 Mission Critical processes

BCM objective is to ensure continuity of only mission critical processes, which are core to the business. As per Naomi (2005), processes that are not critical also need to be recovered in the end, but not necessarily within a given (often short) timeframe. Of course their protection and recovery is also important, but it does not belong within the scope of BCM.

A successful BCM process requires an organization to identify its critical processes and to determine all resources these processes depend on, including IT systems. However, the focus is not primarily on these resources, but on the critical business processes. All BCM demands should therefore be derived from requirements regarding the critical business processes.

2.1.4.2 The risks: only those that could cause a sudden and serious disruption (Naomi, 2005)

Only risks that could result in a sudden and serious disruption of the business are considered as a part of BCM. These may be any kind of risk, ranging from flood to a failure of suppliers and from fraud due to unavailability of staff.

Risks that do not satisfy this description are not considered to be within the scope of BCM. Risks outside the scope of BCM are either not sudden or not severe enough.

Risks that are not sudden, but more long-term, fall outside the scope of BCM. Although such a risk may have a large impact, management has time to identify and evaluate the risk and take appropriate measures. Threats formed by competitors are examples of such risks.

Risks that are not severe enough to endanger the continuity of business do not belong to the scope of BCM either. We don't claim that these risks do not deserve attention, but BCM only focuses on the major threats to ensure continuity of business. Less severe threats must be dealt with somewhere else within the organization if necessary.

2.1.4.3 Continuity measures (Naomi, 2005)

BCM concerns both preventing disasters and disruptions and limiting the impact of a disaster or disruption that takes place despite of preventive measures. Therefore BCM encompasses different kinds of measures:

1. Preventive measures, which can either take a risk away or reduce its chance
2. Repressive measures, which can limit the damage a risk in case it manifests
3. Corrective measures, which can correct the damage caused.

Graphically, the difference between the various measures can be shown below:

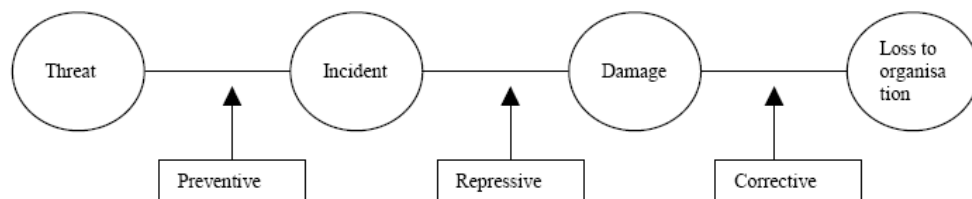


Figure 8: Measures to handle Risks (Naomi, 2005)

Besides those concrete measures, organizations have two other possibilities:

4. To either accept the risk (acceptance)
5. Or to transfer the negative consequences of a risk to another party (transference). (Van den Akker, 2002)

2.1.4.4 Disaster recovery plans for Mission Critical systems & Key Personnel

Since BCM already addresses critical processes, it is important that the systems required by these processes have robust recovery plans. Also, the key people operating these systems have proper backups. These are all in the scope of BCM

2.2 The concept of maturity models

From the objectives it is transparent that this research concentrates on the development of a tool that will effectively assess the BCM process in an organization, which will be based on a maturity model. Hence, in this section we understand what a maturity model is and how a maturity model can be useful in achieving the goal of this research.

We shall first begin with defining a maturity models followed by the evaluation of its applicability for BCM. Subsequently we will identify some important design issues, which we will take into account when we develop our own maturity model in the next chapter.

We focus our literature review on the following models:

The BPO (Business Process Orientation) Maturity Model (SEI, 2002)

The software development CMM (Paulk, 1995)

The BCM Model developed for Banks in India (Rai & Mohan, 2006)

The KPMG World Class IT model (Delen, 2000)

Complete Public Domain Business Continuity Maturity Model (Virtual Cooperation Inc., 2004)

The Gartner BCP Maturity Model (Mingay, 2002).

2.2.1 The concept of 'maturity model' & alignment with Research Objectives

Dayan & Evans (2006) explains that a Process is a set of practices to achieve a given purpose. It may include tools, methods, material &/or people. A process is therefore a leverage point for an organization's sustained improvement. Getting better performance, higher yield, or improved throughput cannot only be obtained as a result of hard work. It has to come out of smart work – such for which process has to be analyzed, improved, and optimized i.e. the process has to be mature.

According to Lockamy & McCormack (2004), the concept of process maturity proposes that a process has a lifecycle that is assessed by the extent to which the process is explicitly defined, managed, measured and controlled. The process maturity concept is analogous to that of a lifecycle, which occurs in developmental stages. This concept also implies growth in the areas of process capability, richness and consistency across the entire organization (Dorfmann and Thayer, 1997). This process maturity can be determined using maturity models, which assumes that progress towards goal achievement comes in stages.

In Chapter 1, we had assumed that the process capability cannot be measured but we can measure the process maturity. Therefore, maturity model is the right direction in achieving the objectives of the research.

Within the management theory, we find many different maturity models with varying focuses for various management process maturities. Despite the

variations in these models, they have certain common features. For instance, they determine the maturity of one or more specific processes within an organization. The scope of a maturity model can vary from a constituent process or a process within a certain function (e.g. software development Capability Maturity Model, CMM (Paulk, 1995)), to an integrated whole of the main processes that form the business (Instituut Nederlandse Kwaliteit – model, INK (Titulaer, 2001)).

The chosen scope of the maturity model will influence the design of the maturity model. We will see this when evaluating different maturity models. Also, we need to concentrate on differences between various maturity models. This is to formulate the standard features of a maturity model, based on existing maturity models. First of all, let's arrive at a definition for maturity model.

A maturity model consists of various stages with each stage building on the previous one. Hence, the hierarchy composed of the various maturity stages along which an organization progresses is cumulative in nature.

On analyzing various maturity levels (Appendix A), we see that most of them have 5-6 levels of maturity. Moreover, since we require a simple model which represents reality and is easily communicable, we will distinguish no more than five or six different levels for our maturity model. The principle behind the different levels is that an organization develops new practices and processes, from which it learns, and from which it can subsequently optimize these practices and processes to move on to the next level (Naomi, 2005). Most maturity models are designed in such a way that an organization cannot skip a level, although not all specialists agree on this statement (Mingay, 2002).

This may suggest that organizations should always aim for the highest maturity level. But, this is not true. The highest level as an ideal situation one

should aim for. But, in reality it is usually accepted that an organization can decide to aim for a lower level based on its situation or industry.

Based on the discussion so far and the description of Gartner maturity model (Mingay, 2002), Naomi (2005) formulates the following definition of a maturity model:

A maturity model is a staged structure of maturity levels, which defines the extent to which a specific process is defined, managed, measured, controlled and/or effective, assuming the organization develops and adopts new processes and practices, from which it learns, optimizes and moves on to the next level, until the desired level is reached.

Therefore we can list down the following objectives of the maturity models:

- To measure the maturity of the process under consideration i.e. assign a level to the existing process
- To compare the maturity of an organization to other organizations & with best practices
- To provide a mechanism of learning to improve the maturity level

On mapping the objectives of the maturity models with the objectives & aims of our research, it can be concluded that maturity model is the right concept for satisfying our objectives. Therefore, it justifies the development of a BCM maturity model in this dissertation.

During the initial assumption, we said that the BCM outcome / capability is directly dependent on the BCM process. One of the objectives of a maturity model is to determine the maturity of a process. Therefore, a developing a BCM maturity model will satisfy our requirements.

2.2.2 Evaluation of existing maturity models & design options

As we stated before, a number of maturity models exists for various management disciplines. The collection is so vast, that it is impossible to review and give a complete overview of the existing models. However, evaluating a few models could give us an idea on the design for our model. So, we selected three well-known maturity models, namely the CMM (we will focus on the software development CMM since this was the first one developed, but other CMM's like the IT service CMM have a comparable design), the INK and the BPO (Business Process Orientation) Maturity model. Also, we will look at the Business Continuity Model developed for Banks in India (Mohan & Rai, 2006).

We selected these models since all three are well known and accepted in the industry and also have a considerably different focus and design. So, this will give a good overview on different design options we might consider for developing our maturity model. Appendix A gives a brief description of all these maturity models. From these models, we determined the following design options:

Maturity levels: Most models have five different maturity levels. The highest level is an ideal situation and most organizations will concentrate within levels one to three.

Number of Process Areas used to determine maturity: From the description given in Appendix A for the four maturity models taken into consideration, CMM assigns a maturity level to the whole software development process based on the process areas covered. The process is for instance either repeatable or managed based on the number of process areas covered by the organization. Therefore, each maturity level will cover different number of process Areas. The same concept holds good for the BPO Maturity Model.

On the other hand, The world class IT gives a separate maturity level to five different areas, namely exploitation, incidents & problems, changes & configuration, service delivery, development & maintenance and strategy & policy.

The BCP Model developed by Mohan & Rai identifies 5 components namely the Organizational Soft Issues, Processes, People, technology and Facilities Management and defines a variety of metrics at four levels (Corporate / Policy level, Tactical / Organizational level, Tools/Methods, Up gradation / Review / Testing Mechanism level) to measure the 'Resilience' and 'Vulnerability' of a Bank in the event of Business disruption.

We see that CMM and BPO Models are very simple. It has only one hierarchy of levels along which the process matures. This shows that there is a certain order in the activities one should develop and therefore all sub processes will be interlinked. However, in practical management scenario, it may sometimes be impossible to interlink all sub processes. So, having one single hierarchy for maturity level is not an easy task and may not be feasible to every management process.

Nevertheless, having more areas along which maturity can be assigned (Like in KPMG World class IT Model and the BCM Model developed by Mohan & Rai (2006)) has its advantages. Integrating sub processes along one line may result in losing valuable information. Naomi (2005) gives an example to explain this: If process C, which should actually only be paid attention to after process A and B are optimized, already has been optimized in a practical situation, but process A is not, you would lose this information in a model designed like the CMM. However, if you assign a maturity separately to process A-E, you will retain this information and be able to incorporate it the final assessment.

At the same time, more the number of areas, less the model can serve its primary goal of providing clear insight in the maturity of a process. So it is important to create a balance between the information you can lose by simplifying the model (like CMM) and the understanding one can gain by having a good number of areas and determining the maturity across each (KPMG world class model).

Additional design dimensions: We may add extra dimensions to a maturity model besides the number of areas maturity is assigned on and the number of maturity levels. For instance, the world class IT distinguishes two different focuses. It assigns a maturity level to each area two times, once from a supplier's point of view, and once for the user's focus. This makes the model slightly more complex.

On the other hand, the tuning of the supplier and user side is exactly what makes this model so useful, so in this particular instance the extra complexity could be justified. If the value added by adding an extra dimension, like the focus, is large enough to justify the extra complexity, one may choose to add an extra dimension to the model besides the number of maturity levels and areas the maturity is determined on.

2.3 Existing BCM models & Best Practices

Before we begin developing our own model, we have to check whether there are existing models that meet our requirements, if necessary with some small adjustments. When searching for such models, we found two maturity models for BCM. The Complete Public Domain Business Continuity Maturity Model (BCMM) developed by the Virtual Corporation (Virtual Corporation Inc, 2004) and the Gartner BCP Maturity Model (Mingay, 2004), which is based on the maturity model of COBIT.

BCMM

The Virtual Corporation Inc (2004) states that the BCMM has been developed as a tool to ‘objectively and consistently measure the organization's disaster Readiness’ or state-of preparedness. The BCMM states the following as the primary goals to be achieved:

1. Provide a diagnostic tool for objective evaluation of business continuity program initiatives
2. Generate consistent data from which meaningful benchmark analyses can be drawn
3. Answer the following key questions for senior management:
 - a) Where are we now?
 - b) What is the target we are shooting for?
 - c) What evolutionary path do we follow to get there?

The BCMM distinguishes six different maturity levels regarding the BC program. Levels one to three represent organizations that have not yet completed the necessary Program Basics needed to launch a sustainable Enterprise BC program. Level 4 to 6 represent the evolutionary path of the maturing Enterprise BCM program. The BCMM defines eight corporate competences. These competences together determine the maturity of an organization.

Although this model contains a lot of useful information, it does not match the objectives of our research. The lag between the BCMM and the model we aim to develop lies within the different goals of the models. The BCMM is mainly developed as a tool for evaluation, whereas we also want to be able to give recommendations on how to improve maturity. The BCMM does not suit this objective as it identifies characteristics of organizations that belong to a certain maturity level, which are not necessary goals & practices that lead to this maturity level.

Instead of practices that lead to a higher maturity, these characteristics can also be consequences of being at a certain maturity level. For instance, one can imagine that executive management commitment can contribute to the maturity of the BCM. However, being an industry leader seems more like a consequence of a mature BCM instead of the other way around. Since we want our maturity model to provide a foundation for action-based recommendations, we want to base the maturity on the activities an organization should perform.

Being able to do action-based recommendations was one of the reasons for the requirement that the model should be based on a best practice methodology. BCMM is based on best practice, but not on a generally accepted best practice methodology. There's no logical step-wise process or methodology that visibly underlies this model.

Gartner BCP Maturity Model

The purpose of the Gartner BCP Maturity Model is to help organizations (Mingay, 2002)

1. Grade the BCP processes and practice
2. Enable senior management to appreciate what is required to improve the enterprise's BCP position
3. Complete a gap analysis so realistic targets can be set
4. Provide a basis for peer-group comparison and establishment of industry standards.

The different levels of maturity that this model identifies are based on the levels of the COBIT maturity model, which at their part are based on the

CMM maturity levels. Gartner identifies 19 individual process and practice areas that must be assessed to measure an enterprise's BCP maturity.

The criticism mentioned against BCMM (on the last page) also applies to this model. The Gartner BCP Maturity Model does not identify real action-based recommendations and is not based on a best practice methodology. Hence cannot be used as the basis for development of our maturity model that would serve as an input for a BCM analysis tool.

We can **conclude that neither of the two existing maturity models for BCM meets our research objectives.** Furthermore, the gaps between our objectives and these models are substantial enough to conclude it's not possible eliminate those lags by making just a few adjustments. Therefore we have decided to develop our own maturity model for BCM. Although these two models are not suited for the purpose of our research, we could use them as useful inputs for the development of our own model.

2.3.1 BCM “Best Practices”

The development of a comprehensive maturity model of BCM is possible only after a broad-based study of organizational BCM best practices. Some authors have described individual “best practices” associated with BC, sometimes grouped into functional or process categorization. The Business Continuity Institute (Smith 2003) recommended a six-phase approach, summarized as follows:

Understand your business strategy

- Define a business continuity strategy at varying levels of abstraction such as organizational, functional, and resource-level
- Develop plans to execute your business continuity strategy

- Build a “business continuity culture” through training and awareness programs
- Periodically audit and test your program
- Institute appropriate governance processes

Many authors have explored the question of what elements make up the formal BCM system. Gilbert and Gips (2000) saw a BCM system as consisting of four major elements:

1. Risk identification;
2. Risk assessment;
3. Risk ranking; and
4. Risk management.

These four categories were similar to the four discussed by Chapman et al. (2002), namely:

1. Risk identification;
2. Risk assessment;
3. Supply chain continuity management and coordination; and
4. Learning from experiences.

Morton (2002) presents a more detailed system consisting of nine activities:

1. Provide top management guidelines;
2. Identify serious risks;
3. Prioritize the operations to be maintained and how to maintain them;
4. Assign staff to disaster teams;
5. Take a complete inventory;
6. Know where to get help;
7. Document the plan;
8. Review the test plan with key employees and train all employees; and
9. Maintain the plan.

The National Institute of Standards and Technology (NIST) asserted that the success of BC activities is dependent upon an understanding of their recommended baseline BC process, development of a plan with all requisite components, and emphasis on plan maintenance, training, and testing (NIST 2000). NIST recommended a contingency planning process consisting of the following steps:

1. Develop the contingency planning policy statement.
2. Conduct the business impact analysis (BIA).
3. Identify preventive controls.
4. Develop recovery strategies.
5. Develop an IT contingency plan.
6. Plan testing, training, and exercises.
7. Plan maintenance.

A number of other prescriptions for process-oriented frameworks have appeared in the literature, for example in books such as (Barnes 2001) and (Hiles and Barnes 1999). These process models could provide the basis for models assessing the state of preparedness of an organization with regard to both BC and DR. A more direct approach to BC assessment is provided by (Ream 2003) who developed a Business Continuity Management (BCM) maturity model. Similar to maturity frameworks for other areas of study, the BCM maturity model uses a variety of characteristics to “grade” overall organizational competence on BC and related processes. Ream graded organizations as follows:

“Level 1 - Self-Governed - Business continuity management has not yet been recognized as strategically important by senior management.”

“Level 2 - Supported Self-Governed – At least one business unit or corporate function has recognized the strategic importance of business continuity and has begun efforts to increase executive and enterprise-wide awareness.”

“Level 3 - Centrally-Governed –Participating business units and departments have instituted a rudimentary governance program, mandating at least limited compliance to standardized BCM policy, practices and processes to which they have commonly agreed.”

“Level 4 - Enterprise Awakening - All critical business functions have been identified and continuity plans for their protection have been developed across the enterprise.”

“Level 5 – Planned Growth. Business continuity plans and tests incorporate multi-departmental considerations of critical enterprise business processes.”

“Level 6 - Synergistic - All business units have a measurably high degree of business continuity planning competency. Complex business protection strategies are formulated and tested successfully.”

Ream considered organizations at Level 1 – Level 2 to be “at risk” with respect to response capabilities based on the overall weakness of their respective BC programs. Similarly, organizations at Level 3 – Level 4 were labeled “competent performers”. Firms at Level 5 – Level 6 were described as exhibiting the highest levels of preparedness.

The literature cited above provides significant insights on the nature and challenges presented by Business Continuity. Furthermore, comprehensive BC practice models such as those described by (Barnes, 2001), (Smith 2003) and (Ream 2003), and the NIST contingency planning guidelines, illustrate how various BCM practice characteristics may be used to develop an organizational BCM model. Such a model could be used to establish a composite score such as a maturity level to facilitate a comparison of organizations in a wide sample (Cerullo & Cerullo, 2004). However, the above models do not address all the dimensions of Business Continuity which are mentioned in the preceding section 2.1.3. What is needed to support an

industry-wide comparison therefore is the development of a robust evaluation framework (analysis tool) that allows identification of the noted individual practice characteristics and groups them in a way to illustrate a firm's BC strategy (Dye & Scott, 2005)

In June 2003, Continuity Central, a United Kingdom based resource that provides international business continuity information proposed a Business Continuity Management Model (Figure 6) on its Web Site with the explanation that "There seems to be no widely accepted model which can be used to present the concept of business continuity management in a way which is simple enough to allow rapid understanding in people new to the industry, yet comprehensive enough to be useful in other areas of the BCM process, such as communicating with the company board and in awareness and training programmes (Continuity Central 2003)." This model, even in the "straw man" stage goes beyond the Business Continuity Management: Best Practices Guidelines and Publicly Available Specification (PAS 56) Guide to Business Continuity Management umbrella model to include many additional functions and their temporal nature.

PROPOSED BUSINESS CONTINUITY MANAGEMENT MODEL

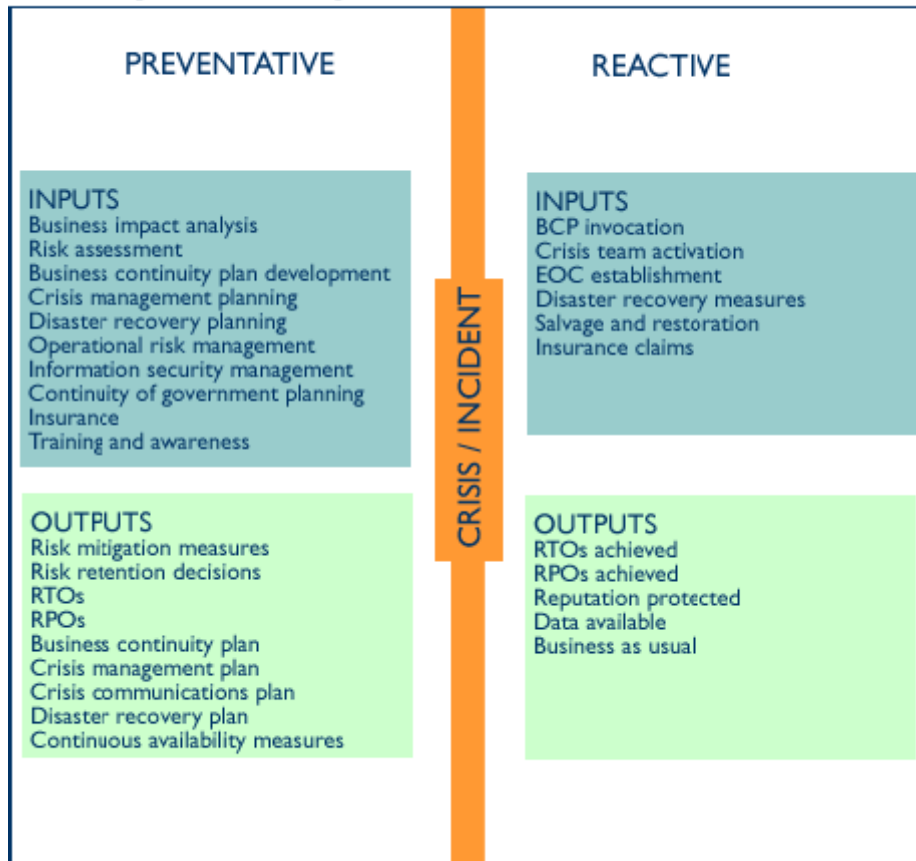


Figure 9: Proposed Continuity Central BCM Model

Other Best practices are explained in the Appendices.

2.4 Requirements of our Maturity Model

Having discussed that the existing BCM maturity models do not satisfy our objectives and also knowing the scope of BCM, following are the requirements for the model we are to develop:

1. It should provide a substantiated judgment of the BCM Process maturity within a given organization.

2. The maturity model should be easily communicable i.e. the results of application of this model must be clearly communicated to top management in terms of certain parameters & process areas.

3. The model should give recommendations on how to improve the maturity based on the determined maturity level. Many maturity models give some recommendations. However, often these are just some vague pointers that seem logical but in practice these are hard to translate into concrete actions. To be applicable in practice, recommendations need to be action based. Therefore, we aim to develop a model that can give action-based recommendations based on the current maturity

4. The model has to be suitable for benchmarking or making other relevant comparisons between organizations or parts of an organization

5. The model has to be based on a generally accepted best practices methodology. This is because it is easier to derive action based recommendations if the assessment is done based on a certain methodology. Also, using a generally accepted methodology as a base for the model makes it easier to explain and justify the model to organizations you would want to assess using the model.

3. Framework for BCM Maturity Model

3.1 Introduction

Having concluded in the previous chapter that none of the existent maturity models satisfy the aim of this research, it is apparent that a new maturity model is required for our purpose. Before we do so, we need to develop a framework for this maturity model. This framework will consist of areas (and underlying aspects) which determine the maturity of BCM in an organization. We will consider this framework as a draft maturity model and this will serve as one of the basis for the data collection exercise.

In this chapter we focus on the methodology of developing the draft model (using the literature available to us). Then we establish the areas to maturity levels are assigned followed by the aspects that describe those areas. Realization of the requirements of these aspects would finally determine the maturity level of each given area.

Figure 10 gives a process based explanation on how this chapter is structured:

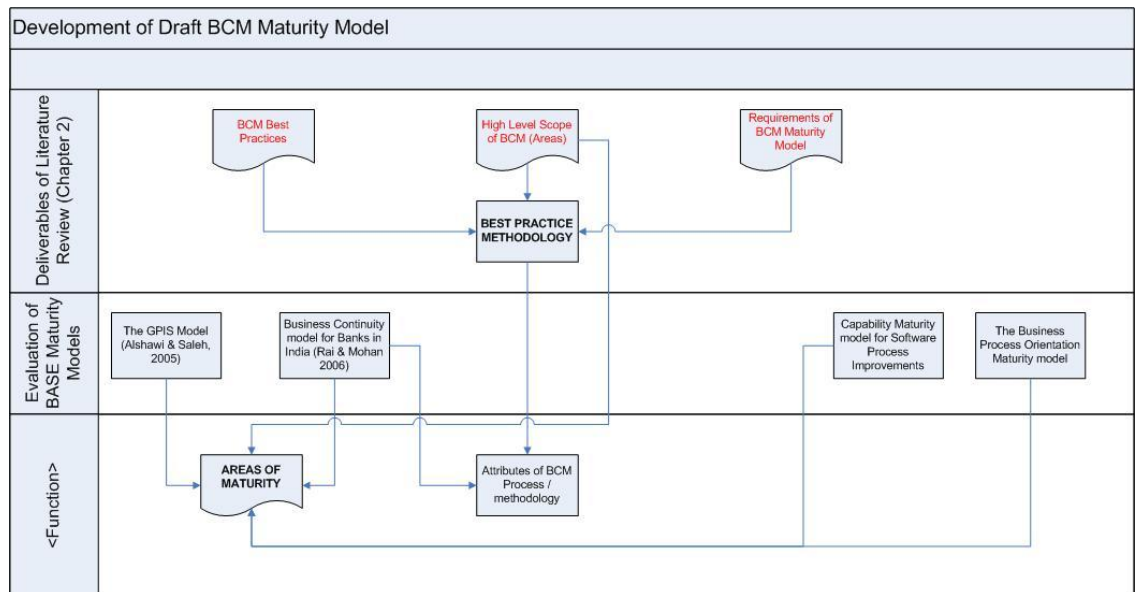


Figure 10: Development of Draft BCM Maturity Model

3.2 Development process for the framework

In section 2.2.2, we analyzed the design options for our maturity model. One of them addressed 'the number of areas to which maturity is assigned'. We may have our model designed to give a single maturity determination based on the analysis of the whole process or the model may be designed to give maturity levels to different areas of a process. Both the options have their own advantages.

By developing a model with four or five different areas, we can collect more information to develop a logical set of maturity levels for each of them. Upon analysis if we find that two or more areas require certain goals to be addressed simultaneously, we may combine them into one single area. This will be validated after executing the survey.

Now the next question is what these 4 or 5 areas are going to be, to which maturity gets assigned? How do we obtain these areas? As mentioned in the first chapter, many best practice BCM methodologies exist. It would be logical to extract the areas based on the different stages within such methodologies. In order to do so, we will look at existent methodologies and come up with a methodology that seems to cover all areas within Business Continuity Management (Few of the methodologies were looked at in section 2.3.1). Then the stages or phases within the selected methodology will be arranged in four or five areas, to which maturity will be assigned.

When arranging the various stages or phases of a methodology into distinct areas, following points were taken into account:

- Each area should be a distinct phase within the methodology. Goals in one area should not exist in another area.

- Each area should be complete as an individual entity to which, a single maturity level may be assigned. They should individually differentiate the maturity of an element in the management process.
- Maturity of one area must not be dependent on the maturity of another area. They should be independent of each other.
- Once we have the areas in place, the next step is to identify sufficient aspects / goals for each area which will help to determine the maturity of this area. These aspects can be extracted out of the existing knowledge base on BCM, which include BCM best practices, BCM methodologies and models.

In a nutshell, we will follow the below mentioned steps in developing our framework for the maturity model:

- Formulate a best practice methodology (from the existing literature review) to base our maturity model
- Extract 4-5 areas from this methodology which will be used to determine individual maturity levels.
- Identify aspects / goals in the areas that can collectively give an indication of the maturity of an area. We will first identify relevant aspects from literature review and then organize them into the different areas (extracted in step 2)

This methodology to develop a framework for our maturity model is shown graphically in Figure 11.

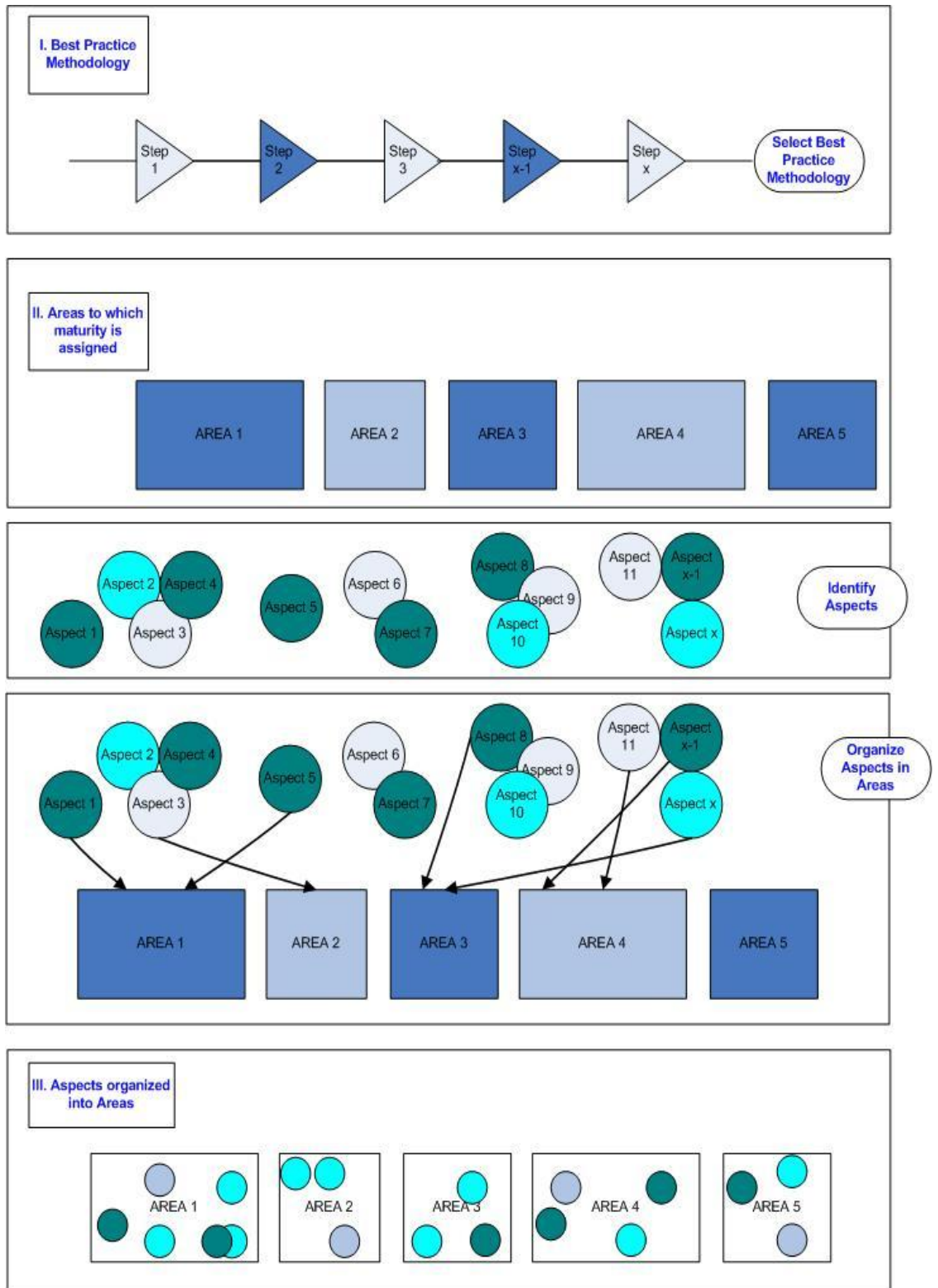


Figure 11: Methodology for development of Framework of BCM Maturity Model

3.2.1 Selection of the best practice methodology

As discussed earlier, no generally accepted best practice methodology exists. But, we can see that the different methodologies are very similar. We studied various methodologies (Refer to section 2.3.1 and Appendix B). Different methodologies have different distinct phases in their process.

However, critical analysis showed that all methodologies generally describe similar sequence of activities. There were certain general activities which were common to all. This helped us formulate the following methodology:

- Kick-off BCM program, develop a BCM Charter (containing strategy / policy) & assign responsibility / accountability
- Perform a BIA (Business Impact Analysis)
- Perform a risk analysis (RA)
- Select the Business Recovery Strategies
- Develop the complete Business continuity Plan along with preventive, corrective & repressive measures (Incident Response Crisis Management, PR & Media)
- Implement the BC Plan by embedding in organization culture through training & awareness.
- Test, Audit & and maintain the BC plans

These seven steps form an iterative process of the whole BCM program. Methodologies like BCI, do not consider initiation as a separate phase, but categorize it generally under ‘program management’. Program management is actually carried out throughout the life cycle of BCM, which includes development of BCM policy or charter, assigning BCM responsibilities, awareness creation and monitoring of the different phases of BCM cycle.

Since Program management encompasses such important activities, we found it satisfactory to replace the first step with a general term: BCM Program

management. This results in the following methodology (which has also been formulated by Naomi, 2005)

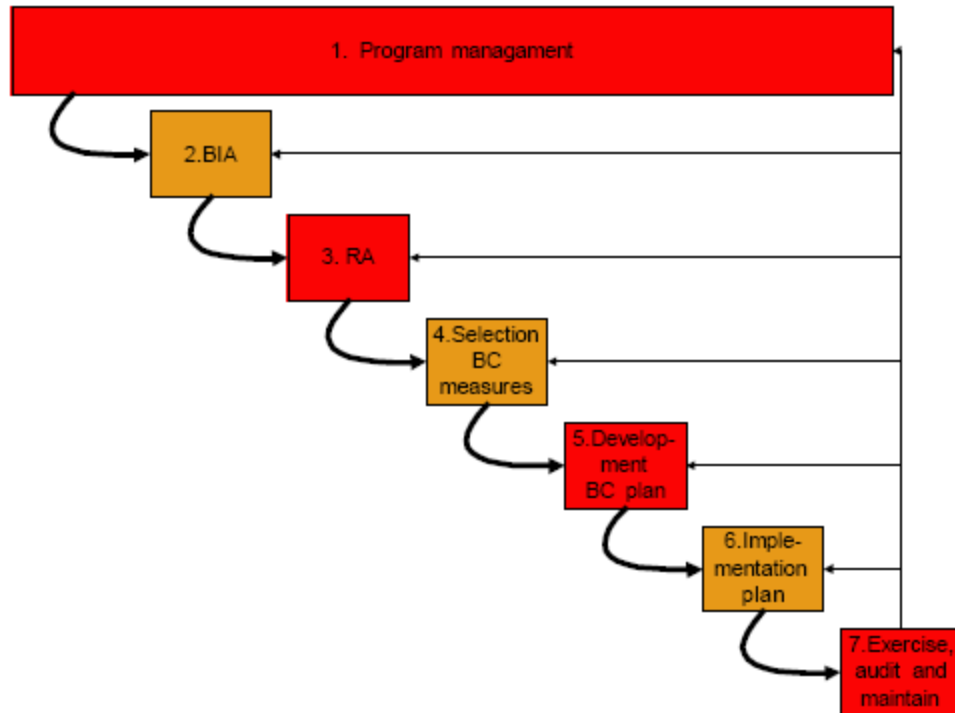


Figure 12: BCM Methodology used as a basis to develop framework for maturity model

3.2.2 Identification of areas within the framework

Following the selection of best practice methodology, we can identify the distinct areas to which a maturity will be assigned. These areas must be based on the best practice methodology formulated in section 3.2.1. Also, these areas must satisfy the guidelines on their composition (refer section 3.2):

- Each area should be a distinct phase within the methodology.
- Each area should be complete as an individual entity to which, a single maturity level may be assigned.
- Maturity of one area must not be dependent on the maturity of another.

All stages in our best practice methodology (Figure 11) satisfy the first two guidelines. But, the third is not satisfied. For example: BIA, RA, and selection of Business Recovery strategies are interlinked. We cannot have an organization with highly matured Business Recovery strategies without having a highly matured BIA / RA process. Therefore, we will combine stages 2, 3 and 4 in the methodology into one single area, which we will call 'Planning & Analysis'. So, we will now have 5 different Areas, which satisfy all the above guidelines.

BCM program management (Step 1) – Initiation of BCM program, development of BCM strategy / policy, how is BCM culture embedded in the organization, who is responsible for BCM, is the top management committed to BCM, how aware are the employees on BCM etc

Planning & Analysis (step 2-4) – Classification of Business areas based on their criticality, identification of the critical processes and their dependences, conducting a Business Impact Analysis (BIA), performing an Risk Analysis (RA) and selecting Business Recovery Strategies based on the results of BIA & RA.

Development of the BC Plan (step 5) – The actual writing of all the plans that together form the BCP including preventive, corrective & repressive measures (Incident Response Crisis Management, PR & Media)

Implementation (step 6) - Implement BC Plan (preventive, corrective & repressive measures) by embedding in organization culture through training & awareness.

Maintenance (step 7) - Exercise, audit and maintain the BC initiative

Therefore the five areas, to which maturity will be assigned, are:

- AREA 1: BCM Program Management
- AREA 2: Planning & Analysis
- AREA 3: Development of the BC Plan
- AREA 4: Implementation
- AREA 5: Maintenance

3.2.3 Determining Aspects within the distinct areas

Now that we have identified the 5 areas for our framework, the next step (step III) is to extract aspects for each area which together indicate the maturity of this area. Once again, we use the existing literature review to identify the aspects (best practices for BCM). We came up with a number of aspects (best practices), which were filtered out by:

- Removing doubles
- Combining two or more inter related best practices addressing a similar thing, into one single aspect. For instance: the best practices 'communicate the mission regarding BCM' and 'organize awareness sessions for BCM' both relate to the aspect 'awareness'.
- Removing any methodology specific aspects
- Removing aspects that are not relevant for determining maturity
- Removing aspects that are more of characteristics than practices and cannot be used to make action-oriented recommendations.

We then took the filtered aspects and organized them into the 5 identified areas (section 3.2.2). We then arrived at the following draft framework for our maturity model (with description of each aspect under each area):

AREA 1: BCM PROGRAM MANAGEMENT

Responsibility	A person placed high in the organization hierarchy must be responsible for BCM. The person should have enough authority to over right functional reporting line for any person in case of a crisis.
Budgeting	Importance of BCM in an organization is determined based on whether it has a separate BCM budget and also how large is this budget?
Top Management Commitment	Successful BCM require resources and cooperation from various departments, which consider BCM as an added burden. So, commitment from the top management is necessary to drive BCM initiative
BCM Charter / Policy	A clear, transparent and communicated BCM policy / charter give the BCM program the right direction. It defines the scope and quality of the BCM process.
Integration of BCM in other processes	Integration of BCM into other management processes and Projects ensures pro active incorporation of continuity rather than considering continuity aspects at a later stage of projects or processes.
BCM Awareness	Without staff awareness, BCM can never be implemented as per their intention (scope & quality)

AREA 2: PLANNING & ANALYSIS

Process Analysis and selection of BCM methodology	Using a standard (industry specific) BCM methodology can clearly indicate the quality of the BCM process in an organization
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Quality of Business Impact Analysis	Whether or not an organization has classified its Business areas / system /processes based on their criticality, will indicate the scope of BIA and its associated quality
Quality of Risk Analysis	Same as ‘Quality of BIA’. Whether or not an organization identifies its critical processes and how it analysis the risks determines the quality of BCM process
Quality of selecting Business Recovery Strategies	The way an organization selects its Business recovery strategies highlight the quality of BCM process. Whether this selection is based on result of BIA & RA?
Level of Analysis	The extent of analysis – what minute details & dependencies are considered in BIA / RA will influence the quality of BCM in an organization
Tuning with external stakeholders	The extent to which external stakeholders (vendors, suppliers, etc.) are involved in the BCM process also determines the quality of the BCM process

AREA 3: Development of the BC Plan:

The number of available plans indicates the quality of the BCM process in an organization.	
Test Plan	Describes the test (schedules based on the criticality of areas) for the BCM plans
Maintenance Plan	Gives the procedure of how to maintain BCM plans. How can stakeholders communicate the changes?

Crisis Communication plan	Highlights how communication should occur in case of a crisis? Responding to Media etc.
Incident Response Plan	This gives the reactive measures to be undertaken in case of a crisis/disruption, parties involved etc.
Security plan	Gives the preventive continuity measures
Escalation Plan	Describes the procedures to be followed to be followed by staff in case of a disruption. Who to escalate and when? This forms a basis whether contingency plan must be activated or not?
Disaster Recovery Plan	Gives the recovery procedures of IT (Corrective & Repressive actions)
Process Salvage & recovery Plan	Describes, how critical processes can be resumed from an other site in case of a disaster and how to return back to 'Business as usual'
Training Plan	Describes the training (schedules) for the BC plans, which help in embedding BCM in the organization's culture
Form of the plan	Not just having a plan is sufficient! What's important is whether it is written in a usable format?

AREA 4: Implementation

Execution of the Plan	Whether an organization considers BCM is an ongoing exercise, or a ad hoc project which has just started or already finished, will indicate the quality of the BCM process. Has the plan been executed in all facilities of the organization? Does it cover all processes? Are the employees
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	trained? All these are indicators of BCM quality.
Disaster Response Organization	Is there an execution of a virtual body, in case of a disaster, which will coordinate all activities (corrective & repressive measure)? Are the succession plans for key staff executed (preventive measure)? These also indicate the BCM process quality.

AREA 5: Maintenance

Tests and exercises	Regular testing and exercising of plans under simulated or live situations, help in gaining confidence and prepare to face disasters. Whether the gaps arising out of tests are addressed or not, is also an indicator of the BCM process quality? Which facilities are tested? - is an indicator of BCM scope
Maintenance of all plans	An organization must treat BCM as an iterative process. It should not remain as a project which is over some day. It should be treated as a cyclic process, keeping it up to date.
BCM Audit	An independent check on the BCM process can provide a useful insight and recommendations to improve.

3.3 Draft Maturity Model

In the preceding section, we arrived at the draft framework which gives us the areas of the BCM process to which maturity is assigned and the aspects / goals relevant to each area. The next step is to identify the various levels of maturity. This will be formulated looking at the existing maturity models – BPO Maturity model & CMMI Model.

Figure 13 show the BPO maturity model and its levels:

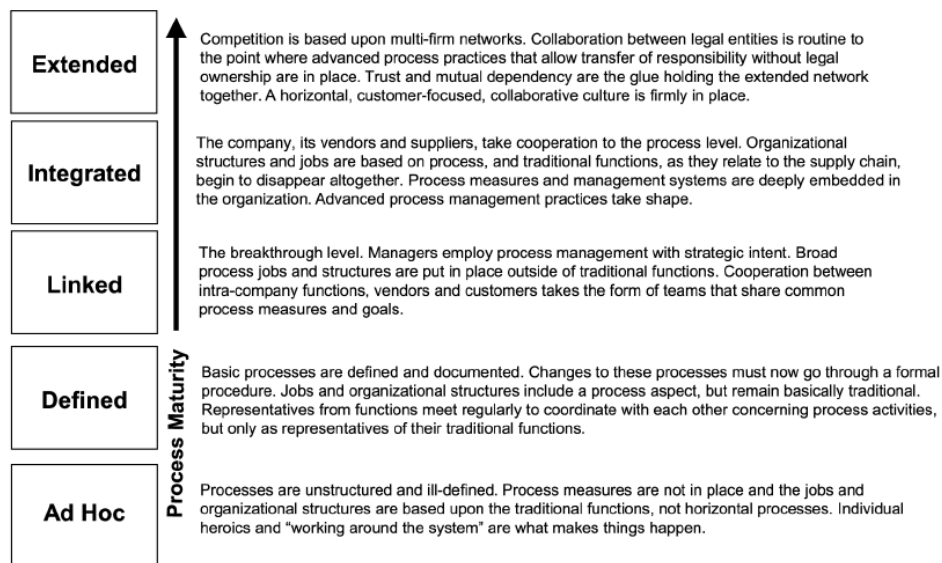


Figure 13: BPO Maturity Model

Also the CMMI model has 5 levels namely:

1. Initial: Process unpredictable, poorly controlled & reactive
2. Managed: Process characterized for projects and if often reactive
3. Defined: Process characterized for organization and is pro active
4. Quantitatively managed: Process measured & Controlled
5. Optimized: Focus on process improvement

We notice that both the maturity models have 5 levels.

Evaluating the Application these levels to the BCM process areas, we notice that ‘Initial’ & ‘Quantitatively Managed’ levels in CMMI cannot be applied to BCM. In BCM, there may not be any process at all and in fact organizations do not have any BCM in place. Organization may have only DR infrastructure to cater to IT discontinuities. Therefore, it is more AD HOC in nature (similar to the first level of BPO).

Also, organizations normally aim to optimize their BCP process upon measuring & controlling their existing processes. Therefore, in case of BCM ‘Quantitatively Managed’ aspects can be combined with the ‘Optimized level’.

In case of BCM, the ‘Initial’ & ‘Quantitatively managed’ level can be replaced with the corresponding levels from BPO maturity Model namely the ‘ADHOC’ & ‘INTEGRATED’. Integrated level is more suited for BCM process because of the inclusion of supply chain management in its scope. The contingency planning to supply chain management is an integral part and must be integrated with the internal processes.

There following levels are proposed for BCM maturity model:

1. Ad Hoc
2. Managed
3. Defined
4. Integrated
5. Optimized

Mapping the description of the five levels to the various process areas and their aspects, the draft BCM framework is given below:

Level 1: Ad hoc

Area 1: BCM Program Management

- Responsibility: No clear responsibility defined
- Budgeting: No budget allocated
- Top Management Commitment: No commitment and only driven at a departmental level
- BCM Charter / Policy: No formal charter
- Integration of BCM in other processes: No integration and it only exists on standalone basis
- BCM Awareness: There is no staff awareness at all. Only Managers are aware, if anything exists.

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: No standard exists in the organization
- Quality of BIA: No classification of business areas / processes exist and therefore BIA is done only on a ad hoc basis for some obvious critical functions
- Quality of Risk Analysis: Same as BIA. No formal risk assessment is done.
- Quality of selecting Business Recovery Strategies: This is of very poor quality as no proper BIA OR RA is done
- Level of Analysis: Very basic analysis is done which is limited to first level contingency planning. No dependencies & integrated requirements are addressed.
- Tuning of external stakeholders: Stakeholders are not addressed in this level

Area 3: Development of BC Plan

- Test Plan: Not applicable
- Maintenance plan: Not applicable
- Crisis Management Plan: No applicable
- Incident Response Plan: Not Applicable
- Security Plan: May or may not exist
- Escalation Plan: May or may not exist as escalation are normally documented as a part of normal IT BAU planning
- Disaster Recovery Plan: Basic Plan exist
- Process Salvage & recovery Plan: Not Applicable
- Training Plan: Not Applicable
- Form of the Plan: It is written in a cumbersome way.

Area 4: Implementation

- Execution of the Plan: Very basic and ad hoc execution exists and covers very limited process
- Disaster Response Organization: Not Applicable in this level

Area 5: Maintenance

- Tests & Exercises: Carried out once a year with no formal process to correct the plans and fill the gaps which are highlighted during the tests. Ad hoc facilities are tested just to satisfy audit requirements
- Maintenance of Plans: No regular maintenance
- BCM Audit: No formal and regular audit

LEVEL 2: Managed

Area 1: BCM Program Management

- Responsibility: With a person at middle level e.g. IT Manager, Operations Manager etc.
- Budgeting: Very limited budget allocated or could be a part of any other budget like Risk or IT or operations budget.
- Top Management Commitment: Very limited commitment
- BCM Charter / Policy: A formal charter exists
- Integration of BCM in other processes: No integration and it only exists on standalone basis
- BCM Awareness: Limited staff awareness i.e. only to people who will be involved in contingency planning & response.

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: Industry best practices are followed
- Quality of BIA: Classification of business areas / processes exists based on their criticality. Business impact is determined for important areas only.
- Quality of Risk Analysis: Same as BIA. RA is done only for critical areas and less priority areas are not touched
- Quality of selecting Business Recovery Strategies: The quality of selecting Business recovery strategies is good as it is based on BIA & RA of critical areas.
- Level of Analysis: Dependencies and integrated requirements are addressed as a part of the analysis, in case of mission critical areas.
- Tuning of external stakeholders: Stakeholders are not addressed in this level

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: Not Applicable. This is more of a reactive process i.e. update something, if the existing plan fails.
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: May or may not exist
- Form of the Plan: It is written in a user friendly way

Area 4: Implementation

- Execution of the Plan: Plans are executed properly for mission critical areas as an ad-hoc project. Not all facilities are covered.
- Disaster Response Organization: Virtual Body comprising of senior management exists. However, supporting bodies for logistics, IT etc do not exist

Area 5: Maintenance

- Tests & Exercises: Carried out once a year with a formal process to correct the plans and fill the gaps which are highlighted during the tests. These tests are limited for mission critical systems and do not address external dependencies
- Maintenance of Plans: No regular maintenance
- BCM Audit: Internal Audit exists on a yearly basis.

LEVEL 3: Defined

Area 1: BCM Program Management

- Responsibility: With a person at middle level e.g. IT Manager, Operations Manager etc.
- Budgeting: A dedicated BCM budget allocated
- Top Management Commitment: high level of commitment
- BCM Charter / Policy: A formal charter exists, which is updated regularly
- Integration of BCM in other processes: Integration exists for all mission critical areas
- BCM Awareness: Staff awareness exists with regular workshops & trainings.

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: Industry best practices are followed and in some cases these practices are modified to suit the organization's culture.
- Quality of BIA: Classification of business areas / processes exists based on their criticality. Business impact is determined for all areas and prioritized based on their criticality.
- Quality of Risk Analysis: Same as BIA. RA is done for all areas and then high list areas are prioritized
- Quality of selecting Business Recovery Strategies: The quality of selecting Business recovery strategies is very good as it is based on BIA & RA of critical areas.
- Level of Analysis: Dependencies and integrated requirements are addressed as a part of the analysis, for all areas
- Tuning of external stakeholders: Stakeholders are addressed in this level. Contingency planning for stakeholders is taken into account for mission critical areas.

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: Exists
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: Exists
- Form of the Plan: It is written in a user friendly way

Area 4: Implementation

- Execution of the Plan: Plans are executed properly for all areas with concentration on mission critical areas. IT is treated as a ongoing program covering all aspects
- Disaster Response Organization: Virtual Body comprising of senior management exists. However, supporting bodies for logistics, IT etc are also taken into account

Area 5: Maintenance

- Tests & Exercises: Carried out 2-3 times a year with a formal process to correct the plans and fill the gaps which are highlighted during the tests. These tests cover all areas. Plan for Mission critical areas are tested at least twice a year covering the external dependencies whereas less critical areas are tested once a year
- Maintenance of Plans: Regular maintenance exists
- BCM Audit: Internal & External Audit exists on a yearly basis.

Level 4: Integrated

Area 1: BCM Program Management

- Responsibility: With a person at higher management level e.g. COO, CEO etc.
- Budgeting: A dedicated BCM budget allocated
- Top Management Commitment: Highest level of commitment
- BCM Charter / Policy: A formal charter exists, which is updated regularly
- Integration of BCM in other processes: Integration exists for all areas
- BCM Awareness: Staff awareness exists with regular workshops & trainings.

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: Industry best practices are followed and in some cases these practices are modified to suit the organizations culture.
- Quality of BIA: Classification of business areas / processes exists based on their criticality. Business impact is determined for all areas and prioritized based on their criticality.
- Quality of Risk Analysis: Same as BIA. RA is done for all areas and then high list areas are prioritized
- Quality of selecting Business Recovery Strategies: The quality of selecting Business recovery strategies is very good as it is based on BIA & RA of critical areas.
- Level of Analysis: Dependencies and integrated requirements are addressed as a part of the analysis, for all areas
- Tuning of external stakeholders: Stakeholders are addressed in this level. Contingency planning for stakeholders and supply chain is taken into account for all areas

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: Exists
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: Exists
- Form of the Plan: It is written in a user friendly way

Area 4: Implementation

- Execution of the Plan: Plans are executed properly for all areas and is treated as an ongoing program covering all aspects including integration across functional areas and supply chain. Plans
- Disaster Response Organization: Virtual Body comprising of senior management exists. Supporting bodies for logistics, IT etc are also taken into account. These virtual bodies are activated by simulating disasters and observations are documented.

Area 5: Maintenance

- Tests & Exercises: Carried out 2-3 times a year with a formal process to correct the plans and fill the gaps which are highlighted during the tests. These tests cover all areas. Plan for Mission critical areas are tested at least twice a year covering the external dependencies whereas less critical areas are tested once a year
- Maintenance of Plans: Regular maintenance exists based on measurement & testing of the existing plans - covering stakeholders, supply chain,

people etc. Processes are in place on how stakeholders can communicate changes to plan

- BCM Audit: Internal & External Audit exists on a yearly basis.

Level 5: Optimized

Area 1: BCM Program Management

- Responsibility: With a person at higher management level e.g. COO, CEO etc.
- Budgeting: A dedicated BCM budget allocated
- Top Management Commitment: Highest level of commitment
- BCM Charter / Policy: A formal charter exists, which is updated regularly
- Integration of BCM in other processes: Integration exists for all areas. This integration is measured and processes are optimized to address changes
- BCM Awareness: Staff awareness exists with regular workshops & trainings. External trainings are also conducted

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: Industry best practices are followed and in some cases these practices are modified to suit the organizations culture.
- Quality of BIA: Classification of business areas / processes exists based on their criticality. Business impact is determined for all areas and prioritized based on their criticality.
- Quality of Risk Analysis: Same as BIA. RA is done for all areas and then high list areas are prioritized

- Quality of selecting Business Recovery Strategies: The quality of selecting Business recovery strategies is very good as it is based on BIA & RA of critical areas.
- Level of Analysis: Dependencies and integrated requirements are addressed as a part of the analysis, for all areas
- Tuning of external stakeholders: Stakeholders are addressed in this level. Contingency planning for stakeholders and supply chain is taken into account for all areas. Processes are optimized to address the external dependencies.

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: Exists
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: Exists
- Form of the Plan: It is written in a user friendly way using flow charts. It covers all aspects, dependencies and gives a step-by-step instruction on what to do in case of BCM activation

Area 4: Implementation

- Execution of the Plan: Plans are executed properly for all areas and is treated as an ongoing program covering all aspects including integration across functional areas and supply chain. Plans
- Disaster Response Organization: Virtual Body comprising of senior management exists. Supporting bodies for logistics, IT etc are also taken

into account. These virtual bodies are activated by simulating disasters and observations are documented.

Area 5: Maintenance

- Tests & Exercises: Carried out 2-3 times a year with a formal process to correct the plans and fill the gaps which are highlighted during the tests. These tests cover all areas. Plan for Mission critical areas are tested at least twice a year covering the external dependencies whereas less critical areas are tested once a year
 - Maintenance of Plans: Regular & iterative maintenance exists based on measurement & testing of the existing plans - covering stakeholders, supply chain, people etc. Processes are in place on how stakeholders can communicate changes to plan.
 - BCM Audit: Internal & External Audit exists on a yearly basis. The improvements suggested during these audits are incorporated in the plans and then tested again.
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The draft BCM framework above across 5 levels is based on the BPO & CMMI maturity models. However, if we review the GPIS model by Saleh & Alshawi (2005) and the BC Model by Mohan & Rai (2006), the additional design dimensions in section 2.2.2 come into play. BPO & CMMI maturity model measure the process quality. Therefore, the BCM framework we have till now also measures only the BCM process quality. But, BCM can address various elements like IT, facility, people etc.

The additional design dimension that can be included to the framework is the BCM scope. Saleh & Alshawi (2005) measures the organization's readiness to invest in a IS project on 4 factors: IT, Process, People and Environment. Also, Mohan & Rai (2006) measures the BCM maturity on 5 factors: Technology, Processes, people, Organizational Soft Issues & Facilities Management.

Considering this the additional design dimension of BCM scope can be introduced to the draft BCM framework with 5 levels namely:

1. Technology
2. Facilities Management
3. Processes
4. People
5. Organizational Soft issues

Therefore the draft maturity model will be as shown in figure 14:

OPTIMIZED	V	X	XV	XX	XXV
INTEGRATED	IV	IX	XIV	XIX	XXIV
DEFINED	III	VIII	XIII	XVIII	XXIII
MANAGED	II	VII	XII	XVII	XXII
AD HOC	I	VI	XI	XVI	XXI
	LEVEL 1 - Technology	LEVEL 2 - Facilities Management	LEVEL 3 - Processes	LEVEL 4 - People	LEVEL 5 - Organizational Soft Issues

Figure 14: Draft BCM Maturity Model

The draft model works on an organization's maturity across two dimensions – BCM process quality on Y axis and the BCM process scope X axis. By defining maturity on both Axes, the model is divided into boxes, named SQBs (Scope Quality Boxes). The model, as shown in figure 13, gives the maturity level based on the covered area of SQB's for which an organization meets the goals. Each SQB is described by specific Process Areas, and each Area is specified by a specific Goals. Each Goal has certain generic practices associated with it, which provides a roadmap on how to enhance the maturity levels. This research is limited to defining the goals of each process area but the detailed generic practices & requirements under each goal is out of the scope and can be taken up as a part of future research.

4. Design, Outcome & Analysis of Data Collection

4.1 Introduction

In the preceding chapter, we developed a framework for the Maturity model for BCM. This framework provides us with different areas to which maturity can be assigned, various levels across quality & scope and how an overall BCM maturity of an organization can be determined. These areas are based on various existing BCM methodologies. Whereas, objective of this research is to develop a model, which is a representation of reality rather than just based on theoretical models. Therefore, the areas identified in the framework have to be validated for their differentiation ability to determine the BCM maturity in real life.

Also the draft Maturity model has only given us generic process areas and aspects / goals under each area along the Y Axis i.e. the BCP Process quality. These have to be further broken down to specific corresponding level on the X axis i.e. the BCP Process scope. This can be done using data from real organizations.

This will be achieved with the data collection exercise from the banking organizations in UAE. We will conduct surveys among organizations that already have a BCM in progress. The information gathered from this scan will be used to validate the areas identified in the framework and also to develop the final model with multiple maturity levels.

The following topics will be addressed in this chapter:

- Why we chose to conduct surveys?
- The target population and the chosen sample
- How the questions were formulated for the surveys?
- Outcome & Analysis of Data Collection

4.2 Why we chose to conduct surveys?

As specified above, the aim of the surveys is to collect information on the areas identified in the framework for the maturity model, which would confirm their differentiation capability practically and to break the Process areas and relevant aspects / goals to specific 'Scope Levels'. To achieve this aim, we require a broad overview of how various organizations have organized BCM in U.A.E. Further, we need an in depth understanding of the various factors that differentiate between organizations.

Case study is an ideal methodology when a holistic, in depth investigation is needed (Feagin, Orum & Sjoberg, 1991). Also, Yin, 2003 defines case study as: 'An empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not evident'. From the previous paragraph, it is evident that our maturity model also requires an in depth investigation of distinctive factors to which maturity can be assigned and this investigation must be from real life. Hence, we decided to use case study approach for our data collection.

Since we want to identify multiple areas that discriminate organization's maturity levels, multiple case studies are required. To address this, we decided to conduct surveys, targeting banking organizations within UAE who have a BCM in place in some form or the other.

Surveys can be divided into two categories, namely the questionnaire and interview (<http://www.socialresearchmethods.net/kb/survtype.php>). In order to get a broad overview of the BCM in various organizations, questionnaire seemed to be the best option. The questionnaires were sent by email to appropriate persons in organizations. In certain cases where answers to questions were not satisfactory or subject to further discussion, follow up telephone interviews were conducted.

An advantage of conducting surveys for our case study approach is that surveys take little time compared to other methods and hence, can choose a bigger sample size. Every survey will have same questions. They will not differ with type or size of organization. This will facilitate comparison of all surveys during the development of final model.

4.3 Target population & chosen sample

It clear from the last section that, we have to cover a large sample in order to get a realistic validation of the various areas which are developed in the draft framework (Chapter 3). The population we are looking at covers banking organizations in U.A.E. The surveys will be sent to the person who will have best insight of the BCM within the organization. In order to reduce the sample, we decided to adopt a triangulated strategy.

Case study is also known as a triangulated research strategy. Snow and Anderson (cited in Feagin, Orum, & Sjoberg, 1991) asserted that triangulation can occur with data, investigators, theories, and even methodologies. Stake (1995) stated that the protocols that are used to ensure accuracy and alternative explanations are called triangulation. The need for triangulation arises from the ethical need to confirm the validity of the processes. In case studies, this could be done by using multiple sources of data (Yin, 1984).

We have already decided to use surveys as one of the sources for data. We have already derived a framework for the maturity model in the previous chapter that serves as a second data source.

KPMG, a leader audit, tax and advisory firm recently released the results of Business Continuity Management survey in UAE. They covered 80 companies in the UAE to understand the BCM challenges faced by them. The survey was conducted by an independent research agency on behalf of KPMG, U.A.E and

consisted of interviews with Information Security Officers, Chief Risk Officers, Chief Information Officers (or equivalent), and Chief Financial Officers of various companies. The following table (extracted from the report) gives the distribution of the business activities of the companies interviewed:

	% of Respondents
Banking/Financial	29%
Manufacturing	14%
Insurance	11%
Construction	8%
Energy/Utility	7%
Healthcare	5%
Distribution/Wholesaling	5%
Professional services/Consulting	4%
Technology software, hardware & services	4%
Transportation	4%
Communications/Media	3%
Legal/Real Estate Investments/Management	2%
Automotive	1%
Others	3%

Figure 15: Target population for KPMG survey

This already covers a very large population of organization who has implemented BCM. Also 29% of their sample size is Banking sector. Therefore, we decided to use this survey as a third data source.

The survey questions will also be developed based on the results of this KPMG survey report and the draft framework of our maturity model. We will then first select a small sample size for conducting our survey – 10 organizations. If the results of the survey are in line with the results of the KPMG survey (3rd Data Source), we will have sufficient evidence to validate our framework and won't require a big sample size.

Hence, the data collection exercise can be summarized in the following figure:

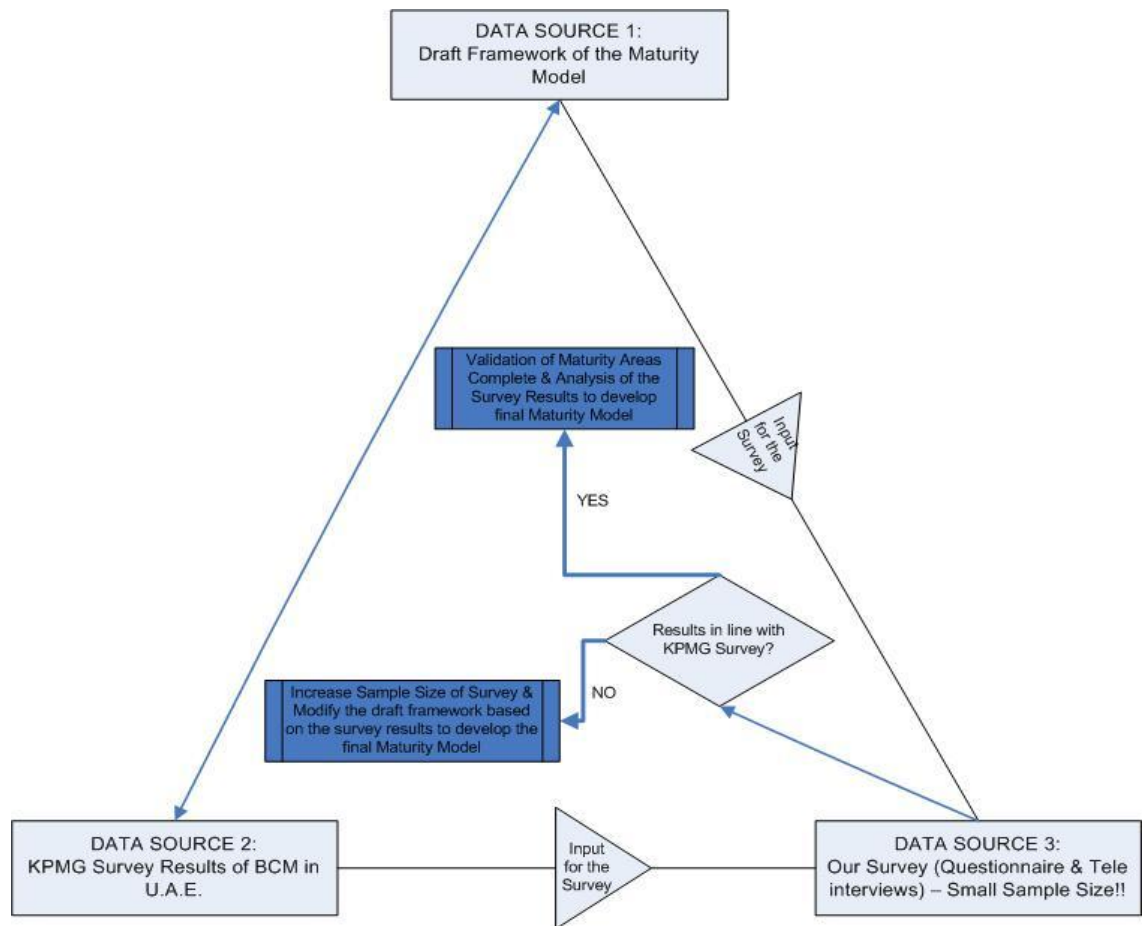


Figure 16: Triangulation Methodology

Since our research concerns business critical information, we agreed to keep all data and information collected during the surveys- confidential. No names of the persons will be mentioned.

The size of the organizations, to which survey was sent vary significantly. The smallest organization had 25 employees and the largest had over 1000 employees. The table below gives the distribution of the number to employees among the organization to which survey was sent.

Size (Number of employees)	Number of organizations
<100	1
100<200	1
200<500	4

500<1000	2
1000+	2

4.4 How were the questions formulated for the survey?

For a successful survey, questions must be to the point and must translate your requirements. Our requirement is to validate the areas to which maturity has been assigned in the draft framework of the maturity model and understand their underneath activities in detail. The second requirements is to break down the aspects in various process areas into appropriate BCM scope levels.

As specified in the data collection methodology (section 4.3), the questions will be based on the identified areas in the draft framework and also formulated in such a way, so as to compare the outcome with the results of the KPMG survey.

It is important to maintain the coherence of the questions in the survey, so as to give a right thinking direction to the interviewee and examine the relevance of the distinguishable maturity areas in reality. So, we formulated 2-4 open questions for each area to which maturity has been assigned in the framework. However, the answers to these open questions may not give us information on all the aspects of the framework. Therefore, for each open question, we decided to have a few close-end sub questions, which will direct the interviewee to give the required answers. These sub questions were formulated based on the aspects under each area.

The question list can be seen in appendix C.

4.5 Outcome & Analysis of the Data Collection

Having conducted the data collection exercise, let us now concentrate on its findings and analyze them. This analysis will form a critical input to the development of the final maturity model in the next chapter. We will present the outcome of the surveys in certain points as below. It is not possible to provide a complete analysis in writing but can be reproduced if required.

4.5.1 Attention for BCM

There is a general understanding and agreement that BCM is very important in organizations today, in light of the changing business environment. Only two interviewees think there is too much attention for BCM within their organizations and the reasons provided by them is that these organizations are too big in size and therefore any interruption can have a cascading internal effect covering various processes. All other interviewees state that BCM is beginning to gain importance in their organizations and still in the infancy stage. They think their organization should pay more attention to BCM.

It should be noted that this finding may not be applicable at an organizational level since all people who participated in the survey were directly responsible for BCM. Other people may have a difference opinion on this. But we need to abide to this finding.

Most organizations say that the attention to BCM is as a result of Central Bank's mandate to comply with Basel II Accord. 50% of the responses indicate there was an immediate cause that actually put BCM on the agenda, 25% say there was already attention for BCM.

The secondary causes mentioned the regional threats of war, some external pressure (in case of international Banks), incidents that have occurred, either within their own organization or somewhere else.

Internal incidents within the own organization are mentioned only twice. Surprisingly, only one organization states that it started giving importance to BCM due to the demands of their customers and their strategy to concentrate on Customer service.

2 organizations do not see any reason to increase their concentration towards BCM planning.

Not a single organization made an explicit business case for executing BCM. Only 1 indicates it has done so globally by assessing the different options and cost – benefit analysis.

4.5.2 BCM Program Management

In most organizations the general manager of the organization or the BU is formally responsible for the BCM. Only in a few organizations, which are relatively mature regarding BCM, the formal end responsibility lies at the risk management or operational department. However, the person that is end-responsible does not always do the execution of the BCM, drawing up the policy and the plans. Actually, only in very few organizations the general management executes the BCM. In many organizations the execution is done by the IT or the security department. In some other organizations BCM is executed by external consultants or a project group.

In more mature organizations BCM is also often executed by the operations management or risk management department or a specialized BCM department.

Most organizations do not have a separate BCM budget.

It turns out to be almost impossible to have insight in the total costs of BCM, since it is hard to distinguish the costs that are made for the regular business from the costs that are made for the continuity assurance.

Only 4 of the organizations have a special BCM policy for the whole organization. This separate BCM policy is made by the security department in 1 case, by the operations department in another case and by a specialized BCM department in the last two cases.

2 organizations have a limited continuity policy as part of their information security policy. The remaining organizations don't have any kind of BC policy.

About half of the organizations that have a BCM/security policy thinks the policy is well known within the organizations. However, a special BCM awareness program is still rare. Only 2 organizations have a special BCM awareness program. 3 organizations only have such a program for security, not especially for BCM. 2 organizations only perform ad hoc activities for BCM awareness when they think it is necessary. Rest of the organizations does nothing to increase BCM awareness.

30% of the organizations use some kind of standard methodology for their BCM. Dependent of the scope, this can be a methodology that only considers the risks regarding IT systems or a methodology that covers that entire BCM analysis process.

Only 2 Organizations have looked at their supply chain partners but not further than what is mentioned in the SLA.

Through the survey, we could not get an insight of how the risk analysis was performed. Since the the people who participated in the survey were not a part of the RA team.

Although not all organizations do a extensive analysis 50% of the organizations do some kind of analysis. 2 organizations perform the analysis on the level of the individual systems whereas other 2 organizations have done analysis for the entire organization

4.5.3 Development of the plan

Most organizations don't have a test plan. However, in some of these organizations it actually is obligated to have one.

Only 2 organizations have a formal BCM test and training plan. 30% of the organizations have some kind of communication plan. However, most organizations have an evacuation plan.

A lot of data was collected on what organizations have what kind of plans. Without going into the detail of this (can be furnished if required), let us look at other major findings which will help us finalize our maturity model

Only 1 organizations use special BCM related software. A few other organizations state they have looked at the existing packages for BCM, but have not procured any. In general the organizations are not very confident on how these software's can help them

4.5.4. Maintenance

- Only 40% of the organizations test their BCM to some extent other than just evacuation. The others or just test evacuations.
- Most organizations only test once a year
- Only one organization tests more often than once a year.
- Integral testing appears often too expensive and complex to do. Even for technical tests sometimes an extra test server is needed.
- Of the 40% organizations that test, only 2 state they test everything including the procedures of the plan and the technique.
- 2 organizations execute walkthroughs only.
- A good maintenance process makes BCM a process instead of a project.
- 3 organizations have a formal maintenance plan and process.
- 1 organizations have made some one responsible for the maintenance but only have ad hoc initiatives and no formal process for it.
- 2 organizations believe in maintaining BCM instead of only the BC plan itself (so also on training, education, etc.).
- In case of only 2 organizations, BCM considerations are taken into account when planning projects or other changes.
- Only 2 organizations are audited on their BCM, either specifically on BCM or as part of a larger audit.
- 2 organizations check whether their suppliers actually act as agreed in contracts regarding BCM.

5. Final BCM Maturity Model

5.1 Introduction

Now, we reached a point where we can develop our final maturity model. This will be based on the theoretical framework derived in chapter 4 and data collected from practice (results of the data collection exercise in the previous chapter).

The final model will be discussed two parts. We will first finalize the Process areas under each level i.e. both across the Process Quality axis & Process scope axis. Then, we will develop the model into an analysis tool for organizations, who want to determine the maturity of their BCM process. For this, we have to formulate a method to determine the maturity based on this model and recommendations to reach a higher maturity level.

5.1.2 Final maturity model

In chapter 3, we developed the draft maturity model with maturity assigned to 5 distinct areas of BCM. For the development of the final model, we validated maturity levels for each area from the data collected from the surveys (chapter 4).

In chapter 3, we had identified the aspects / goals under each area which are most important for judging the maturity of that area. We divided the answers to the questions addressing those aspects into several standard answer categories. For example: the answers to the level of BCM policy of an organization was divided into: ‘No BCM Policy’, ‘Part of IT security’, ‘Basic BCM policy’, organization wide BCM policy’ and ‘Strategy driven BCM policy’.

For each area, we did a similar categorization of standard answers to derive 5 different maturity levels (which are independent of each other) among organization in UAE.

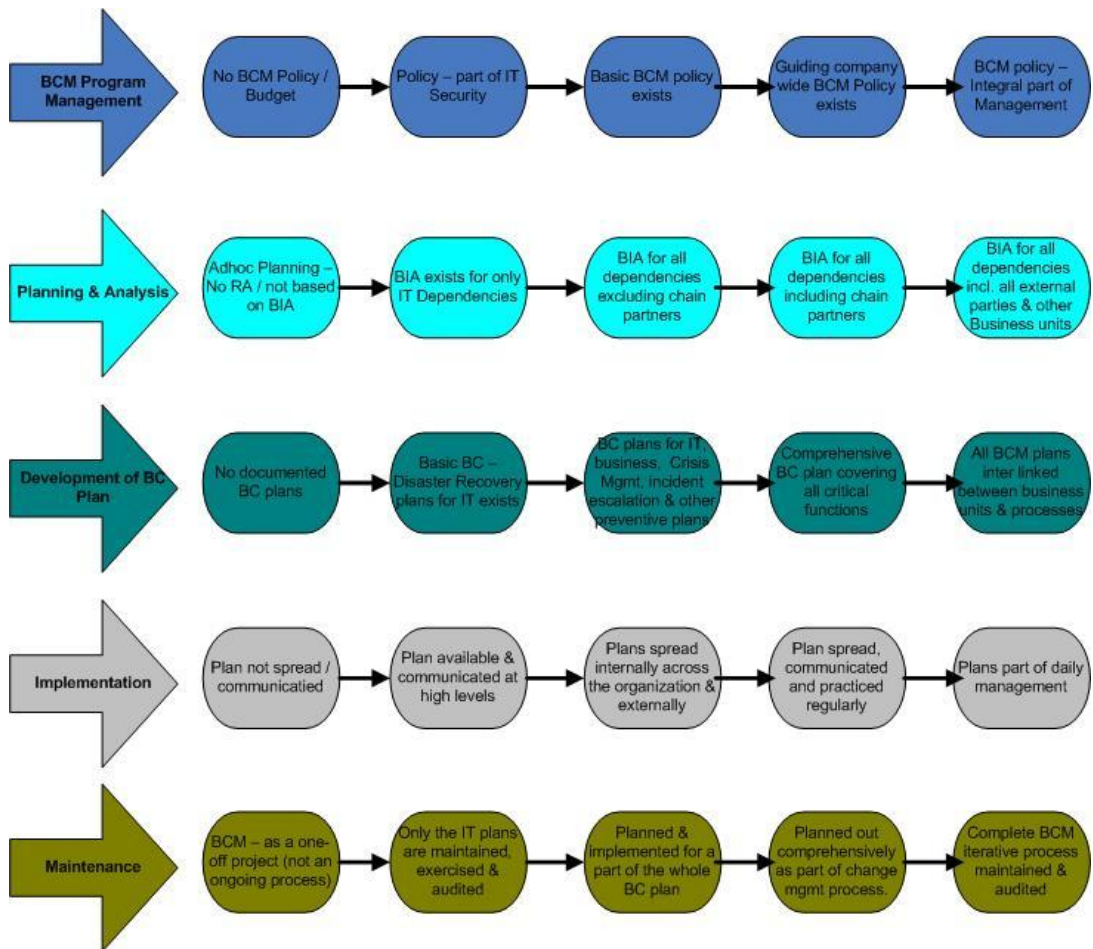


Figure 14: Maturity Levels from the Data Collections Exercise

The above gives maturity of each area separately. This was compared to the aspects & Goals of the various maturity levels given in the Draft Maturity Model to integrate the various Maturity paths across different areas & scope to give an overall judgment of the BCM process.

This led to the final Maturity Model given in **APPENDIX D**.

5.1.2.1 Validation of the Two Dimensions in the Maturity Model

One of the requirements (in section 2.3) was that the model must be easily communicable. So, we have to integrate the various maturity paths across different areas into one model which gives a single judgment on the BCM maturity of the organization.

One of the simplest ways to do this is to match the levels of the 5 areas i.e. an organization has reached level 3, only if it has reach level 3 within all areas of the framework shown in figure 14. However, analysis of the data collection (section 4.5) showed that there is a significant difference in the maturity levels of the 5 stages a single organization. Hence, matching the levels of the 5 areas is not the right strategy for our final maturity model.

Moreover, further analysis of the survey data concluded that when organizations matured on areas 1, 2 or 3, they covered wider scope of BCM. On the other hand, when organization matured on areas 4 and 5, their BCM quality enhanced.

Therefore, having two dimensions (one of the design options in section 2.2.2) across which an organization matures – BCM Scope & BCM Quality addresses the issue and hence validates our approach of two dimensions in the draft Maturity model.

Maturity levels of areas 1, 2 and 3 align themselves along the BCM Scope whereas areas 4 & 5 aligned with BCM quality. This also validates the addition of more aspects for the maturity of Area 1 by adding a maturity line of program management across the second dimension (BCM Scope).

6. Validation of BCM Maturity Model

6.1 Introduction

In the previous chapter, we derived the final BCM Maturity Model from the draft model based on the results of surveys conducted across banks in UAE. Here, we validate the final outcome of this research i.e. the final Model through a focus group session and applying it to determine the maturity of an existing organization. We will validate whether all the requirements of our model have been achieved.

This chapter will first reason out the limitation in conducting the complete validation which will be followed by the explanation of validation process / methods adopted for this research. Finally, validation of each of the above requirements will be explained.

For reference, the requirements we had formulated in chapter 2 were as follows:

1. It should provide a substantiated judgment of the BCM Process maturity within a given organization.
2. The maturity model should be easily communicable i.e. the results of application of this model must be clearly communicated to top management in terms of certain parameters & process areas.
3. The model should give recommendations on how to improve the maturity based on the determined maturity level. Many maturity models give some recommendations. However, often these are just some vague pointers that seem logical but in practice these are hard to translate into concrete actions. To be applicable in practice, recommendations need to be action based. Therefore, we aim to develop a model that can give action-based recommendations based on the current maturity

4. The model has to be suitable for benchmarking or making other relevant comparisons between organizations or parts of an organization

5. The model has to be based on a generally accepted best practices methodology. This is because it is easier to derive action based recommendations if the assessment is done based on a certain methodology. Also, using a generally accepted methodology as a base for the model makes it easier to explain and justify the model to originations you would want to assess using the model.

6.2 Limitation in validation & Methodology used

It is not possible to have a complete validation within this research. However, it has been validated extensively within the available time period and with the best possible strategy.

The aim of this research was to have a model in place which could determine the current status of an organization's BCM process. The best way to validate this is applying the model in various organizations. If it is successful in determining the maturity of organizations and implemented recommendations, it would validate the model completely. Such a validation will take a long time. Therefore it is not possible to execute such a validation as a part of this dissertation.

As an alternative, the final maturity model has been applied to one organization and also have been discussed in a 'Focus Group Session' comprising of three BCM experts. During the focus group session, the attendees gave feedback on the practicality of the model based on their industry experience, taking the requirements of the model into account.

Such a method may not be fully scientific but does give extra indication of the quality of the BCM maturity model developed.

6.3 Validation of Model against requirements

As stated above the focus group session performed a check on whether the model satisfies the requirements:

1. Substantiated judgment of the BCM Process Maturity within a organization

It was agreed that the model met this requirement. None of the attendees criticized the model with respect to this requirement. However, certain questions were raised on the completeness of the requirements of each aspect / goals and it was agreed that it would require further research to get the completeness.

There was also a remark for the addition of a Level 0 for Process quality which would make the model complete. This level 0 is for organization who, do not have any idea of BCM and do not have anything in place. But then it was challenged that for which scope would this level 0 be applicable.

Overall conclusion against the requirement was that it is complete and gives a fare judgment of the current situation of BCM in an organization. The goals also seemed measurable and hence easy to determine the maturity.

2. Easily Communicable Model

During the focus group session, this particular requirement was not at all challenged. The SQB with certain process areas and goals were easily understood by all. The shape was very easy to eyes of the reader i.e. a 2 D figure with Process quality on the Y axis and Process scope on the X Axis

3. Model must give recommendation to improve maturity in terms of action oriented goals

The determination of recommendation is done in two steps. First, current status of the organization is determined. Second, the target level is to be determined. Ideally, in order to reach a target level, organizations must work towards attaining all level on the way. For instance, if a organization is in Managed Level covering all scope levels and if it wants to achieve Integrated level across all scope levels, it must first achieve all defined levels across all scope levels.

But it was agreed that not all organizations follow this growth strategy and the model must provide recommendations to directly jump to a level without having to go through levels on the way.

Also the current model is limited to defining the Goals under each Process area but the detail requirement of achieving this goal requires further research.

In a nutshell, in the current scope of the research, the developed maturity model gives a decent recommendation of action oriented goals but do not give detail list of actions to achieve these goals.

4. The Model must be suitable for benchmarking with other organizations and industry best practices

For a model to be used in comparisons, it should have distinguishing capabilities to position organizations with different BCM maturity within the model. Focus group session performed a thought experiment by making up imaginary organizations and placing them in the model. They were successfully able to achieve this and hence validated this requirement.

5. The model must be based on a generally accepted best practices methodology

Since the development of this model was from the existing best practices, this requirement was obvious. The focus group also validated this by trying to map the Process areas with the various best practices existing in the field of BCM.

6.4 Validation using Case Study

Apart from the focus group session, the model was applied to an existing organization in UAE. The scope of this exercise was:

1. Determine the maturity level of the existing BCM process using the Model
2. Recommend improvement strategies to the organization based on the target maturity level

Validation of whether the organization was able to achieve the target maturity level based on the recommendations was out of the scope due to time limitations.

6.4.1 Results of Case Study

1. The organization had a fully fledged BCM process covering all scope areas. Their BCM process have been in implementation since 2004 and hence is a good sample for the case study
2. Limitation of the case study is that we could not extract information specific to each process scope i.e. people, technology, facilities, processes etc. However, high level information was given which was used to place the organization in the maturity model. Find below the Analysis of the various process areas:

Area 1: BCM Program Management

- Responsibility: Had a dedicated BCM Manager reporting to COO
- Budgeting: 20% of the IT budget dedicated for BCM
- Top Management Commitment: Strong commitment with a defined BCM steering committee
- BCM Charter / Policy: A formal charter exists which have never been updated
- Integration of BCM in other processes: Integration exists between IT, processes, people, facilities & organizational soft issues and also across various functional processes
- BCM Awareness: Good amount of staff awareness with regular training

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: Industry best practices are followed
- Quality of BIA: Classification of business areas / processes exists based on their criticality. Business impact is determined for important areas only.
- Quality of Risk Analysis: Same as BIA. RA is done only for critical areas and less priority areas are not touched
- Quality of selecting Business Recovery Strategies: The quality of selecting Business recovery strategies is good as it is based on BIA & RA of critical areas.
- Level of Analysis: Dependencies and integrated requirements are addressed as a part of the analysis, in case of mission critical areas.
- Tuning of external stakeholders: Stakeholders are addressed but supply chain dependencies are not considered.

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: Quarterly updates exist based on the feedback from process owners.
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: Exists
- Form of the Plan: It is written in a user friendly way

Area 4: Implementation

- Execution of the Plan: Plans are executed properly for mission critical areas as an ongoing project.
- Disaster Response Organization: Virtual Body comprising of senior management exists. Other IT Support & logistics teams exist but not trained regularly

Area 5: Maintenance

- Tests & Exercises: Carried out once a year with a formal process to correct the plans and fill the gaps which are highlighted during the tests. These tests are limited for mission critical systems and do not address external dependencies
 - Maintenance of Plans: Regular maintenance exists
 - BCM Audit: Internal Audit exists on a yearly basis.
3. Based on the above analysis, the organization fit in the 'Defined' Level on the Process Quality Axis and all process scope areas which includes SQB III, VIII, XVIII, XXIII
 4. Target Maturity level defined by the company was 'Integrated' Level across all Process scope levels.
 5. Recommendations were as follows:

Area 1: BCM Program Management

- Responsibility: No Change
- Budgeting: Have a dedicated BCM budget not interlinked to IT budget
- Top Management Commitment: Strong commitment with a defined BCM steering committee

- BCM Charter / Policy: BCM charter needs to be reviewed.
- Integration of BCM in other processes: Supply chain integration needs to be taken into account
- BCM Awareness: New staff and external training need to be organized

Area 2: Planning & Analysis

- Process Analysis & Selection of BCM Methodology: No Change
- Quality of BIA: Must cover all the areas, not only the critical ones
- Quality of Risk Analysis: RA must be done for all areas
- Quality of selecting Business Recovery Strategies: If RA & BIA are done for all areas, the recovery strategies quality will also improve
- Level of Analysis: Must cover all areas across the bank
- Tuning of external stakeholders: Supply chain dependencies must be included

Area 3: Development of BC Plan

- Test Plan: Exists
- Maintenance plan: BCM team must review all plans in light of system changes, process changes which may not be apparent to the process owners who are busy with BAU
- Crisis Management Plan: Exists
- Incident Response Plan: Exists
- Security Plan: Exists
- Escalation Plan: Exists
- Disaster Recovery Plan: Exists
- Process Salvage & recovery Plan: Exists
- Training Plan: Exists
- Form of the Plan: It is written in a user friendly way

Area 4: Implementation

- Execution of the Plan: Must cover all areas as a continuous program
- Disaster Response IT Support & logistics teams must be trained in integration with Virtual Crisis teams comprising of senior staff

Area 5: Maintenance

- Tests & Exercises: Mission critical areas must be tested twice a year and other areas once a year
- Maintenance of Plans: No Change
- BCM Audit: Must be audited by independent auditors.

6. The banks BCM team agreed on the recommendations. It was evident that the objectives of the model were met in all respects.

6.5 Conclusion

Due to time constraints, complete validation hasn't been carried out. Practical application of the model would be the best validation. However, with the validation explained in the preceding sections it is safe to say that our model is suitable to be a analysis tool for determining a BCM process maturity and recommending corrective actions to attain a higher maturity level. The results of the application are also very clearly communicable.

7. Conclusions

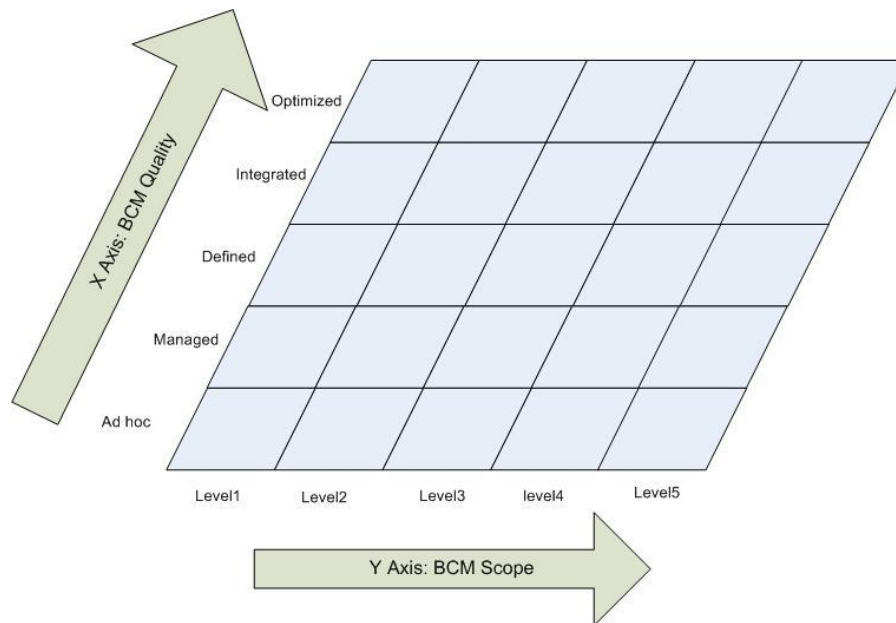
7.1 Final Result

Considering the increasing regulations in UAE and rising competition with demand for continuous & uninterrupted service has resulted in organizations initiating and the rising pressure from regulators, organizations in UAE are beginning to pay attention to Business Continuity Management. The extent to which, they need to incorporate BCM in their organizations (IT based, critical site based, organization wide, integrated) depends on the complexity and criticality of their businesses. Moreover, compliance to industry standards & regulators also drive the decision on the scope of BCM, an organization intends to implement.

Based on this observation, the maturity model developed serves as an analysis tool to aid organizations on how to achieve their target maturity. Higher the maturity of the organization, better the BCM processes. We had formulated the following requirements of this model:

- It should give substantiated judgment of the maturity of BCM
- It should be easily communicable
- It should give recommendations on how to improve the maturity.
- It should be suitable for benchmarking or making other relevant comparisons between organizations or parts of an organization
- It should be based on accepted best practices methodology.

Based on the existing literature and the market survey, we developed the maturity model as shown below:



The full explanation of this model is given in chapters 4 & 5. We found out that the model gives a maturity of an organization across two aspects – Process quality & Process scope. The maturity of an organization is determined by the area of SQBs (Scope Quality Boxes) for which an organization satisfies the Goals.

7.2 Further Research

The inherent opportunity to conduct a further research in this area is to convert the maturity model into a fully fledged tool, which would provide organizations step-by-step requirements to meet the goals for each SQB. The first step will be to compile generic practices & requirements for each goal under a process area. From the validation exercise described in the last chapter, this opportunity was evident (as a result of the focus group session).

Another area for research is to investigate on the extent to which this model can be useful as a practical analysis tool by employing it in practice. This will help in validation of the fact that more mature the BCM process, better is the BCM capability & hence the outcome.

APPENDIX A

Maturity Models

As discussed in the literature review, the analysis of the different design options for the BCM maturity model shall be based on three existing maturity models, the CMM, the KPMG world class IT model and the INK model. Here is a short evaluation of these three models.

Mohan & Rai (2006)

The BCP Model developed by Mohan & Rai identifies 5 components namely the Organizational Soft Issues, Processes, People, technology and Facilities Management and defines a variety of metrics at four levels (Corporate / Policy level, Tactical / Organizational level, Tools/Methods, Up gradation / Review / Testing Mechanism level) to measure the ‘Resilience’ and ‘Vulnerability’ of a Bank in the event of Business disruption.

The extract below from the paper explain the model:

The five components of the BCM model are briefly described on the following page:

Organizational

The bank must be clear in its vision and direction. The findings of the survey highlight the importance of clear articulation of the strategic objectives with respect to:

- The markets and geographies to be served.
- The scale, i.e. volumes, to be achieved each year.
- The diversity of portfolio of products and services to be offered in line with the demands of the segments being served.
- The multiplicity of channels to be deployed for delivering products and services.
- Innovative methods of differentiating products and services with a view to enhance value to customers in a cost-effective manner.
- The organization required to meet the above objectives.
- The infrastructure building blocks required to meet the objectives in terms of Information Technology, Communications, Security and Convenience.

Processes

This relates to processes for ensuring continuity of banking transactions, and not the rules and regulations (banking or legal) governing those operations. The following procedures need to be designed, communicated, practiced and reviewed periodically to ensure continuity.

- *Alternate processes* – Most banking processes are IT-enabled or automated. This necessitates a clear-cut scheme of alternate processes that can be resorted to in the event of a technical disruption [5]. Certain banks have a well-documented “Plan B”.
- *Roles and Responsibilities*: Procedures to outline in clear terms who is to take responsibility of a particular role which may be at a higher level than, or different from, than his/her normal role in the event of the right person not being available for whatever reason.
- *Options to Customers* and the sequence in which they can resort to alternate processes, channels, outlets etc. ought to be communicated, and a sensitivity check made from time to time.
- *Alternate Channels of Delivery*: All stakeholders, internal and external, should be aware and comfortable to switch to alternate channels of delivery, for example, from Branch to ATM to Internet.
- *Alternate methods of communication to transact business or obtain information*: Paper-based, Internet-based, Voice-based or through third party such as call centers and media agencies (television, newspapers, etc.) for informing clients about alternative processes that have been put in place.
- *Support to Customers* through multiple methods of providing support to customers by way of self-service systems like AVR (Advanced Voice Recognition), Websites, assisted call center help, customer relationship executives and associate partners.

People

This is the most important and critical resource to ensure continuity of businesses on both the demand and supply side. We identify four categories of people who should be involved and be responsible to ensure business continuity. The “Soft Requirements” for these stakeholders to engage in a collaborative manner to ensure continuity are also outlined.

- *Employees*: The knowledge, commitment and motivation of employees at all levels in the bank are paramount to ensure business continuity [4]. It is essential that all employees perform their designated functions correctly, efficiently and effectively. Banks have an excellent record in operationalizing the concept of “job rotation” better than any other kind of business that the authors have been involved with. This ensures that employees possess an acceptable level of knowledge of related functions along with their primary function, where they are expected to be experts [5]. Our survey, however, highlighted variances in realization of some softer aspects, particularly at the operating level. These are:
 - *Empowerment*: To take decisions not only pertaining to authorization and limits, but also in dealing with situations supposedly outside the realm of authority to meet the contingency [6]. This can however be authorized ex-post facto.
 - *Commitment*: To fulfill customer’s requirements and not just completion of a task
 - *Motivation*: This is an important factor wherein each employee perceives himself/herself to be the owner of the business, and runs it as if he/she has a personal stake in its successes.
- *Customers*: They are the very reasons for which the business exists and, hence, are the most important link for business continuity. The following aspects are essential for effective engagement of customers while transacting business.
 - *Awareness*: The bank must make the customers aware about the products and services in terms of offerings, limitations, regulations etc. This is the task of every employee who interacts with the customer for whatever duration and for whatever purpose [7].
 - *Esteem*: Customers should be made to feel important and worthy, irrespective of the value or importance of the transaction. Operational responsiveness is only one part of the story. It has to be complemented with visibly evident disposition of the employees in terms of courtesy and care.
 - *Trust*: Sustained performance, cordial treatment and ethical and upright disposition ensure high level of trust, which translates into tolerance on part of the customers in the event of business discontinuity [8].
- *Business Partners*: The terms “Vendors”, “Suppliers” and “Contractors” are passé in present times. The correct term for representing all those who contribute towards the success of your business is “business partners”. They may be involved in facilities management, supplying provisions and consumables, maintaining IT Infrastructure or bandwidth. Irrespective, they are all more than equal partners in the business. Their performance and commitment, including a high degree of ownership, are the mainstays of supporting the business during unforeseen disruptions [9]. The following elements have to be considered in this regard:
 - *Service Level Agreements (SLAs)*: Well-defined and justified terms and conditions that form the SLAs are the backbone of a fruitful relationship with business partners.
 - *Empathy*: Banks need to be alive to the concerns, both operational and commercial, of their business partners to harness above-par performance and extra efforts needed during unexpected contingencies.
 - *Sense of Belonging*: Business partners must feel a sense of belonging to the banks, which can be created by non-discriminatory treatment to them on the same lines as the bank’s own employee in terms of working space, usage of common facilities, and other related factors.
- *External Stakeholders*: These comprise the government (central, state and municipal), regulatory bodies, professional associations, and media. An excellent working relationship in an atmosphere of trust with these stakeholders may also be crucial to find the requisite support for continuing your business as regards operational logistics and image. The following are essential to maintain relationships with these stakeholders:
 - Continued good performance
 - Transparency and honesty of purpose
 - Regular interaction with them on professional and social forums
 - Regular engagement in symbiotic relationship, such as specialized service in terms of dedicated outlets etc.

Technology

There have been significant advances in the usage of technology in the banking sector in general. Our survey does indicate that there are higher levels of maturity and excellence achieved in the selected banks, who have invested heavily in installing near world class IT infrastructure [10]. Broadly the technology usage in banks can be grouped as follows:

- Banking Applications at Service Points:
Core Banking System, Internet Banking, Phone Banking, and Mobile Banking
- Electronic Banking:
ATM’s, Smart Cards, Credit Cards, Debit Cards, and Prepaid Cards
- Back Office Processing and Administration:
Intra Branch end of the day (EOD) transactions, Intranet, Mail Messaging Systems, Online Help, and Magnetic Ink Character Recognition (MICR) Processing

- Inter Branch Transaction handling: Real-Time Gross Settlement (RTGS), and Electronic Funds Transfer (EFT)
- Data Communications: Intra Branch Network and Inter Bank Network
- Data Center Management: Main Data Center and Disaster Recovery Site (Servers, Storage, Backup Systems, Switches, Systems Software, Application Software)
- Security: User Level Security - Access Permissions, Authorizations, Application Security - Transactional & Inter Application Security, Systems Security – System – Administration Level & Perimeter Security, and Physical Security - Access Control, System Logs, Fire and Damage Control
- Technical Support: Help Desk, Documentation, Performance Monitoring, and Upgrades

Facilities Management

The facilities include physical space, amenities, communication and transportation. It was observed during the survey that, on more than 80% occasions, the discontinuities were on account of non-technical disruptions such as absence of key personnel, sudden increase of loading and other infrastructure-related disruptions, for example, power failure, public network links outage, traffic congestion etc [7]. This is true even in medium to large banks whose IT Infrastructure and automation standards are near world class. Still they face problems due to scale and scope of their products and services offerings. Better Facility Management is therefore, a key issue to be dealt with by banks. Six components have been identified under this head:

- Physical Space: Front Offices, Office Spaces, Data Centers, Secured Spaces (Vaults), Engineering Maintenance Spaces, etc [7]
- Office Equipment
- Amenities: Catering Services, Aesthetics & Comfort, and Entertainment & Information [11]
- Power Supply: Captive Power Generators and Uninterrupted Power Supply [7]
- Communication: Telephone, Wireless Links, Media, and Calling trees [11]
- Transportation: To commute personnel and equipment to alternate sites in the event of disaster [11]

4. THE BUSINESS CONTINUITY REALITY CHECK

We have developed metrics to measure the business continuity parameters for each of the five components of the BCM Model outlined in Section 3: Soft Organizational Issues, Processes, People, Technology and Facilities. For each component, specific measures were defined to capture the relevant issues at four different levels:

- Corporate Planning / Policy Level* – This is to ascertain the policy decisions taken by Bank’s top management as regards degree of preparedness from the business continuity perspective. The top management sets the performance expectations in terms of quality of service to be rendered, including response time standards for various transactions (personal banking, loans, etc.) On the technology front, these get translated into Recovery Time Objective (RTO), Recovery Point Objective (RPO), etc.
- Tactical / Organizational level* – This deals with the organization structure and processes implemented in the bank in accordance with the policy guidelines. This also includes the alternate organization, processes and infrastructure together with outsourced arrangements to cater for emergency situations which cause interruptions to business.
- Tools / Methods* – The IT Infrastructure and operating instructions that are pressed into action once discontinuity is declared, including instructions to switch over to “contingent mode” in terms of alternate facilities, movement of people and modus operandi to transact business, and reverting back to normal operations once the contingency is over.
- Up gradation / Review / Testing Mechanism* – The prevalent culture and processes adopted by the bank to review and/or test the BCM organization and effectiveness, and upgrade the same on a regular basis or as and when necessary.

The table below shows the number of metrics for each Component and Level. Details each metric are available with the lead author of this paper.

Component Level	Organizational (Soft)	Process	People	Technology	Facilities
1. Corporate Planning / Policy Level	9	14	2	10	3
2. Tactical / Organizational Level	7	6	8	12	4
3. Tools / Methods	3	1	5	3	3
4. Up-gradation / Review / Testing Mechanism	2	4	3	3	5

The metrics taken into consideration were as follows:

Sr.No	BCM Parameters
ORGANIZATIONAL	
A1	Clear Definition and Communication of Vision and Mission
A2	Performance Objectives (e.g. Growth in volumes and diversity) enunciated and communicated to all concerned.
A3	Portfolio of Products and Services
A4	Multiple Delivery Channel Alternatives deployed or planned to deploy. E.g.
A5	Participative Governance

A6	Social Sensitivity
A7	Socializing, Planning and Learning from Review of Results and Performance (Bank and Individuals) and Communicating Results to foster esteem and motivation amongst employees.
A8	Cultural Change- Agility of bank to adopt changes
A9	Promotional Model and Brand Management
B1	Business Impact Analysis and Risk Evaluation for Critical Process to identify impact on business
B2	Rationalizing Organization - Roles and Responsibilities
B3	Allocation of Budget for BCM
B4	Process Reviews - Top driven exercise with involvement of concerned stake holders.
B5	Relationship with Business Partners
B6	Review of Outsourced Activities and Relationships
B7	Knowledge Management to assess environment for competitive positioning and organizational climate for improvement
C1	Alternate Processes - Organization and Cost
C2	Communication of Alternate Processes in the organization
C3	Insurance of Equipment and Personnel
D1	Implementation of BCM in the organization of partners
D2	Insurance of Outsourced Partner Assets
PROCEDURAL	
A1	Contingency Plans
A2	Emergency Action Plan
A3	Service Level Agreements
A4	Documentations
A5	Security Rules
A6	Safety Rules
A8	Health Rules
A9	Application of Security Policy across the organization
A10	Review of Vulnerability of Critical Processes and Analysis of Recovery.
A11	Integration of Business Continuity Procedures with normal business processes
A12	Compliance of RBI Regulations
A13	Compliance of Security and Safety Procedures in accordance with ISO 27001
A14	Standardization of Processes
B1	Incident Reporting
B2	Incident Logging

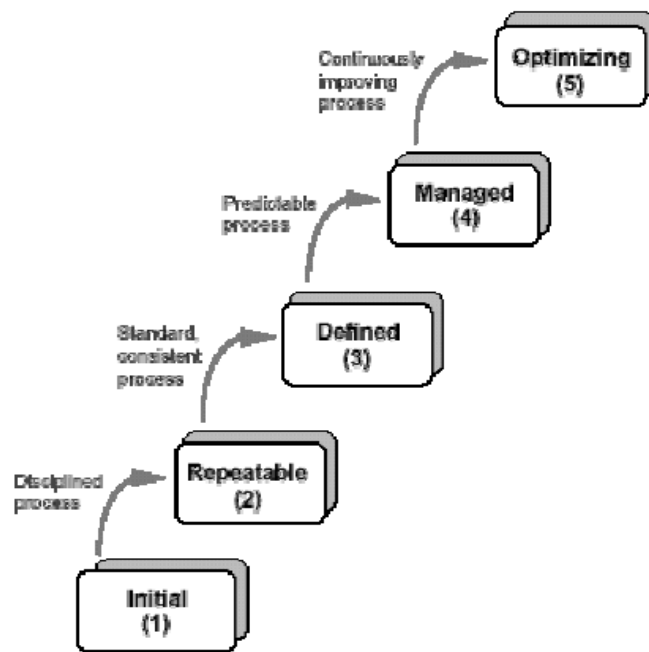
B3	Handling Media in the event of an accident.
B4	Risk Awareness Reality Check Up in the Organization
B5	Security for Outsourced Partners
B6	Market/Environment Information Gathering for incorporation in BCP
C1	Data Replication
D1	Testing Schedules for Processes
D2	Process Updates (Changes)
D3	Knowledge Management to track customer behavior, to take proactive actions during disasters
D4	Knowledge Management to assess efficacy of alternate processes in operation and suggest improvements
PEOPLE	
A1	Crisis Management Team (Multi Functional Team).
A2	Deployment Management Team
B1	Key Personnel
B2	Security Roles and Responsibilities
B3	Safety Roles and Responsibilities
B4	Risk Awareness and Preparedness tests
B5	Tolerance Limit - Assessment and Enablement (Employees)
B6	Tolerance Limit - Assessment and Enablement (Partners)
B7	Tolerance Limit - Assessment and Enablement (Customers)
B8	Training and Education of Stake Holders in running alternate procedures
C1	HR Process Reviews
C2	Actions against Defaulters
C3	Social Sensitivity
C4	Adaptation of Technology and Culture of Self Help - Employees, Customers, Partners
C5	Knowledge Management to track performance of individuals in situations other than routine operations
D1	Succession Planning
D2	Reward System for Outstanding Contributions (Merit Based Promotions and Incentives)
D3	Culture of Shared Values
TECHNOLOGY	
A1	Architecture of IT Solutions blending proprietary & open source systems and web based & centralized applications

A2	Enterprise Application Integration
A3	Data Integrity
A4	Data Architecture Review
A5	Replication
A6	Delivery Channel Integration
A7	Standardization of Equipments and Applications
A8	System Administration - Monitoring, Tuning and Maintaining using automated tools
A9	Applications Monitoring, Tuning and Diagnostics using automated tools
A10	Alternatives for Displaying information in Public domain - website and media channels (TV and Print).
B1	Server Consolidation
B2	Storage Consolidation
B3	Back Up Systems
B5	ATM Operations and Security
B6	Alternate arrangements for specialized / automated delivery mechanisms- ATM's, POS terminals, Kiosks.
B7	Phone Banking Operations and Security
B8	Internet Banking Operations and Security
B9	Specialized inter banking operations- fail safe mechanisms and alternatives
B10	Review of Vulnerability Analysis of Critical Hardware, Applications, Data Communications
B11	Knowledge Management to track utilization and performance of hardware and applications
B12	Infrastructural Renewal
C1	Network Bandwidth Provisioning and Utilization
C2	Network Monitoring and Maintenance using automated tools
C3	Intra Bank Communication System Portfolio - Intranet, voice based, messaging system.
D1	User Access Control
D2	Database Security
D3	Application Security
FACILITIES	
A1	Workplace
A2	Central Data Centre
A3	Recovery Center Locations
B1	Communication
B2	Resource Location in Disaster
B3	Safety Equipment and Maintenance

B4	Facility (Power, Fire and flooding, Access Control) Management - Monitoring, Tuning and Maintaining using automated tools
C1	Transportation
C2	Data Center Security
C3	Data Center Safety
D1	Security Planning in Disaster
D2	Infrastructural Renewal
D3	Review of Vulnerability Analysis of Critical Assets
D4	Training and Education of Stake Holders in handling emergency/safety equipment in crisis.
D5	Knowledge Management to track utilization and performance of assets in Normal and other than normal situations

Capability Maturity Model

The original version of the Capability Maturity Model, developed in 1986 by the Software Engineering Institute, was meant to model software development. However, many other versions have been developed since for a variety of (management) processes. The Software Development CMM provides organizations with guidance on how to control their software development processes and evolve toward a culture of software engineering and management excellence. (Paulk, 1995) The CMM can determine the current maturity of the software development and identify the issues most critical to the quality of the software development process. The principle behind this model is that the chance the outcome of the software development process is a success rises as the maturity of the software developments process matures. The software development CMM identifies five different maturity levels, which can be seen below:



Every level has its own key process areas. These are the aspects that should at least be covered at this level. The CMM doesn't judge the quality of the way the process area is covered, it only checks whether the key process areas are covered or not. When all key process areas at a certain level are covered, an organization can reach for the next level by starting covering the key process areas of this level.

Every process area identifies a set of related activities that together achieve a goal important for enhancing process capability. Those activities, or key practices, are organized by some common features. Figure 2 illustrates the way maturity levels are compounded.

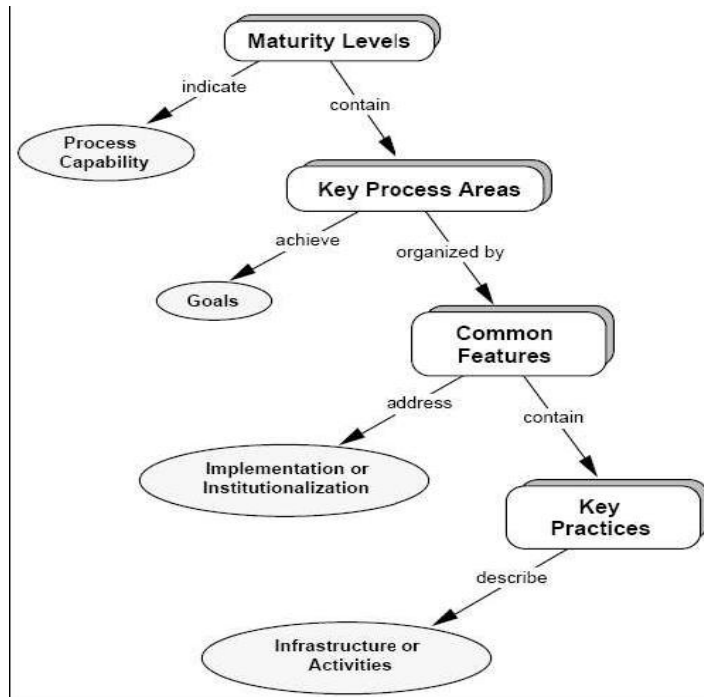


Figure: Composition Maturity Levels

The KPMG World Class IT Model

The KPMG World class IT model has been developed as a model to analyze the ICT within an organization and determine a strategy for the future. Not only does it offer an image of the current situation, it also indicates in which direction the next step should be taken. (Delen, 2000) For this purpose, it identifies six primary processes within ICT:

1. Exploitation
2. Incidents & problems
3. Changes & Configuration
4. Service delivery
5. Development and maintenance
6. Strategy and policy

The extent to which these processes have been developed, determines the maturity of the ICT within the organization. The World Class IT model states that information management should be considered as one integrated process and approaches that look separately at the demand and supply of ICT stimulate imbalance and therefore aren't effective. Supply and demand should be in balance and if improvement of ICT is needed, both parts should grow simultaneously. Therefore the model describes the six processes both from the supplier focus (which usually is an ICT supplier or an IT department within an organization) and the user focus.

The maturity of a process depends on the way information management is really organized. In every maturity level both the supply and the user side have a certain role in the processes. The maturity of a process depends on the roles that the supply side and the user side have within the process. The model distinguishes the following five different maturity levels for every process:

1. Technology driven – user follows

In the first phase supply and demand are two separate worlds. The ICT department is mainly driven by technology and the user follows without steering.

2. Controlled – user chooses

In the second phase the ICT department controls its processes and the user chooses the services it needs.

3. Service driven – user decides

The ICT department is able to supply stable services at a price and quality level determined in advance agreed with the user.

4. User-driven – user is owner

The focus shifts from what can be supplied towards what is asked by the users.

5. Business driven – user steers

The responsibility for good Information management is fully shared between the user & supplier.

The INK Model

The INK-management model originally was meant as an instrument to select candidates for the Dutch Quality Price. It can be used to identify the strengths and weaknesses within an organization. The functioning of an organization is the focus of the assessment. (www.ink.nl)

The INK-model focuses on nine areas of interest, five organization areas (which can be directly controlled by an organization) namely leadership, employees, strategy and policy, resources and processes and four result areas, namely recognition by employees, recognition by customers, partners, consumers and suppliers, recognition by society and end results.

Every organization area has a maturity level, varying from 1 to 5:

- 1. Activity oriented:** Skills are central in this phase. The organization reacts ad hoc to situations; there is no real policy.
- 2. Process oriented:** The processes are central in the second phase. Separate steps are captured within work processes. Processes are improved based on identified deviations.
- 3. System oriented:** Every level of the organization is systematically trying to improve the organization as a whole. Customer focus is dominant for the policy.

4. Chain oriented: The organization strives for a maximum value added together with partners in the value chain. Control systems are linked in an innovative manner.

5. Excel and transform: The organization has embedded the process of continuous improvement within both the structure and the culture of the organization. A long-term vision forms the base for initiating new activities.

The result areas also have a maturity varying from 1 to 5. This maturity depends on the extent to which the performance on the result area can be measured. The different levels are:

1. Only information available based on simple facts
2. Based on available information a trend in development can be seen
3. Actual performance can be compared to objectives
4. Performance compared with similar organizations
5. Performance compared with 'best practices' of excellent organizations worldwide

The total maturity is determined by the weakest link principle. The end goal of the INK methodology is to reach phase 5, which describes the excellent organization.

APPENDIX B

Various BCM Methodologies

1. Methodology PAS 56

(BCI, 2003)



Figure B 1: Methodology PAS 56

2. Methodology CSCI

(Jordan, Zellenrath & Verzuu, 2005)

Initiation & Definition

BIA

Strategy Alternatives

Development

Testing

Maintenance

Methodology CCTA/ IT Infrastructure Library

(CCTA, 1995-1)

Initiation

Requirements and strategy

BIA

RA

BC strategy

Implementation

Organization and implementation planning

Implement stand-by arrangements

Develop business recovery plans

Implement risk reduction measures

Develop procedures

Initial testing

Operational management

Education and awareness

Review

Testing

Change control

Training

Assurance

Methodology Verdonck, Klooster & Associates

(VKA, 2005)

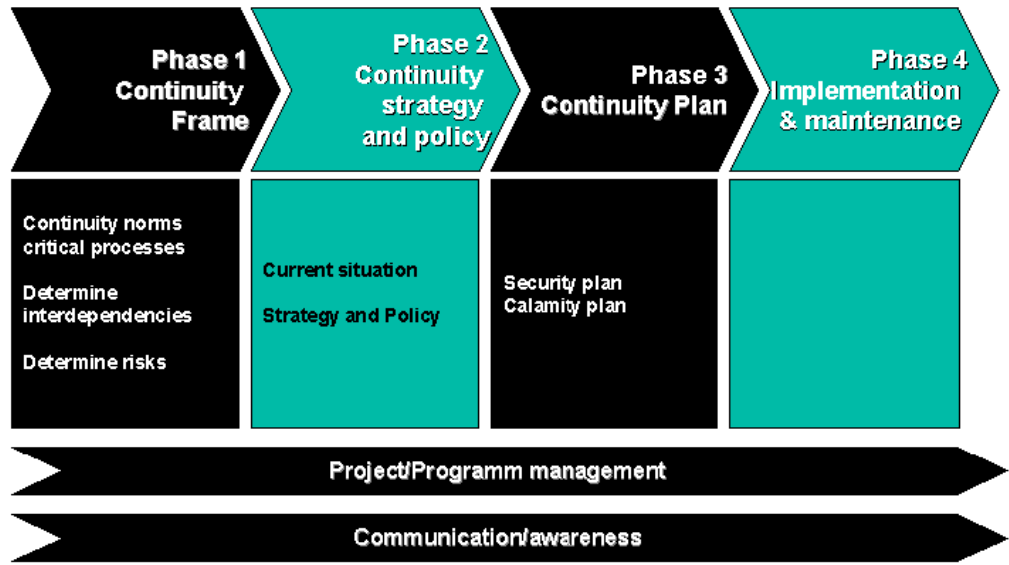


Figure B 2: Methodology VKA

Methodology UK Interest Group

(UK Interest Group, 1999)

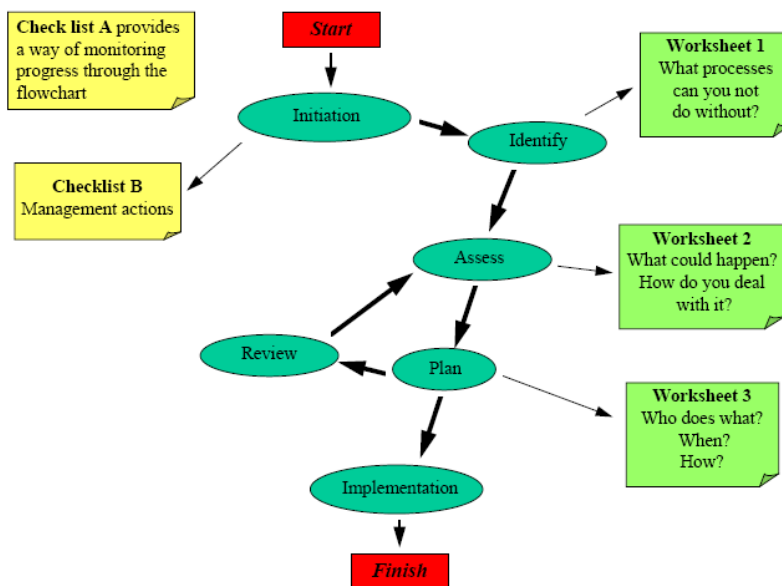


Figure B 3: Methodology UK Interest Group

Standard Chartered Bank BCP Methodology

(Heng, 1996, p. 11-13)

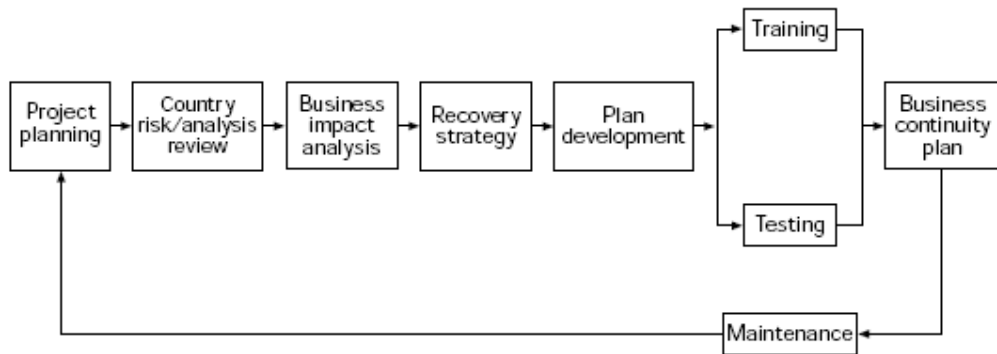


Figure B 4: SCB BCP Methodology

BCI Methodology, 2005

(BCM Good Practice Guidelines, 2005)

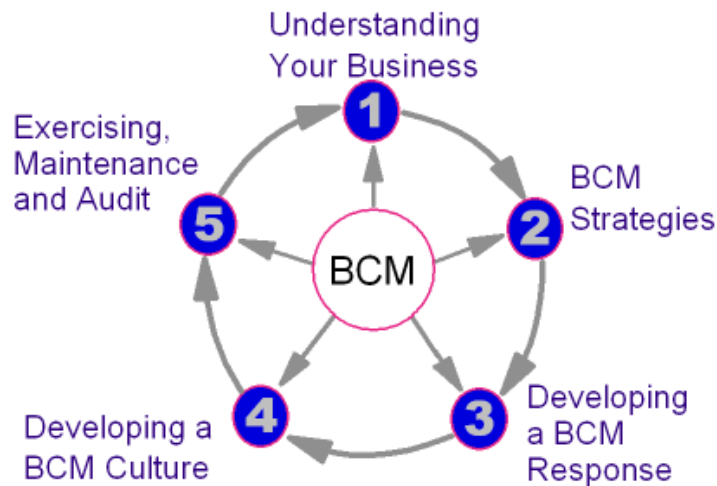


Figure B 5: BCI methodology for BCM

The Business Continuity Management Programme:

Organisation (Corporate) BCM Strategy and BCM Policy.

Business Continuity Management

Incident Readiness and Response

Stage No.1: Understanding Your Business:

Organisational Strategy

Business Impact Analysis.

Risk Assessment and Control.

Stage No.2: Business Continuity Management Strategies:

Organisation (Corporate) BCM Strategy.

Process Level BCM Strategy.

Resource Recovery BCM Strategy.

Stage No.3: Developing and Implementing a BCM Response

Crisis Management, Public Relations and the Media.

Business Continuity Plans

Business Unit Plans, Incident Response

Stage No.4: Developing a Business Continuity Management Culture

Assessing

Designing and delivering

Measuring results

Stage No.5: Exercising, Maintenance and Audit

Exercising of BCM plans.

BCM Maintenance.

BCM Audit.

Appendix C

Questionnaire

Disclaimer: The data or information collected from this survey shall be strictly confidential and shall be solely used for research purposes as a part of my Master degree in Project Management.

A. ATTENTION FOR BCM

A.1 How important is BCM for your organization?

What was the reason to consider implementing BCM in your organization?	
Was the Business case made?	

B. BCM PROGRAM MANAGEMENT

B.1 How is the BCM organized within your organization? (Responsibilities, budget etc.)

Who is responsible for BCM? Who does this person report to?	
Rate the top level commitment for BCM in your organization.	<u>V. High</u> <u>High</u> <u>Medium</u> <u>Low</u> <u>V. Low</u>
How is the budget for BCM determined? Is there one central BCM budget or is it a part of IT budget?	

Is BCM incorporated in all important processes and projects of the organization? (in their life cycle?)	
---	--

B.2 Does a company-wide BCM policy exist?

If not, what is the highest level on which BCM policy exists?	
Who all had been involved in its compilation?	

B.3 Which external requirements (such as law, legislation or requirements of customers) were taken into account, when formulating the BCM policy?

--

B.4 What do the organization do to make its employees aware of the BCM policy and the importance of BCM itself?

Has the vision and the policy of the organization with regard to BCM, cascaded to all employees?	
Are there any special awareness programs to raise the BCM conscience within the organization?	

C. PLANNING & ANALYSIS

C.1 Is there a standard methodology for the analysis and treatment provision for BCM within the organization?

C.2 How is the criticality for the company processes determined?

C.3 Does the organization have insight on which processes are most critical to the continuity of the business?

C.4 Which dependences are examined during BCM:

- a. ICT – Y/N
- b. People – Y/N
- c. Resources and information – Y/N
- d. Chain partners – Y/N

C.5 How the possible threats have been identified (for example: asking the process owners)?

C.6. How the eventual treatment is determined? (Preventive, corrective, etc)

C.7 What is the risk appetite which is accepted by management?

C.8 Is there a integrated plan for parts of the organization? i.e. covering various functional aspects?

C.9 Are there any external parties involved in the development BC plans and if so, who?

D. Development of BCM Plans

D.1 Which of these plans exist in your organization?

Testing Plan?

Maintenance Plan?

Crisis Communication Plans?

Incident Reponse Plans

Security Plan?

Escalation Plan?

Disaster Recovery Plans?

Process Salvage & Recovery Plan?

Trainign Plan?

D.2 Are these plans updated with latest information, contact details etc?

D.3 What are the triggers to update these plans?

D.4 How is the form of these plans? Are these in form of simple checklists or detailed descriptions or flowcharts?

D.5 Any software being used to develop and host these plans?

E. IMPLEMENTATION

E.1 How are the BCM plans implemented?

E.2 What preventive measures do you have in place addressing IT, People, Processes, and facilities?

E.3 How is it ensured that everyone is aware of their responsibilities and what is expected out of them in case of calamities?

E.4 Have the backups for critical activities defined and in place? Are the backups trained and aware?

E.5 Do you have backup arrangements with suppliers and are they aware of what is expected out of them in case of BCM activation?

E.6 Are the employees trained on BCM processes?

E.7 Do staff have ready access to BCM plans? Where is it available?

F. MANAGEMENT

F.1 How frequent are the BCM tests carried out?

Never Once a year Twice a year More than Twice

F.2 What are the different kind of testing carried out in your organization and what is its scope? (For example: Scope: Technical / Process and test type could be at a cold site, hot site, etc)

F.3 Are the findings of the tests serve as input to plan maintenance?

Yes No

F.4 Who is responsible for updating BCM plans?

F. 5 Does the update to plans address processes, training, awareness creation, etc?

F. 6 Is the BCM plan in line with the BCM charter (if it exists)?

F.7 Is BCM a component of the annual planning cycle?

F.8 Is there an annual audit of the BCM process?

F.9 If yes, is it done internally or externally?

F.10 What is objective and scope of these audits?

F.11 Does BCM cover the BC arrangements of suppliers?

G. Conclusion

G.1 How many FTE staff occupy themselves within the organization primarily responsible for BCM?

G.2 How many FTE staff are operative within IT who are responsible for IT continuity?

G.3 What is the BCM budget?

G.4 What is your vision concerning the BCM for coming years?

Appendix D

Final Maturity Model

OPTIMIZED	V	X	XV	XX	XXV
INTEGRATED	IV	IX	XIV	XIX	XXIV
DEFINED	III	VIII	XIII	XVIII	XXIII
MANAGED	II	VII	XII	XVII	XXII
AD HOC	I	VI	XI	XVI	XXI
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
	- Technology	- Facilities Management	- Processes	- People	- Organizational Soft Issues

I. SQB I: ADHOC – LEVEL 1 (Technology)

a. Process Area: BCM Program Management

- i. Goal 1: Responsibility – Not defined
- ii. Goal 2: Budgeting – No dedicated budget for Disaster planning

- iii. Goal 3 : Top Management Commitment – no commitment
- iv. Goal 4: BCM Charter & policy – No format charter
- v. Goal 5: Integration of BCM in other processes – No integration taken into consideration
- vi. Goal 6: BCM Awareness – No training / awareness

b. Process Area: Planning & Analysis

- i. Goal 1: Process Analysis & selection of BCM Methodology – No formal methodology in place
- ii. Goal 2: Quality of Business Impact Analysis – No prioritization of IT services based on their impact is in place. Quality of BIA is v low
- iii. Goal 3: Quality of Risk Analysis – Low quality as no formal Risk assessment is undertaken
- iv. Goal 4: Quality of selecting Business Recovery Strategies – Low quality as it is not based on BIA or RA
- v. Goal 5: Level of Analysis – Only limited to certain IT services without any process related dependencies / integration.
- vi. Goal 6: Tuning with External Stakeholders – No external stakeholder dependencies taken into consideration.

c. Process Area: Development of BCM Plan

- i. Goals 1: Test Plan – Do not exist
- ii. Goal 2: Maintenance Plan – Do not exist
- iii. Goal 3: Crisis Communication Plan – Do not exist
- iv. Goal 4: Incident Response Plan – Do not exist
- v. Goal 5: Security Plan – Do not exist

- vi. Goal 6: Escalation Plan – May or may not exist as a part of BAU
 - vii. Goal 7: Disaster Recovery Plan – May exist for random systems
 - viii. Goal 8: Process Salvage & Recovery Plan – Do not exist
 - ix. Goal 9: Training Plan – Do not exist
 - x. Goal 10: Format of the Plan – Not very easy. Cumbersome in nature
- d. Process Area: Implementation
- i. Goal 1: Execution of the Plan – Only for random systems. Does not prioritize the critical ones
 - ii. Goal 2: Disaster Response Organization – Do not exist
- e. Process Area: Maintenance
- i. Goal 1: Tests & Exercises – Not tested or exercised. May happen for one odd case during implementation of the system
 - ii. Goal 2: Maintenance of all Plans: No formal process in place
 - iii. Goal 3: BCM Audit – Not audited

II. SQB II: MANAGED – LEVEL 1 (Technology)

- a. Process Area: BCM Program Management
- i. Goal 1: Responsibility – a middle level IT manager
 - ii. Goal 2: Budgeting – No dedicated budget but part of IT budget
 - iii. Goal 3 : Top Management Commitment – Low commitment
 - iv. Goal 4: BCM Charter & policy – Charter is a part of IT services charter. No dedicated BCM charter

- v. Goal 5: Integration of BCM in other processes – Integration is limited to mission critical systems
- vi. Goal 6: BCM Awareness – Limited training / awareness to mission critical systems

b. Process Area: Planning & Analysis

- i. Goal 1: Process Analysis & selection of BCM Methodology – Methodology is a part of IT services
- ii. Goal 2: Quality of Business Impact Analysis – Basic first level BIA is conducted to identify mission critical systems. Quality is still low.
- iii. Goal 3: Quality of Risk Analysis – Detailed RA is not done. Only a high level RA is carried out.
- iv. Goal 4: Quality of selecting Business Recovery Strategies – Quality is moderate as basic BIA and RA is conducted
- v. Goal 5: Level of Analysis – Only limited to certain critical IT services with direct process related dependencies / integration.
- vi. Goal 6: Tuning with External Stakeholders – No external stakeholder dependencies taken into consideration.

c. Process Area: Development of BCM Plan

- i. Goals 1: Test Plan – Exists
- ii. Goal 2: Maintenance Plan – Do not exist
- iii. Goal 3: Crisis Communication Plan – Do not exist
- iv. Goal 4: Incident Response Plan – Do not exist
- v. Goal 5: Security Plan – Exists
- vi. Goal 6: Escalation Plan – Exists
- vii. Goal 7: Disaster Recovery Plan – Exists for Mission critical systems

- viii. Goal 8: Process Salvage & Recovery Plan – Exists
- ix. Goal 9: Training Plan – May or may not exist
- x. Goal 10: Format of the Plan – Not very easy. Cumbersome in nature

d. Process Area: Implementation

- i. Goal 1: Execution of the Plan – Only for critical systems
- ii. Goal 2: Disaster Response Organization – May or may not exist. It may be defined but never practiced

e. Process Area: Maintenance

- i. Goal 1: Tests & Exercises – Only tested for mission critical systems.
- ii. Goal 2: Maintenance of all Plans: No formal process in place
- iii. Goal 3: BCM Audit – Audited as a part of IT.

III. SQB III: DEFINED – LEVEL 1 (Technology)

a. Process Area: BCM Program Management

- i. Goal 1: Responsibility – a senior level IT manager
- ii. Goal 2: Budgeting – Dedicated budget for BCM
- iii. Goal 3 : Top Management Commitment – High commitment
- iv. Goal 4: BCM Charter & policy – Dedicated BCM charter
- v. Goal 5: Integration of BCM in other processes – Integration is limited to mission critical systems. All processes, people and facilities dependencies are taken into account

- vi. Goal 6: BCM Awareness – Good amount of training & awareness exists

b. Process Area: Planning & Analysis

- i. Goal 1: Process Analysis & selection of BCM Methodology – Best practice BCM practices are followed.
- ii. Goal 2: Quality of Business Impact Analysis – Detailed BIA is conducted to prioritize business processes and underlying IT systems.
- iii. Goal 3: Quality of Risk Analysis – Detailed RA is done covering all aspects of business processes.
- iv. Goal 4: Quality of selecting Business Recovery Strategies – Quality is good as it is based on BIA & RA.
- v. Goal 5: Level of Analysis – Covers all critical IT services with process related dependencies / integration. Other less priority systems are also covered.
- vi. Goal 6: Tuning with External Stakeholders – External stakeholder dependencies are taken into consideration for mission critical systems / processes

c. Process Area: Development of BCM Plan

- i. Goals 1: Test Plan – Exists
- ii. Goal 2: Maintenance Plan – Exists
- iii. Goal 3: Crisis Communication Plan – Exists
- iv. Goal 4: Incident Response Plan – Exists
- v. Goal 5: Security Plan – Exists
- vi. Goal 6: Escalation Plan – Exists
- vii. Goal 7: Disaster Recovery Plan – Exists for all systems
- viii. Goal 8: Process Salvage & Recovery Plan – Exists
- ix. Goal 9: Training Plan – Exists
- x. Goal 10: Format of the Plan – Easy and user friendly

d. Process Area: Implementation

- i. Goal 1: Execution of the Plan – covers all systems and underlying processes, people, infrastructure etc.
- ii. Goal 2: Disaster Response Organization – Exists. A virtual body is identified which would be activated to handle disasters. Other supporting groups like Logistics and IT support are also identified.

e. Process Area: Maintenance

- i. Goal 1: Tests & Exercises – All plans are tested. Especially mission critical ones are tested every year
- ii. Goal 2: Maintenance of all Plans: Plans are maintained on a regular basis. This could be triggered by test results, process changes, incidents etc.
- iii. Goal 3: BCM Audit – a separate audit is carried out.

IV. SQB IV: INTEGRATED – LEVEL 1 (Technology)

a. Process Area: BCM Program Management

- i. Goal 1: Responsibility – a senior level IT manager
- ii. Goal 2: Budgeting – Dedicated budget for BCM
- iii. Goal 3 : Top Management Commitment – High commitment
- iv. Goal 4: BCM Charter & policy – Dedicated BCM charter, which covers external stakeholders.
- v. Goal 5: Integration of BCM in other processes – Integration for all systems, processes, people and facilities dependencies are taken into account
- vi. Goal 6: BCM Awareness – Good amount of training & awareness exists including supply chain training

b. Process Area: Planning & Analysis

- i. Goal 1: Process Analysis & selection of BCM Methodology – Best practice BCM practices are followed and in certain cases modified according to the organization’s culture
- ii. Goal 2: Quality of Business Impact Analysis – Detailed BIA is conducted to prioritize business processes and underlying IT systems.
- iii. Goal 3: Quality of Risk Analysis – Detailed RA is done covering all aspects of business processes.
- iv. Goal 4: Quality of selecting Business Recovery Strategies – Quality is good as it is based on BIA & RA.
- v. Goal 5: Level of Analysis – Covers all IT services with process related dependencies / integration with supply chain and cross functional processes
- vi. Goal 6: Tuning with External Stakeholders –External stakeholder dependencies are taken into consideration for all systems / processes

c. Process Area: Development of BCM Plan

- i. Goals 1: Test Plan – Exists
- ii. Goal 2: Maintenance Plan – Exists
- iii. Goal 3: Crisis Communication Plan – Exists
- iv. Goal 4: Incident Response Plan – Exists
- v. Goal 5: Security Plan – Exists
- vi. Goal 6: Escalation Plan – Exists
- vii. Goal 7: Disaster Recovery Plan – Exists for all systems
- viii. Goal 8: Process Salvage & Recovery Plan – Exists
- ix. Goal 9: Training Plan – Exists
- x. Goal 10: Format of the Plan – Easy and user friendly

d. Process Area: Implementation

- i. Goal 1: Execution of the Plan – covers all systems and underlying processes, people, infrastructure etc. Also these are tested.
 - ii. Goal 2: Disaster Response Organization – Exists. A virtual body is identified which would be activated to handle disasters. Other supporting groups like Logistics and IT support are also identified and trained
- e. Process Area: Maintenance
- i. Goal 1: Tests & Exercises – All plans are tested. Especially mission critical ones are tested twice a year and less priority one once a year
 - ii. Goal 2: Maintenance of all Plans: Plans are maintained on a regular basis. This could be triggered by test results, process changes, incidents etc.
 - iii. Goal 3: BCM Audit – a separate audit is carried out. These include both external as well as internal audit

V. SQB V: OPTIMIZED – LEVEL 1 (Technology)

- a. Process Area: BCM Program Management
- i. Goal 1: Responsibility – a senior level IT manager or BCP manager reporting to CEO or COO.
 - ii. Goal 2: Budgeting – Dedicated budget for BCM
 - iii. Goal 3 : Top Management Commitment – High commitment
 - iv. Goal 4: BCM Charter & policy – Dedicated BCM charter, which covers external stakeholders and reviewed regularly
 - v. Goal 5: Integration of BCM in other processes – Integration for all systems, processes, people and facilities dependencies are taken into account

- vi. Goal 6: BCM Awareness – Good amount of training & awareness exists including supply chain training. External training is also included.

b. Process Area: Planning & Analysis

- i. Goal 1: Process Analysis & selection of BCM Methodology – Best practice BCM practices are followed and in certain cases modified according to the organization’s culture
- ii. Goal 2: Quality of Business Impact Analysis – Detailed BIA is conducted to prioritize business processes and underlying IT systems. BIA also covers the non availability of supply chain elements.
- iii. Goal 3: Quality of Risk Analysis – Detailed RA is done covering all aspects of business processes.
- iv. Goal 4: Quality of selecting Business Recovery Strategies – Quality is good as it is based on BIA & RA.
- v. Goal 5: Level of Analysis – Covers all IT services with process related dependencies / integration with supply chain and cross functional processes
- vi. Goal 6: Tuning with External Stakeholders –External stakeholder dependencies are taken into consideration for all systems / processes

c. Process Area: Development of BCM Plan

- i. Goals 1: Test Plan – Exists
- ii. Goal 2: Maintenance Plan – Exists and updated regularly
- iii. Goal 3: Crisis Communication Plan – Exists
- iv. Goal 4: Incident Response Plan – Exists
- v. Goal 5: Security Plan – Exists
- vi. Goal 6: Escalation Plan – Exists
- vii. Goal 7: Disaster Recovery Plan – Exists for all systems
- viii. Goal 8: Process Salvage & Recovery Plan – Exists

- ix. Goal 9: Training Plan – Exists
 - x. Goal 10: Format of the Plan – Easy and user friendly
- d. Process Area: Implementation
- i. Goal 1: Execution of the Plan – covers all systems and underlying processes, people, infrastructure etc. Also these are tested.
 - ii. Goal 2: Disaster Response Organization – Exists. A virtual body is identified which would be activated to handle disasters. Other supporting groups like Logistics and IT support are also identified and trained
- e. Process Area: Maintenance
- i. Goal 1: Tests & Exercises – All plans are tested. Especially mission critical ones are tested twice a year and less priority one once a year. Crisis management plans and disaster recovery teams undergo regular drills and results are captured to make changes to existing plans
 - ii. Goal 2: Maintenance of all Plans: Plans are maintained on a regular basis. This could be triggered by test results, process changes, incidents etc.
 - iii. Goal 3: BCM Audit – a separate audit is carried out. These include both external as well as internal audit. Recommendations are incorporated in the plans.

These first five levels give the Process quality for Technology. Similarly these five levels will be repeated across each of the scope areas i.e. Facilities management (premises), Processes, People and Organizational soft issues.

- VI. SQB VI: ADHOC – LEVEL 2 (Facilities Management)
- VII. SQB VII: MANAGED – LEVEL 2 (Facilities Management)
- VIII. SQB VIII: DEFINED – LEVEL 2 (Facilities Management)
- IX. SQB IX: INTEGRATED – LEVEL 2 (Facilities Management)

- X. SQB X: OPTIMIZED – LEVEL 2 (Facilities Management)
- XI. SQB XI: ADHOC – LEVEL 3 (Processes)
- XII. SQB XII: MANAGED – LEVEL 3 (Processes)
- XIII. SQB XIII: DEFINE – LEVEL 3 (Processes)
- XIV. SQB XIV: INTEGRATED – LEVEL 3 (Processes)
- XV. SQB XV: OPTIMIZED – LEVEL 3 (Processes)
- XVI. SQB XVI: ADHOC – LEVEL 4 (People)
- XVII. SQB XVII: MANAGED – LEVEL 4 (People)
- XVIII. SQB XVIII: DEFINED – LEVEL 4 (People)
- XIX. SQB XIX: INTEGRATED – LEVEL 4 (People)
- XX. SQB XX: OPTIMIZED – LEVEL 4 (People)
- XXI. SQB XXI: ADHOC – LEVEL 5 (Organizational Soft Issues)
- XXII. SQB XXII: MANAGED – LEVEL 5 (Organizational Soft Issues)
- XXIII. SQB XXIII: DEFINED – LEVEL 5 (Organizational Soft Issues)
- XXIV. SQB XXIV: INTEGRATED – LEVEL 5 (Organizational Soft Issues)
- XXV. SQB XXV: OPTIMIZED – LEVEL 5 (Organizational Soft Issues)

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