The role of the management accountant in business process reengineering

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THE ROLE OF
THE MANAGEMENT ACCOUNTANT
IN BUSINESS PROCESS REENGINEERING

A thesis submitted in "partial" fulfilment of the
requirements for the award of the degree

MASTER OF COMMERCE (HONOURS) IN ACCOUNTANCY

from

UNIVERSITY OF WOLLONGONG

by

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DEPARTMENT OF ACCOUNTING AND FINANCE

(1996)
DEDICATION

This thesis is dedicated to my mother and father, Wimala Kalupahana and William Kalupahana, who made my existence possible and therefore, responsible in some way for my accomplishments.
ACKNOWLEDGEMENTS

I wish to express my deepest appreciation to a number of individuals and organisations for their help in making completion of my degree possible.

First, I am sincerely thankful to Mr. Adrian Gardiner and Mr. Larry Blackett for serving as my supervisors. Over the past year I was fortunate to work on this research project under their guidance. Their expertise in Management Accounting and Information Systems in Accounting, insights in Business Process Reengineering and their accessibility on a weekly, even daily, basis, provided the kind of learning experience from which I benefited enormously.

I would also like to acknowledge Professor Michael Gaffikin, Dr. Hema Wijewardena, Mr. Abbey Ariyadasa and other members of the Accounting and Finance Department of the University of Wollongong who gave me unforgettable support during my stay at the university. If not for the assistance of the Management Accountants participated in the survey, this research project might not have been possible.

Finally, I am grateful for the continual support, understanding and encouragement provided by my husband, Anushka and my daughter Maheshi whom I compelled to neglect enormously.
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ABSTRACT

THE ROLE OF THE MANAGEMENT ACCOUNTANT IN BUSINESS PROCESS REENGINEERING
Siriyama Kanthi Herath

An issue that has long been of interest in management accounting research is the question of how organisations can achieve organisational efficiency and effectiveness and what role Management Accountants can play in organisational goal congruence.

This research studied the role of the Management Accountant in the attempt of private sector companies to manage their organisations’ achievements of desired goals and objectives by radically changing the existing business processes.

In the study I have been concerned with the development of a model of the role of the Management Accountant in Business Process Reengineering. The proposed model is consisted of three phases; Discovery, Design, and Implementation. The model was empirically substantiated using a sample of Management Accountants in sixty private sector companies engaged in business across Australia.

The results of the study show that the greater the involvement of the Management Accountant in the reengineering project as well as in different phases of the reengineering project, the more likely the reengineering project will succeed. Another important finding was that the Management Accountant’s knowledge of underlying cost structures of the processes being reengineered, is very important in reducing the risk of BPR failure.

These results indicate that the Management Accountant has an important role to play in radically improving organisational performance.
CHAPTER ONE

INTRODUCTION

Reengineering is in trouble
The only way for it to succeed is to fulfill the role of the management on it

1.1 INTRODUCTION

Chapter One consists of six sections: statement of the problem, purpose of the study, significance of the study, methodology, contributions of the study to management accounting literature, and summary of the following chapters.

1.2 STATEMENT OF THE PROBLEM

This research studies the role of the Management Accountant in the attempt of private sector companies to manage their organisations’ achievements of desired goals and objectives by radically changing the existing business processes. One of the management’s most important functions is the utilisation of scarce resources to achieve the short-term and long-term goals of the organisation as described in its mission and goals, consistent with competitive pressure and changing technology. To deal with the rapidly changing competitive position and technology, it is widely accepted that radical changes must be made in the way managers do their work (e.g., redesigning business processes, outsourcing, downsizing etc.).
The general idea of radically changing the way managers do their activities is known as Business Process Reengineering (BPR). Michael Hammer and James Champy (1993) through their work “Reengineering the Corporation: A Manifesto for Business Revolution” proposed that existing business processes should be reengineered to achieve dramatic improvements in business performance. Reengineering is not a new concept. Reengineering as a management technique is found in the literature of management as early as the 1880s. Frederick W. Taylor, who was largely responsible for scientific management, proposed that processes be reengineered to improve productivity and performance of manufacturing organisations.

Hammer and Champy (1993) proposed a new version of reengineering consisting of four types: business process, human resource, product, and corporate-wide. Each type has a different focus. For example, in the business process reengineering, elimination of non-value-adding activities is the focus. In the human resource reengineering, the focus is on employee empowerment and skill development. In the product reengineering, product integration is focussed, and in the corporate-wide reengineering, all other areas of reengineering are focussed.

To date, however, there are very few firms who have attempted corporate-wide reengineering. In reality, this type of reengineering is more difficult
because of its ambiguous scope and the potential power conflicts associated with change (Andrews & Stakicks, 1994, p.2). Corporate-wide reengineering requires much dedication and more resources than other types of reengineering.

From a managerial point of view, an organisation must determine which types of reengineering are more appropriate for achieving different objectives. Objectives enable the criteria of effectiveness and efficiency to be used to evaluate the performance of both the organisation and its participants as a whole. *It is important that change management tools such as reengineering are focussed on organisational effectiveness to be relevant to its participants - management and employees.* In that sense, any reengineering program, whether business process, human resource, product, or corporate-wide must emphasise organisational effectiveness to be relevant to its participants.

The term “reengineering” throughout this thesis will mean Business Process Reengineering (BPR) - i.e., a program designed to improve business processes by eliminating or minimising non-value-adding activities. It is possible that different reengineering projects be used to achieve different organisational objectives. Hammer and Champy (1993), Hunt (1993), Johansson *et al.* (1993), Andrews and Stalicks (1994), and Manion (1995) provide a number of frameworks for achieving radical improvements in businesses through
reengineering existing business processes and activities. The usefulness of a reengineering process depends not only on its association with the organisation's effectiveness, but also on its adaptability. The extent to which a particular reengineering project is associated with the organisational structure, its culture, and the overall leadership style may indicate the degree to which the reengineering project achieves its intended outcomes. The influence of senior managers is of profound importance to the success of any radical change process in organisations.

The more internally cohesive the business processes become in the rest of the organisational context, the more likely that the manager will need to work within a team. Team work is very important in reengineering. It allows the integration of individual participants' work. BPR involves changing a large number of interacting components of the organisational context. Organisational culture and structure, leadership style, focus of activities, competitive pressure, technology, and information management are to name but a few that may require change in a successful reengineering attempt.

Thus, two relationships are of particular interest for our discussion. First, the association between the reengineering program and effectiveness, which indicates the degree to which the type of change is relevant to the organisational outcomes; and second, the association between the
reengineering program and the work of practicing managers (including Management Accountants) which indicates to what extent the change process is integrated with the overall organisational context.

1.3 PURPOSE OF THE STUDY

The purpose of this research is to provide a model of BPR for private sector companies and to test the model by considering the role of the Management Accountant in Business Process Reengineering. The model is built so that it can be readily adapted to an actual business situation. The model will also help practicing managers of private sector companies do their business activities in order to achieve goal congruence.

A review of the literature forms the background of the research problem. Reengineering has become the latest model of management in the business world. Hammer and Stanton (1995) say that "Reengineering is clearly an idea whose time has come (p.xiv)." However, there also are many disappointing stories about reengineering. Hammer and Stanton (1995) reveal that "There are numerous reports in the press of reengineering "failure" (p.xiv)." The researcher holds the view that one of the key factors responsible for the success or failure of Business Process Reengineering is the role played by the
Management Accountant(s) in BPR projects. Of particular interest are the relationships between the reengineering project and:

(1) the criteria used by managers to judge the overall effectiveness and efficiency of their organisations;

(2) managers' perceived performance as measured by effectiveness and efficiency of the organisation under their control and responsibility; and

(3) the components of the organisation - people, processes, type of organisational structure, culture and technology - and the managers' position and power bases.

In fact, Management Accountants play a vital role in planning and implementing changes to their organisations. Managers, not processes, run companies (Hout & Carter, 1995, p.133). The Management Accountant can be regarded a key manager whose active involvement is essential for the success of a reengineering project. Organisational success depends on the willingness and ability of the executives to address the collective responsibilities of the company as a whole. Therefore, the research is extended to explore the role of the Management Accountant in BPR.
1.4 SIGNIFICANCE OF THE STUDY

The needs of two particular groups were considered in developing the reengineering model. The primary group consists of students studying the reengineering process in management, accounting, and finance courses. Reengineering is a relatively new management tool. Therefore, a teaching and learning tool is needed to supplement existing textbooks and research articles on reengineering and permit future managers and management consultants to manipulate the key variables of the reengineering process and analyse their impact on reengineering in action. This experimentation with a component of "real world" type examples will allow students to look beyond the techniques and mechanics of the reengineering process and gain an understanding of the reengineering process as a useful management tool.

The second group of users of the reengineering model considered in this research was the managers of private sector companies. These managers require a tool that permits them to experiment with alternative courses of action that allow them to redesign radically their business goals, processes, component activities, and organisational structures according to changing environmental factors such as technology, competition, and customer preferences.
1.5 METHODOLOGY

The research effort included three phases:

(1) Review of prior research;
(2) Development of a reengineering model; and
(3) Testing of the model through an empirical study.

(1) Review of prior research. The relevant management, organisation, and accounting literature was reviewed: (a) to provide the researcher with a comprehensive background in the theory and techniques relevant to the study, (b) to determine the essential characteristics of a reengineering model as a change management tool for private-sector companies, and (c) to provide a theoretical basis for development of a reengineering model.

(2) Development of a Reengineering Model. The reengineering model of the role of the Management Accountant in BPR was developed in three phases as outlined below. The first phase involved the careful definition of the variables of reengineering by examining contemporary accounting and management textbooks and journal articles to determine the kinds of reengineering models usually developed.
During the second phase, the reengineering model was developed. Every effort was made to document the model so that a student or manager unfamiliar with the reengineering concept would be able to understand the model’s structure. The model was designed to implement change as easily as possible for the user. The final phase involved testing the reengineering model.

(3) The Testing of the Model. The objective of this step was to test the impact of the Management Accountant on the success of reengineering. A sample of 60 Management Accountants in private sector companies was selected to empirically test the validity of the proposed model.

1.6 CONTRIBUTIONS OF THE STUDY TO MANAGEMENT ACCOUNTING LITERATURE

This research provides valuable information for companies contemplating the implementation of business process reengineering. As noted earlier, there are many stories of failures of reengineering efforts by companies. However, it is not reasonable to discard the concept of reengineering on the ground of those unsuccessful efforts. There are many successful stories about reengineered companies that have achieved dramatic business outcomes. Reengineering has proved to be a very promising business management tool. The researcher
strongly believes that the destiny of a reengineering program depends largely upon the actions of Management Accountants. The impact of the Management Accountants on the decision variables of the reengineering model was tested using a sample of respondents. The following information was gained from this research effort.

(1) The determination of the elements of the design of the reengineering project.

(2) The determination of the involvement of the Management Accountants in the following phases of the reengineering project:
   A. Identifying (Discovering) processes needing improvement;
   B. Designing the new processes; and
   C. Implementing the reengineered processes.

(3) The determination of the importance of the involvement of the Management Accountant in the above mentioned phases of the reengineering projects.

(4) The determination of the importance of the role of the Management Accountant in the success of the reengineering project.

(5) The determination of the importance of the Management Accountant’s knowledge of the actual costs underlying business processes in:
A. Identifying (Discovering) processes needing improvement; and
B. Designing the new processes.

(6) The determination of who should be responsible for reengineering business activities/processes.

With the information noted above, potential users will be able to see the problems that may contribute to failure of a reengineering attempt. This information will be valuable to managers in evaluating the true worth of reengineering. If they desire, such information will assist in smoothing the path to changing existing business activities and to tailor the reengineering process to fit individual organisational needs.

1.7 SUMMARY OF THE FOLLOWING CHAPTERS

To guide the reader through the remainder of this thesis, the following preview is provided.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
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<tbody>
<tr>
<td>One</td>
<td>is an introductory chapter setting forth the problem, the objective, significance, methodology, and contributions of the study to management accounting literature.</td>
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is a review of the literature relevant to this study. Three major types of literature are reviewed: on organisations, on effectiveness, and on the theory of reengineering.

develops a model of the role of the Management Accountant in Business Process Reengineering. It also develops three research hypotheses for empirically testing the proposed model. A discussion on the role of the Management Accountant in Business Process Reengineering gives the model a sense of real world identification. A section is devoted to identify the necessity of understanding the underlying cost structures of a BPR project by the Management Accountant. This chapter also discusses activity-based-cost management as a useful tool for identifying the cost structures of BPR projects.

presents the research methodology of the study. The instrument, sample selection and data collection, and the nature of the companies selected for empirically testing the research hypotheses are explained in detail.

presents a summary and the final conclusions of the study. It presents the results of the research effort, discusses the results, relates the research hypotheses to the observed results, presents the limitations of the study, and looks at the implications for future research.
CHAPTER TWO

LITERATURE REVIEW

Reengineering works-up to a point. The obstacle is management (Champy, 1995, p.1) which needs to integrate effectively with employees, and to satisfy customers.

2.1 INTRODUCTION

As discussed in Chapter One, the purpose of this research is to design a reengineering model for private sector companies that will provide students, managers, and management consultants with a valuable tool for developing a reengineering project and for assessing the impact of the Management Accountant on the success of the reengineering project. The foundations for the reengineering model are developed as follows.

First, since the reengineering model is designed for private sector companies, it is necessary to gain a basic understanding of the nature of such organisations. Therefore, an introductory literature on organisations is briefly discussed in the first section of this chapter. Second, because the objective of designing the reengineering model is to assist companies in improving business performance, it is deemed useful to review the literature on organisational effectiveness. This is discussed in the second section of the
chapter. Third, it is imperative that the relevant literature on reengineering be reviewed in order to gain a thorough understanding of the proposed reengineering model.

2.2 ORGANISATION AND CRITERIA OF ORGANISATIONAL SUCCESS

In order to establish the foundation in which a reengineering model can be designed, the relevant literature relating to organisations is briefly reviewed in this section. Organisations are an integral part of our society and their importance and impact cannot be denied. Cleland and King (1972) point out:

... the need for organizations - both formal and informal - lies both in the psychological and sociological needs of human beings and their desire to accomplish objectives. In a complex world, those significant things which can be accomplished by a single person become increasingly rare. Moreover, even those things which could be done by an individual cannot be efficiently done in such a fashion. This is reflected in our tendency toward increased specialization in virtually every field of human endeavor (pp.60-61).

There are many types of organisations, ranging from informal to formal groups, formal groups to formal organisations such as Woolworths, Grace Brothers, General Motors, Broken Hill Proprietary Company Limited, the Department of Accounting and Finance at the University of Wollongong, and the World Bank.
For the purpose of the present study, it is convenient to consider organisations as falling on a continuum ranging from simple individual activities to complex and highly formalised organisations as shown in Figure 2.1.

Organisations are diversified in their size, format, nature of activities, objectives, and so on. However, they share common elements as Cleland and King (1972) report:

... organizations are (1) goal oriented, people with purpose; (2) psychological systems, people working in groups; (3) technical systems, people using knowledge and techniques; and (4) an integration of activities, people coordinating their efforts (p.61).

As can be seen in Figure 2.1, private sector companies are formal organisations varying from domestic to international. The reengineering model developed in this study is for private-sector companies engaged in the transformation of inputs into outputs. Such organisations are perceived to be very much concerned with the efficiency and effectiveness of their organisations. The attention in this study is on the efficiency and effectiveness of such private sector organisations. Therefore, in the section following "Definition of Terms", organisational effectiveness and efficiency are introduced.
Figure 2.1

An Approximate Continuum of Organisations

[Diagram showing a continuum ranging from Individual Activity to Domestic Organisations on the left, to Formal Groups on the right, with branches indicating Private Sector, Public Sector, and Multinational Organisations, and Domestic and International Organisations within the Formal Groups.]
2.2.1 DEFINITION OF TERMS

Readers of this research may require some definitions of the jargon and terms used. Some of the terms and their definitions are given below.

2.2.1.1 AN ACTIVITY

A collection of process steps that are linked to perform a specific task.

2.2.1.2 A PROCESS

A process is a set of logically connected activities.

2.2.1.3 EFFICIENCY

Efficiency refers to the rate at which a process transforms inputs into outputs.

2.2.1.4 EFFECTIVENESS

Effectiveness can be defined as an organisation’s “ability to exploit its environments in the acquisition of scarce and valued resources to sustain its functioning (Seashore & Yutchman, 1967, p.378).”

2.2.1.5 VALUE-ADDING ACTIVITIES

Those activities which move products and/or services forward through processes and add value to the output.
2.2.1.6 NON-VALUE-ADDING ACTIVITIES

Those activities which do not move products and/or services forward through processes or enhance value of the output.

2.2.2 ORGANISATIONAL EFFECTIVENESS AND EFFICIENCY

Effectiveness is an important criterion in measuring organisational success. The goal of reengineering is to improve performance through improved business processes. Similarly, the goal of any business process is to transform inputs into outputs as efficiently and effectively as possible. Efficiency is concerned primarily with the speed of the transformation process. Cycle time is one expression of process efficiency (Harbour, 1994, p.24). Productivity is another expression of process efficiency. Effectiveness refers to the quality of outputs with respect to goals. That is effectiveness is the relationship of inputs and outputs to goals. An effective business process has the ability to meet internal and external customers' needs. A number of models of organisational effectiveness can be found in the management and organisational literature. These include the open systems model, rational goal model, and competing values approach.
2.2.2.1 OPEN SYSTEMS MODEL

In the open systems model, the organisation is seen as a “self-maintaining system in dynamic equilibrium within an environment (Seashore, 1983, p.57).” The organisation is an open system with constant interactions with the environment. Organisations emphasise system-elaborating processes and activities and the measures of effectiveness include flexibility, adaptability, and maximisation of bargaining position.

2.2.2.2 RATIONAL GOAL MODEL

The rational goal model sees the organisation as an instrument of its constituent parts, human and non-human. Organisations are effective to the extent to which they achieve their goals and objectives. Hofer and Schendel (1978) define effectiveness as “the degree to which the actual outputs of the system correspond to desired outputs (p.2).” In the rational goal model, the goals of the organisation indicate the power and values of the organisation’s constituencies.

2.2.2.3 COMPETING VALUES APPROACH

This approach indicates the usefulness of identifying different measures of effectiveness. In a review of the literature on organisational effectiveness, Campbell (1977) identified 30 criterion measures previously used in various
empirical researches in the field. Campbell argues that a model of effectiveness should identify the relevant variables to be measured and specify their inter-relationships. Campbell noted that the usefulness of a particular model of effectiveness depends upon “both the values of the user and the facts of organizational life (p.15).”

Quinn and Rohrbaugh (1983) propose a competing values approach (CVA) of organisational effectiveness, based on Campbell’s “effectiveness” criteria. In this framework, they demonstrate that Campbell’s effectiveness criteria could be classified along three empirically derived value dimensions: organisational focus, preference for structure, and means-ends continuum. These three value dimensions, which represent an individual’s perception of the effectiveness of an organisation’s performances, are described below:

1. **Organisational focus**, which ranges “from an internal, micro emphasis on the well-being and development of people in the organization, to an external, macro emphasis on the well-being and development of the organization itself”;

2. **Organisational structure**, which represents on one hand, a preference for stability, order and control, and on the other hand, an interest in flexibility, change and innovation; and

3. **Organisational means and ends**, which range “from an emphasis on important processes (e.g., planning and goal setting) to an emphasis on final outcomes (e.g., productivity) (Quinn & Rohrbaugh, 1983, p.369).”
These value dimensions of the CVA model classify Campbell’s *criteria of effectiveness* into eight categories of variables: (1) growth, resource allocation; (2) flexibility, adaptability; (3) human resource development; (4) information management; (5) cohesion, morale; (6) productivity, efficiency; (7) planning, goal setting; and (8) stability, control. These competing values have been empirically validated by a number of researchers including McGrath (1983) and Nunnaly (1978).

It can be seen that each model of effectiveness uses a different set of variables to judge the effectiveness of the organisation. *One can integrate and synthesise these models of effectiveness to measure and evaluate the usefulness of management tools and techniques in organisational goal accomplishment.*

Figure 2.2 summarises the relationships between the organisation and the measures of organisational success. As illustrated in Figure 2.2, an organisation consists of people and processes. The processes consist of individual activities. Efficiency and effectiveness are important criteria of organisational performance measures. The remainder of the chapter is devoted to a comprehensive literature review of BPR. It discusses reengineering - both its history and current trends.
Figure 2.2

The Organisation and Criteria of Organisational Success
2.3 BUSINESS PROCESS REENGINEERING (BPR)

A thorough understanding of Business Process Reengineering (BPR) is needed to develop a model of the role of the Management Accountant in BPR. Therefore, the following sections are devoted to a detailed discussion of BPR.

2.3.1 DEFINITION OF TERMS

Readers of this research may require some definitions of the jargon and terms relating to reengineering. Some of the terms important in this study and their definitions are given below.

2.3.1.1 REENGINEERING

"The fundamental rethinking and radical redesign of business processes to bring about dramatic improvements in performance (Hammer & Stanton, 1995, p.3)." The goals of reengineering are to achieve dramatic improvements in cost, quality, speed, and service. Business reengineering means "starting all over, starting from scratch (Hammer & Champy, 1993, p.2)." A similar view is held by Harbour (1994), who said "Reengineering is akin to throwing the baby out with the bath-water and starting over from scratch (p. 2)." The five key words in the Hammer and Stanton definition are explained below:
(1) **Fundamental** In an attempt to reengineering, all businesses have to answer basic questions about their organisations and how they operate: Why do we do these activities? Why do we do them in the way we do them? Answering these questions help organisational employees and management understand the basic rules and assumptions they make in carrying out their activities. Often, they find these rules and assumptions are outdated or inappropriate. Reengineering starts with no rules and assumptions and no given conditions; and reengineering takes nothing for granted (Hammer & Champy, 1993, p.33). It is concerned with what should be and ignores what is. Reengineering concentrates on what (effective) a company must do and how (efficient) to do it.

(2) **Radical** means going to the beginning of things. Reengineering is not about just improving existing processes. It is about throwing them away and starting over.

(3) **Redesign** means that reengineering is about the design of how work is done. Reengineering is based on the notion that the design of processes is of profound importance for organisational success.

(4) **Processes** mean “the blending and transformation of a specific set of inputs into a set of outputs. A process is what we do in order to produce a product, complete a task, or render a service (Harbour, 1994, p.1).”
(5) *Dramatic* means that reengineering is not about marginal improvements to businesses. The objective of reengineering is achieving breakthrough performances.

In this thesis BPR is defined as *the rapid and substantial redesign of important existing business processes*.

### 2.3.1.2 REENGINEERING MODEL

A model is “a simplified representation of reality (Starr, 1971, p.31).” Models are useful in that they permit us to solve complex real world problems by focussing on only a portion of the key characteristics of the real world instead of all details. In constructing a model, the relevant variables that have major impacts on the decision situation are only taken into account. It is important to bear in mind that “the particular form selected should depend upon the purpose (Murdick & Ross, 1971, p.378).” A model provides the basis for studying the complex relationships and interrelationships of the issue under study. A reengineering model should be able to increase effectiveness and efficiency of an organisation undergoing a reengineering process.

### 2.3.1.3 CONTINUOUS IMPROVEMENT

Continuous improvement is the achievement of breakthrough improvements in the quality and reliability of products and processes. It should be always incorporated with organisational effectiveness and efficiency.
2.3.2 BACKGROUND OF REENGINEERING

In 1993, Hammer and Champy published "Reengineering the Corporation", which described a new concept in business management. They called this concept "Reengineering" because its unique characteristic was throwing away old systems and starting over. It involves going back to the beginning and reinventing a better way of doing business activities. After carefully investigating a number of business organisations, Hammer and Champy identified that the way to dramatically improve business performance is to radically change the ways in which businesses operate. According to Hammer and Champy, business process reengineering is:

"the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed (1993, p.32)."

These two proponents of business reengineering suggest that radical changes are necessary to produce significant improvements that are essential to survive under the current conditions of world economics and global competition.

Manion (1995) takes a similar perspective:

"The era of business re-engineering has arrived - again driven by competitive market forces. Organizations are finding that, regardless of how successful they have been in the past, failure to re-examine the way they do business today can be a recipe for disaster (p.39)."
Therefore, BPR can be considered a unique approach for improving organisational efficiency and effectiveness because BPR always deals with the achievement of organisational goals in the best possible way. The basic concept of process reengineering - attempt to improve performance and optimise productivity - is not new. As early as the 1880s, Frederick Taylor proposed that processes be reengineered to improve productivity and efficiency of business activities. In 1881, Taylor began to study how individual tasks were being performed in organisational settings. He timed each task and then greatly increased individual productivity by rearranging work stations and the flow of materials throughout the mill. These studies constituted the time and motion studies, which made Taylor highly respected among management theorists. Taylor's rearranging of work resembles today's business process reengineering. Like Taylor, Henry Fayol believed that principles of reengineering were useful in the work place. Whiting (1994) reported:

Taylor's work provided a foundation for... Henry Fayol...also an engineer, to believe that reengineering principles could be applied generally to most organizations (p.15).

Thus, early management scientists also believed work rearrangement would provide the organisation with a way to improve organisational effectiveness. Modern pioneers of business process reengineering also hold the same
perspectives of reengineering. Hammer in a discussion about reengineering says:

Another myth is that reengineering is required in certain industries or companies. I think all companies in all industries require some degree of reengineering (Filipowski, 1993, p.48).

Therefore, any organisation can undertake some form of reengineering to increase organisational effectiveness. According to early management literature, the concept of reengineering had its origin during the 1880s. Even though the idea of reengineering of work had its origin over decades ago, it took more than a century before reengineering again came to the forefront in the business world. In every aspect, the modern business world is full of changes. In response to change, many techniques are used to assist organisations (Stein, 1995, p.62). *Reengineering has emerged as one such change management tool.*

The next development stage of reengineering occurred within business firms due to shortcomings of existing business management tools. Business Process Reengineering, as its proponents called this new business model, evolved as a result of attempts to develop new techniques that would allow businesses to survive in an increasingly harsh competitive environment. Hammer and Champy in their best selling book, *Reengineering the Corporation: A*
manifesto for business revolution, advocate that dramatic change can be
achieved in the way business is operated if the processes basic to doing
business are reengineered. To quote the authors:

...we demonstrate how existing corporations can reinvent
themselves. We call the techniques they can use to accomplish
this business reengineering, and it is to the next revolution of
business what the specialization of labor was to the past (1993,
p.2).

Business reengineering means putting aside how work was done in the past
and then focussing on the ways in which it can best be done now. One
important aspect of this technique is that it is customer oriented. Every aspect
of an activity should be focussed on some aspect of customer satisfaction:
creating a product high in quality; supplying the product at a fair price; or
providing excellent service. In reengineering, businesses have to change their
traditional methods of organising and managing work and reinvent a new
business environment. Hammer and Champy have expressed this statement:

At the heart of business reengineering lies the notion of
discontinuous thinking-identifying and abandoning the
outdated rules and fundamental assumptions that underlie
current business operations (1993, p.3).

According to reengineering proponents, an organisation should always
consider the most appropriate way of doing business with the aim of
increasing organisational effectiveness. As a result of their book, both
Hammer and Champy became reengineering gurus in the business world. They
both worked as reengineering consultants for a number of business
organisations. Although the success of this new technique is questionable, its
wide publicity drew the attention of many private and public sector
organisations. From its inception, many organisations have implemented
business process reengineering with the objective of improving their business
performance.

Although business process reengineering does not give specific formulas
commonly applicable to all organisations, the best way to describe it may be to
contrast it with the traditional business management process. Traditional
businesses have been organised around Adam Smith’s division or
specialisation of labour and the resulting fragmentation of work. This
division of work into tasks necessarily led to the creation of standard,
pyramidal organisational structures. That kind of organisational structure was
well suited for planning and control purposes. By dividing work into small
tasks, supervisors could ensure consistence and correct worker performance,
and the supervisor’s boss could do the same thing. All planning activities
could easily be approved and monitored department by department, and
budgets were generated and pursued on the same basis. The managers in the
middle of the organisational chart helped to organise simple, repetitive tasks
that ensured the hierarchical organisational structure. Another important feature of the traditional business organisation is the great distance between the senior managers and the workers and customers. Throughout the traditional organisation massive bureaucratic control systems are visible.

In today's constantly changing environment, competitiveness is very high. Accurate prediction of business activities, market growth, product life cycles, technological and economic changes, competitiveness, and customer demand is difficult. Customers, Competition and Change are the controlling forces of today's business world. These three Cs have changed the environment of businesses. It is obvious that organisations built around division of labour, mass production, stability and growth cannot be successfully operated in an environment where these three Cs demand flexibility and quick response. Thus, everything has to be reinvented - redesigned in a way that optimises the organisational efficiency and effectiveness. The key words in reengineering are work and processes. The major objective of BPR is to create significant improvements in measures of performance such as cost, quality, speed, and service through dramatically changing existing business procedures. 

Reengineering has been defined by consultants practicing it in the field as an approach to planning and controlling "radical" organizational change (Earl et al., 1995. p.32).
However:

It does not mean abandoning long-established procedures and looking afresh at the work required to create a company's product or service and deliver value to the customer. It involves going back to the beginning and inventing a better way of doing work (Hammer & Champy, 1993, p.31).

Accepting the views of Hammer and Champy, Earl et al., (1995) state that “BPR has meant redesigning existing business processes and implementing new ones (p.32).” Reengineering does not mean incremental changes that leave the existing fundamental structure intact. Reengineering is the process of radically changing the way of doing work. The job of business reengineering is to rip the guts out of an organization and resemble them in the context of today’s changing world business (Andrews & Stalick, 1994, p.1).

The proposed new business technique recommends that business organisations be built around the idea of reunifying business tasks into coherent business processes. Hammer and Champy explain:

By “process,” we simply mean a set of activities that, taken together, produce a result of value to a customer - developing a new product, for example (1993, pp.3-4). [emphasis added]
Thus, reengineering concentrates on identifying ways that businesses can significantly improve business activities by replacing, deleting, or improving them. Kelada (1994) describes BPR as follows:

...business reengineering means an organisation radically changes the way it thinks and the way it operates. More specifically, it involves changing processes, organizational structures, management style and behaviour, compensation and reward systems, and the relationships with shareholders, customers, suppliers, and other external partners (p.80).

Manion (1995) puts forth a similar perspective:

Business re-engineering is a means of achieving and sustaining major improvements in performance in an organization. How? By aligning and integrating an enterprise’s people, business processes, and technology with its strategic imperatives (p.39).

According to these views, BPR means radical *changes* to business processes through which an organisation can improve effectiveness and efficiency. BPR, also known as business process redesign or process innovation, refers to discrete initiatives that are intended to achieve radically redesigned and improved work processes in a bounded time frame (Davenport & Beers, 1995, p.57). In traditional industrial management, bureaucratic organisation structures, inflexibility, lack of innovation, high overhead, the absence of customer focus, and unresponsiveness to competitiveness are the major characteristics of the industrial leadership. In BPR, in contrast to “traditional business management”, old organisational structures - departments, divisions,
titles and teams and groups cease to matter. The emphasis is placed on what matters today - today's customers' needs and wants, today's technologies and today's competitiveness. These appropriate business conditions are expected to achieve by radically changing business processes instead of sustaining incremental improvements.

From the time of its inception, business process reengineering has been a popular management tool in the business world (Davenport & Beers, 1995, p.57). Reengineering has become the fashionable management philosophy of the business world. The 1990's has seen an explosion of interest in what has become known as business process re-engineering (Gadd & Oakland, 1995, p.7). In one broad survey of U.S. and European firms, 69 percent of U.S. companies and 73 percent of European companies surveyed had adopted reengineering programs (Davenport, 1993, p.34). Many industrial giants have adopted the method and achieved significant improvements. In reengineering proponents' words:

The shift to process-based thinking is already underway, and that shift is illustrated in the radical changes that mainstream companies such as IBM Credit, Ford Motor, and Kodak have made (Hammer & Champy, 1993, p.36).

Another success story is American Telephone and Telegraph (AT&T), where they reengineered their standard capacitor filtering strategy for Surface Mount
Technology (SMT) packs. This effort reduced the number of parts by one-third and reduced the cost to one-ninth of the original cost (Hunt, 1993, p. 76).

In the late 1980s, Boeing Ballistic Systems Division was unable to win a number of full-scale development contracts. As a result of this failure, the company initiated a company-wide reengineering project to improve operating costs and efficiency. This project has helped Boeing to improve its competitive position in the market. As a result of its reengineering effort, Boeing has been awarded several major new developmental contracts (Hunt, 1993, p. 80).

According to recent surveys, 88 percent of large corporations are or have been involved in business process reengineering projects, and many others plan to begin projects soon (Clemons et al., 1995, p. 10). Another source estimated that over 300 organisations are using reengineering in 1995. Cooper and Lynne say:

> Just a few years ago, business process reengineering seemed to be the answer to many managers' prayers. Managers everywhere faced huge gaps between the performance of their organizations and their best competitors. ...Something more was needed, something big. And reengineering seemed to fit the bill (1995, p. 39).
In spite of the many success stories about reengineering, however, not all companies that attempt to reengineer succeed at it. One source revealed that, “only a few years after the introduction of the term, there are reports that between 50 and 70 per cent of re-engineering efforts fail to achieve the goals set for them (Stewart, 1993, p.34).” According to Hammer and Champy (1993), “from 50 to 75 percent of the organizations that undertake radical business process reengineering do not achieve the dramatic results they intended (p.200).” Another source revealed that from 50 to 75 percent of the organizations that undertake radical business process reengineering do not achieve the dramatic results they expect (Hunt, 1993, p.11). Cooper and Lynne (1995) point out:

... the bad news began to filter in. Reengineering efforts have a high failure rate (p.39).

Nevertheless, reengineering is continuing to grow as a means of improving organisational efficiency and effectiveness. This is because it concentrates on consumers and changing social conditions. Notwithstanding its acceptability, however, the usefulness and practicability of process reengineering has been questioned by many. In spite of the critics, the advocates of reengineering have a different view of the technique’s usefulness.
Unlike some management techniques, reengineering is here to stay says Michael Hammer (Filipowski, 1993, p.48). However, very recently we heard about a contrasting issue made by Champy, one of the proponents of the concept:

Reengineering is in trouble. It’s not easy for me to make this admission. I was one of the two people who introduced the concept (1995, p.1).

According to Champy, poor leadership was the reason for BPR failure. So, he proposed that management be reengineered to overcome this problem. Thus, although reengineering is a highly accepted management technique, it is not without stories of failure. Many researches and journal articles give evidence of BPR failure. Coleman (1996) points out:

We are in the middle of the reengineering revolution with a greater than 70% failure rate. Michael Hammer, the current prophet of re-engineering, predicted that American companies will spend $32 billion dollars this year in re-engineering efforts and that two thirds of those efforts will fail (p.1).

Breezy Services Company, a medium-sized service provider was in trouble due to the increased competition. One source reveals:

Breezy’s top management decided to undertake a massive three-year business reengineering effort that would involve all business functions and include an extensive information systems (IS) project to technologically enable radical business change. ... *Despite some earnest determination, however, the*
reengineering effort was only marginally successful in bringing about holistic, broad-based change (Erwin, 1995, p.51). [emphasis added]

If business reengineering is not to be another management fad, it should be able to achieve the significant improvements intended by those who follow the reengineering principles. However, BPR does not give organisations exact formulas or rules to be successful. The key to success lies in the knowledge and abilities of the management and employees (i.e. the organisation's people).

Some researchers believe that the fundamental problem with reengineering is the chaotic nature of organisations. When the roadblocks to reengineering were examined by a 1993 Delloite-Touche survey, it turned out that reengineering ...has two major obstacles: people and technology (Coleman, 1996, p.1).

If management and employees (people) do not fully trust each other, if the organisation’s people do not have fun at work, if their spirit has not been captured by the organisation’s vision, then no amount of “empowerment”, education and training will generate the creativity and energy required to respond to (indeed initiate) change.
However, there may be other reasons for the failure of reengineering efforts. Whatever the reasons for failure of BPR, it is of paramount importance to take remedial actions to reap the best results of this unique management technique. Therefore, research is needed to devise new ways of achieving success through reengineering. These remedies may constitute new techniques or a further refinement of the existing techniques. *Certainly barriers such as more sophisticate technology and unprepared management and employees (people) need to be dealt with.*

Business people are the followers of these management tools and techniques developed by various thinkers. It is hard for them to accept or reject any new idea, concept, tool, or technique without complete understanding of the theory and consequence of the use of those management tools and techniques. Thus, as academics and researchers, it is advisable that we *review these concepts and try to adjust them to suit man's requirements. This is the final goal of this research.*

Reengineering is not limited to process reengineering as most of us might think. It is a wide management system in which system defects are avoided rather than corrected in later stages of the project. Therefore, reengineering can be applied to wide areas of the organisation. As exhibited in the Figure 2.3, four potential areas of reengineering are:
(1) *Process* reengineering (Business Process Reengineering);
(2) *Human* resource reengineering;
(3) New *product* reengineering; and
(4) *Radical corporate-wide* reengineering (human, product and process).

Although an organisation can implement a reengineering project on a radical corporate-wide basis, it can also select one or several sections of the organisation or any particular processes for reengineering. Some organisations may select only one or two opportunities such as human resources and/or process, e.g., reengineering the information system and human resources in the Accounting Division.

However, in the modern world in which change has become a big challenge to businesses, organisations cannot rely only on limited criteria such as quality or in-time delivery. The present situation demands quality, value, customer satisfaction, reliability, low cost, and everything in perfect condition. Therefore, the answer for the problem of business failure will not be partial reengineering. Corporate-wide reengineering may integrate the human factor, products and processes in a way that customers’ needs are fulfilled and organisational activities are directed towards organisational efficiency and *effectiveness*. 

Chapter Two: Literature Review
Figure 2.3
Potential Reengineering Opportunities

[Diagram showing potential reengineering opportunities connected to Human Resource, Process, New Product, Corporate-wide]
The most important aspect of corporate-wide reengineering is that it reminds everyone in the organisation that top-managers, workers, suppliers, maintenance staff, financial specialists, product and process designers, and so on, should be equally responsible for the achievement of desired business outcomes. The potential of the reengineering process is tremendous. It empowers the business as well as the people of the organisation to carry out the proposed redesigned activities from the beginning to the end of the stages of development.

The corporate-wide reengineering process shown in Figure 2.4 integrates the various aspects of a reengineering project so as to achieve business outcomes including satisfying customers.

As pointed out earlier, the corporate-wide reengineering project is very useful in successfully adapting to the changing world condition and survive in the competitive environment. It is guided by business vision and incorporates business goals and objectives, resources, and processes in a way that will achieve organisational as well as individual goals including satisfied customers.
Figure 2.4

Quality & Customer-Focused

Corporate-Wide Reengineering

Source: Adapted from Hunt (1993, p.7).
2.3.3 BUSINESS PROCESS REENGINEERING - TOOLS, TECHNIQUES, AND MODELS

This section discusses the tools, techniques, and models of BPR. It reviews the key elements of BPR, goals of BPR, and important dimensions of BPR. A sub-section is devoted to a discussion on the people, and processes in the transition organisation, and several business models relating to reengineering. It also discusses the selection of business processes for reengineering and the myths and misconceptions of reengineering.

2.3.3.1 KEY ELEMENTS OF REENGINEERING

Reengineering is a fundamental new way of looking at how businesses can achieve desired business outcomes. Traditional business activities have been organised as discrete functional units (such as production, marketing and financing). In such a setting, communication among different functional units is very formal and hierarchical. Inter-departmental boundaries very often limit efficient and effective communication among different departments. This traditional organisational structure has succeeded in the past. However, in the currently continuously changing world, it is accepted that such a hierarchical system has limited use in the sense that business managers as well as employees (people) must have much more liberty and authority in order to achieve business outcomes in the best possible manner.
The traditional sequential management process becomes less efficient as product complexity, customer awareness, demand for value-adding processes, and global market competition increase. In our experience, the latest management technique for business success is business process reengineering. According to Andrews and Stalick:

Business reengineering begins the process of transforming a dysfunctional organization into a learning, productive, quality-focused, customer driven organization. Business reengineering must be customer driven. The organization that defines its quality, values, and future internally will not remain competitive in a global economy (1994, p.17).

Thus, the traditional boundaries among customers, suppliers, distributors, employees, and producers become irrelevant when the business activities are defined in terms of added value, responsiveness, sensitivity, creativity, and empowerment.

It is important to note that reengineering human resources, products or processes within the existing dysfunctional organisational framework is not successful. The framework needs to be revised first. Figure 2.5 illustrates the fundamental elements in a reengineering project.
Figure 2.5

Key Elements of the Reengineering Process

Adapted from Hunt (1993, p.10).
As noted in Figure 2.5, any reengineering project should be customer-oriented because central to the success of a BPR initiative is the customer orientation. Jury and Sturdivant (1995) note:

Achieving profitable and sustainable competitive advantage through business reengineering requires the organization to be truly customer focused (p.37). [emphasis added]

Key to any BPR process is the identification of customer requirements. The starting point of the reengineering process is the identification of customers’ wants and needs. We must figure out what they want, organize around that outcome and eliminate all the non-value-added layers that get in the way of delivering customer value (Myers, 1995, p.13). The importance and the power of satisfying customer requirements in successful business should not be underestimated. Under pressure to participate in improvement activities or to become involved with the newest business wisdom, management may lose sight of the real issue—enhancing customer satisfaction and improving productivity (Arendt et al., 1995, p.22). Thus, necessary attention should be given to the customers’ requirements.

Development of goals and outcomes should involve a thorough review of the organisational environment, resources, management style and all other important aspects with an impact on performance. One important aspect of
any reengineering project is that it should always concentrate on improving the quality of the organisation’s products or services. Kelada (1994) emphasises the importance of quality as follows:

> When business reengineering is implemented, the objective of total quality must always be at the forefront to ensure success - otherwise implementation can be costly and still not produce acceptable long-term results (p.79).

In other words, organisational *effectiveness* should be given a prior place in BPR. The feasibility study of the project is concerned with how initial ideas for reengineering are generated and what the feasibility of implementing them is. Relating to the reengineering process, feasibility study concentrates on the interaction between ideas, experimentation, invention, and evaluation. Such an evaluation reports the organisation’s readiness -- both human and non-human -- for the project. Especially, in reengineering, which involves many changes to people as well as to the entire organisational setting, a feasibility study becomes an imperative. To quote Arendt *et al.*, (1995):

> ...a major factor in the failure of projects that involves significant change is a lack of readiness within the organization. *Understanding the readiness of the organization’s personnel to embrace and support the changes entailed by the project is a crucial step* in preparing the transition team to be successful in creating and implementing the planned changes (p.26) [emphasis added].
Human resources should be integrated with relevant motivational and educational factors for reengineering to be successful. People should be given their due places. Greengard (1994) warns “not everyone immediately is satisfied with the results of reengineering. The human side of the equation can get in the way (p.32N).” Thus, particular attention should be given to the human factor in any kind of reengineering process because people are affected in different ways by any change program. Development of teams may be a way to get people’s fullest support. It enhances the skills, abilities, and support of the people. Arendt et al., (1995) explain the importance of this issue:

*Most business changes are undertaken without understanding how the human element influences the success or failure of a project.* Frequently, businesses develop great technical plans for what must take place and simply assume that the change - technical or organizational or process - will occur. Too often, this is an erroneous assumption. The change is unpredictable by the people involved due to the stress caused by any change, be it positive or negative (p.22) [emphasis added].

To be successful at reengineering, it is very important to consider the personal concerns of the people who actually do the work. Hammer and Stanton (1995) point out:

*Any successful reengineering effort must take into account the personal needs of the individuals it will affect.* The new process must offer some benefit to the people who are, after all, being asked to embrace enormous change, and the
transition from the old process to the new one must be made with great sensitivity to their feelings (p.32) [emphasis added].

People are central always whether it be process, human, product, or corporate-wide reengineering. Always it is necessary to integrate people with the technology, processes and resources to provide the maximum benefit of reengineering. Selecting the most appropriate tools and techniques ensures the technical readiness of the project. An analysis of the consequences of each possible tool and technology should be made. Leadership is of profound importance to the success of any change program. Managers, not processes, run companies (Hout & Carter, 1995, p.133). The managers are the major designers and activists in successful organisations. Success depends on the ability and willingness of the entire top management. Manion (1995) says, “change must start at the top. Executive leadership is the first step (p.40).” Without the full support of top executives, the success of the reengineering project can only be a dream. This is because “only senior managers can rise above the details of the business, recognize emerging patterns, make unexpected connections, and identify the points of maximum leverage action (Hout & Carter, 1995, p.133).”

Another key aspect of the reengineering process is continuous process improvement (CPI). CPI is a systematic approach that you can use to make incremental and breakthrough improvements in processes that produce
products and services for customers (Chang, 1994, p.7). CPI allows the reengineering firm to take a detailed and constant look at processes to discover ways of improving them. The focus of CPI is to achieve faster, cheaper, better, and more efficient end-results. Performance is very important to identify the end-results of any BPR project. When performance fails to meet targets, organisations seek to identify problem causes and develop action plans (often involving cross functional teams) to improve performance (Sinclair & Zariri, 1995, p.63). Even when performance is satisfactory, measures should be taken to ensure that the results continue to be satisfactory in the future. Thus, continuous improvement must be a life-time process in the reengineering project. It needs well-defined strategies and knowledge, and full information about the processes involved for a successful continuous improvement strategy. Continuous improvement can occur efficiently only if a structured continuous improvement process is in place to guide managers in prioritizing performance objects and choosing areas to concentrate resources (Sinclair & Zariri, 1995, p.63). Continuous improvement should be compatible with all the other elements of the reengineering project. Continuous improvement can best be achieved by an all encompassing advanced planning, monitoring and control system which embraces the new empowerment philosophies (May, 1995, p.14).
Leadership is a vital factor in the success of any change management program. The role of the leader in the reengineering project should not be undermined. Boone (1991) identifies the different roles a leader may play within an organisation. The leader may be the coach, change agent, facilitator, commander, and communicator. One model for describing leaders’ decision making is Anthony's (1965) hierarchy of organisation. This model identifies three areas of leadership - operational, tactical and, strategic decision making leaders. These leadership strategies are of particular importance to the success of the reengineering project. Hammer and Stanton (1995) point out:

If you proceed to reengineer without the proper leadership, you are making a fatal mistake. If your leadership is nominal rather than serious, and isn’t prepared to make the required commitment, your efforts are doomed to failure (p.23).

Thus, in any reengineering project, a powerful leader with the ability to direct people towards achieving organisational effectiveness and efficiency must be an essential part.

Tools and techniques provide power to the reengineering project. With other tools and techniques, computers enhance the quality of reengineering work. Toffler (1980, p.12) shows how the leaders can use the computer as a personal productive tool. The computer helps information to be reliable, accurate, cost-effective, and timely. Boone (1991) states:
Computers give executives the opportunity to empower or oppress. If executives are truly interested in expanding their own minds and the minds of their people, they will use computers in ways that are consistent with that philosophy (pp.336-337).

Therefore, reengineering should consider all these aspects of an organisation in implementing a change process to achieve radical improvement. It is not enough to consider one aspect of the organisational setting. It is also not enough to concentrate on one aspect of the reengineering project. All the phases need adequate and constant review and scrutiny. They need to be coordinated. To successfully perform business processes in a functionally divided organizational structure, corporations must exercise a significant amount of coordination and control (Back & Bell., 1995, p.46). In reengineering, the functions are regarded as component parts of a delivery process, no longer a series of separate, independent entities under separate management or control. Basically, reengineering is about business reinvention or redesigning. However, Manion (1995) says:

*But redesigning a process for re-engineering isn’t enough for the long haul. It is imperative that companies move beyond a focus on process, and that they link change to a company’s people, strategy and technology. The linkage is called “business integration”* (p.39).

You cannot reengineer a process in isolation (Hammer & Stanton, 1995, p.31). Everything must be incorporated and integrated. Therefore, an integrated business organisation is the immediate distinction between a
reengineered and non-reengineered business. Integration is a major feature of the reengineering process.

The above discussion provides the researcher with an understanding of the basic nature of BPR which can be used as the foundation for the development of the proposed reengineering model. The sections on business processes and activities, together with the section on continuous improvement, are particularly useful in designing the reengineering model. The next section discusses the important dimensions of BPR, which will help understand the Discovery Phase - the learning phase of the proposed model of reengineering.

2.3.3.2 GOALS DRIVING BUSINESS PROCESS REENGINEERING

Formulating unique goals or objectives of the reengineering project is vital to the existence and continuity of the project. A company may have a number of reasons for deciding to reengineer its processes and operations. These reasons may vary widely from organisation to organisation. They ultimately become the objectives of the reengineering project for any organisation. Objectives such as cost reduction, technological improvement, innovation, increased competitive advantage, process development, and empowerment are among the many objectives of those who reengineer their business processes.
However, it should be noted that the unique objective of the reengineering process is customer satisfaction. In order to satisfy customers while achieving organisational objectives, an organisation should clearly understand and define the specific objectives of its unique reengineering effort. These goals of reengineering, as shown in Figure 2.6, can be divided into three major types: cost improvement, achieve parity or "best in class", and to effect a breakpoint. An organisation can have one or more of these goals in relation to its reengineering process.

The core concept of business process reengineering is to radically redesign existing key business processes that are outdated and no longer economical or efficient. Reengineering is an approach to process improvement when breakthrough gains are sought (Angus et al., 1996, p.26). It is used to redesign inefficient, uneconomical, and outdated business processes "...to achieve dramatic improvements in critical, contemporary measures of performance (Hammer & Champy, 1993, p.32)."

In the attempt to achieve breakthrough performances, reengineering efforts have been focussed mainly on improving service and quality, cost cutting and revenue growth. According to the Seventh Annual Survey of North American CIOs, "of those surveyed, 69% expected an improvement in service, 62% an
Figure 2.6

Goals Driving Business Process Reengineering

improvement in quality, 54% a reduction in costs, and 25% an enhancement in revenue as a result of their reengineering activities (Boyle, 1995, p.24)."

Cost reduction and revenue improvement have been high-level outcomes of the majority of the reengineering attempts. Typically, the terms "reengineering" or "restructuring" have been equated with "cost reduction" or "layoffs". The reason is simple: during restructuring management’s focus is typically on developing severance and incentive packages to reduce employee headcount (Marshall & Yorks, 1994, p.81). “Because restructuring companies usually focus first and foremost on overhead cost reduction by trimming headcount (Marshall & Yorks, 1994, p.81)”, they have to take strategic initiatives for restructuring to be a positive force for change management rather than as a mere way to reduce overheads. It is true that many reengineering attempts have been focussed on cost reduction. Singhvi (1995) describes how costs can be reduced by reengineering the payables process. In the current competitive business environment, companies aggressively are cutting cost by reengineering their processes (Singhvi, 1995, p.46). However, as Greengard (1993) points out, reengineering is more than just reducing headcount or reducing cost:

As new technologies change building codes for corporate structures, firms scramble for radical new work designs. It’s called reengineering, and it’s not just slashing jobs or
automating existing processes. It's a golden opportunity to rebuild and shape the future (p.48B).

From the 1950s through 1970s, most reengineering efforts have been focussed on reducing costs in the form of the hierarchical organisational structures. However, this emphasis of cost reduction through reengineering has changed over time. The reengineered companies have realised that reengineering can do much for the progressive development of their activities. Angus et al., (1996) point out:

Until recently, the majority of such reengineering efforts have been focussed on cost cutting (often headcount reduction). But more companies are now realizing that creating value for customers can be better achieved when the emphasis is put on reengineering for profitable revenue growth (p.26).

In fact, reengineering can be applied both reactively and proactively to redesign business processes. Marshall and Yorks (1994) describe a successful real-world experience in restructuring as follows:

*When APS initiated its strategic approach to restructuring in 1990, it was struggling with high costs, sagging customer service ratings, and a bureaucracy that was inwardly focused and insensitive to the emerging competitiveness in the electric power industry. The company was threatened by takeover from Pacific Corp., which had publicly targeted the utility. By all accounts, it was a classic example of a regulated, bureaucratic organization resistant to change.*

*Three years later, its industry association cited APS as one of the best power companies in the United States.*

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company's power plants have had the best power availability factor, a measure of its capacity to meet customer demand, in thirty-five years. Customer service ratings are the highest in years. At the time of its strategic restructuring, APS made a commitment to the rate commission that it would not file for a rate increase before 1993. As 1993 grew to a close, the company had exceeded its cost-per-kilowatt hour goal to lower costs and had cancelled the proposed rate increase. CEO Mark De Michele credits strategic restructuring for triggering the turnaround (p.82).

From the 1980s to the present, the three Cs - Customers, Competitors, and Change - have been the guiding forces of business success. To survive against these threatening forces, most organisations have recognised the need to change from ‘top down’ to ‘bottom up’ empowerment culture.

Angus et al., (1996, p.26) further point out that “with this shift in emphasis, the focus is on inventing new and better work processes to dramatically reduce cycle times and yield better quality products and services at lower costs.” Therefore, in designing a BPR model particular attention should be given to improve organisational efficiency and effectiveness.

2.3.3.3 IMPORTANT DIMENSIONS OF BUSINESS REENGINEERING

Many businesses tend to reengineer only a part of their businesses. For example, reengineering one division, one department, or one business process was the most common scope of reengineering. However, today many firms
are reengineering multiple business processes, units, divisions and departments. However, this type of multiple reengineering is a task requiring immense efforts and resources. Andrews and Stalik (1994) say:

In reality, this type of reengineering is more difficult because of the ambiguous scope and potential power conflicts associated with change (p.2).

In total or multiple business process reengineering, it is important to understand the various dimensions to business reengineering. According to Andrews and Stalick (1994), there are nine dimensions (see Figure 2.7). By understanding these dimensions and designing the relevant reengineering strategies for each dimension, business reengineering -- both human and process -- can be successfully implemented.

This analysis can be regarded as a complete explanation of the dimensions of the reengineering process because it incorporates all the important elements of the process. In this thesis, the analysis of the dimensions of the reengineering is used as the basis for understanding the important aspects underlying a BPR project.

The division of the dimensions into layers provides the organisation with an opportunity to better understand the nature of each dimension in terms of its
Figure 2.7

The Dimensions of Business Reengineering

more concrete easiest to change

Physical/Technical Layer

Process Structure
Technology Structure
Organization Structure

Infrastructure Layer

Reward Structure
Management Systems
Management Methods

Value Layer

Organizational Culture
Political Power
Individual Belief Systems

more difficult to change less concrete

ability to change. The Physical/ Technical layer is the most visible and most concrete. The three dimensions within this layer provide the operational foundation for the organisation. The second layer consists of the reward structure, measurement systems, and management methods and support the Physical and Technical layer. The value layer is the least visible and less concrete and most difficult to change. The first two layers are mostly connected with process reengineering, while the third layer has an immense impact on the human reengineering process of the organisation.

2.3.3.3.1 THE PHYSICAL/TECHNICAL LAYER

The physical and technical structure of the organisation is easily identifiable. It is not enough to focus the reengineering effort only on this structure. Both process and human sides of the reengineering efforts are essential for the success of the reengineering campaign. At the same time, if the three dimensions - process, technology and organization structures - are not compatible then a number of operational problems may occur. Thus, in any organisation, for the reengineering process to be successful, the inter-relationships of these dimensions should be properly understood.
2.3.3.3.1.1 THE PROCESS STRUCTURE

The *process structure* includes the business processes, their outcomes, practices, procedures, and the policies. Process structure will answer the questions of how, what and when work is performed. Process is the nuts and bolts of a company - defining its activities and costs (Manion, 1995. p.40). Processes produce business outcomes - products and services. A process consisting of value-adding activities should be the aim of the design of a process structure in reengineering.

2.3.3.3.1.2 THE TECHNOLOGY STRUCTURE

The *technology structure* consists of the automated communication devices, network systems, and computer systems designed to support the process structure. Important among other devices are the local and wide area communication network systems, imaging systems, and mobile communication networks, which have the potential to reduce communication gaps in the organisation. Relational database systems and advanced software languages and tools can deliver faster and cheaper administrative and control measures. It is very important to understand the benefits and limits of the integration of information technology with work processes. The impact of information technology on business success can be understood from the following statements. Andros et al. , (1992) reveal:
In 1979, IBM reviewed how it used information technology in its accounting function. Company executives wanted to be able to use the systems to reengineer the enterprise’s processes so they could continually improve the way IBM delivers goods and services (p.28).

Modern sophisticated systems are bringing about a total transformation of the controller’s staff and a redefinition of the overall financial system. Technology is changing the culture of the controller’s organization just as it is impacting the entire business (p.31).

Angus et al., (1996) view information technology as an imperative for business process improvement:

No single business resource is better positioned than information technology to bring about radical improvements in business processes (p.31).

However, it should be remembered that technology alone cannot solve any business problem. Many people mistakenly think of re-engineering only in terms of changing the way a certain work function is done through technology (Myers, 1995, p.11). Reengineering is about radically redesigning a business system -- not only the technical system but also the entire business system. It is important to remember that “reengineering is not simply implementing an old system on a new technical platform. It’s not installing a new integrated software package that forces changes in business processes (Myers, 1995, p.11).” Applying technology without the necessary corrective measures will
probably irritate the business problems. Thus, in order to gain the fullest support of technology for reengineering efforts the application of technology should be sensible. According to Myers (1995):

Successful re-engineering initiatives are business-driven, not technology-driven. They are technology enabled (p.13).

Thus, technology should be used to improve business performance and the application of technology must not be given the main theme of the reengineering project. On one hand, reengineering is a technical task. Words like, activities, processes, technology, automation, and organisation structures come to mind when one thinks about “process reengineering”. Unfortunately, the definition of reengineering (refer to p.23) has been significantly misunderstood by the popularity and publicity that followed the introduction of the concept. Many people think that reengineering is changing the way certain work is done through technology. However, this is not true.

Technological change is only one part of the radical improvement story. It is important to pay regard to Myer’s (1995) idea that:

The reengineering concept is about rethinking and radically redesigning a business system—not a technical system but a whole business enterprise. Reengineering is not a technology endeavor, it’s a business and operations endeavor (p.11).
On the other hand, however, behind all these technical images associated with reengineering are people. Human beings - be they top managers, subordinates, maintenance workers, or clerical staff - do the reengineering process, give life to it and have to live with the new process. The behavioural aspects of reengineering refer to the human behaviour that is brought out in the process of radically changing the organisation and the human behaviour that is induced when people try to live with the readjusted organisation. It refers to the anxiety caused by knowing that power and authority have to be shared by all involved in the organisation, the dread of telling subordinates that they have the right to participate in the decision making process, the lose of power when knowing that all workers have the access to company information systems, and the jealousy that may develop when another department head receives the largest amount of monetary resources for the next budget period. Among other behavioural aspects are employee empowerment and trust, which have tremendous impact for the success or failure of a reengineering project. Thus, it is important to consider both technical and behavioural aspects of the business reengineering process to cope with the problems that may occur during the reengineering endeavour.

2.3.3.3.1.3 THE ORGANIZATION STRUCTURE

The organization structure defines the performers of each activity of the organisation. It includes the job content, accountabilities, job structure, skill
and knowledge requirements, and reporting and work group relationships. In short, this dimension defines who performs, manages, and is accountable for each organisational activity. It is very important to integrate human factor and business processes in the correct alignment of authority and responsibility (accountability). An organisational structure should be able to improve innovation, self-managing ability, leadership and creativity of the people involved. In other words, the organisation structure dimension should be directed towards broader job accountabilities, self-managing work teams, and non-hierarchical reporting and decision making relationships.

2.3.3.3.2 THE INFRASTRUCTURE LAYER

The policies and procedures operationalising (strategies) play a vital role in the day-to-day operations of the physical and technical dimensions of an organisation. Strategy gives a company a focus (Manion, 1995, p.40). Policies and procedures greatly influence the success or failure of the physical and technical design and they should be integrated in a way that will jointly improve the business outcomes expected from the reengineering process. Therefore, if a decision is taken to change the physical technical dimensions, then the infrastructure dimensions should also be changed according to the requirements of the entire organisation. Of profound importance is the human reinforcement factor in the reengineering effort. People, as always, are the
most critical component (Manion, 1995, p.40). Arendt et al., (1995) were concerned centrally with this issue:

Most business changes are undertaken without understanding how the human element influences the success or failure of a project. Frequently, businesses develop great technical plans for what must take place and simply assume that the change - technical or organizational or process - will occur. Too often, this is an erroneous assumption. The change is unpredictable by the people involved due to the stress caused by any change, be it positive or negative (p.22).

Without the required new skills and knowledge, top management support and motivation, and relevant feedback, people will be reluctant and resistant to work under the new work environment and will return to the usual, comfortable ways of performing tasks. Trust among management and employees must be gained. Therefore, much attention should be paid to educating people of reengineering issues. A new study shows that training also increases the likelihood of a business-reengineering effort succeeding (Anonymous, 1995, p.26).

2.3.3.3.2.1 THE REWARD STRUCTURE

The reward structure motivates and regulates value-adding behaviour. Rewards may be formal or informal, financial or non-financial. From our own experiences we know that a well-designed job provides a work environment that is rewarding and self motivating. Such jobs influence people’s thinking and
creative abilities, and they will strive to achieve the desired outcomes of the processes (goal congruence). Very often, however, there may be contrasting situations between the desired and the actual behaviours. A promising reward system should be able to reduce the gap between these two types of behaviours. Even a child’s behaviour can also be changed towards the desired behaviour through a good reward system and this theory can be applied in the business reengineering process and the reward structure will be crucial for the success of the reengineering project. However, reward and recognition systems are probably the least understood of all the elements of the performance models (Sinclair & Zairi, 1995, p.68). What they really motivate is often unknown.

2.3.3.3.2.2 THE MEASUREMENT SYSTEM

The measurement system consists of the feedback processes that provide information about the performance of processes. A sound measurement system must provide accurate and appropriate information if feedback is to be useful. “Different information for different decisions” can be used as the foundation for designing the measurement system. Good measurement systems provide actionable information, which enables people to improve process performance within their sphere of control and accountability (Andrews & Stalick, 1994, p.6). Another important aspect of the measurement system is the direct and simultaneous availability of measurements to the process by workers and
managers. Under these premises, a measurement system will probably be informative and actionable in correcting deviations. Designing acceptable performance measures is very important for a good measurement system because they act as standards of performance. Sinclair and Zairi (1995) identified a useful set of critical success factors and associated key performance indicators (KPIs) as follows:

* Customer satisfaction;
* Quality;
* Delivery;
* Employee factors;
* Productivity;
* Financial performance;
* Safety; and
* Environmental/social performance (p.60).

Further, some researchers suggest that performance indicators should be weighted according to their importance towards goal accomplishment (see, for instance, Globerson, 1985).

2.3.3.3.2.3 THE MANAGEMENT METHODS

The *management methods* define the practices and techniques used to manage, supervise, develop, and support the people actively engaged in business activities. Management methods are very important in reinforcing workers in their daily activities. Top managers' attitudes to workers have tremendous impact on the workers' performances. The way in which management treats
people, evaluates and supports their work, develops skills and abilities, and allows participation in decision making, will have profound impact on process performance. This dimension again and again reminds us of the importance of the human factor in the success of the reengineering project. Methods designed to manage and develop people are crucial for achieving the desired business outcomes.

2.3.3.3.3 THE VALUE LAYER

Value dimensions cannot easily be seen, but they define the organisation’s culture and behaviours. These dimensions are vital for the active and useful reengineering efforts because if they are not aligned with the employees’ value system, the reengineering effort will be futile. Humans naturally resist change if the changes appear to be not supportive of their goals and objectives. Thus, the value system of the reengineering project should always be compatible with the participant's value system. Given those individuals have differing values, this is a difficult juggling act.

2.3.3.3.3.1 ORGANIZATIONAL CULTURE

*Organizational culture* may be defined as the way we do things around here in order to succeed (Schneider, 1994, p.9). Social scientists define human culture as learned behaviour acquired by individuals as members of a specific social
group. Human societies have different norms governing behaviour and other knowledge to which an individual is socialised. It includes the collective rules and beliefs of the organisation. Just as the culture of specific societies can be discussed, culture can also be discussed relating to organisational settings. In this sense, there is a body of knowledge that is shared by all members of that organisational setting. Organisational culture is directly related to leadership. Leaders play a vital role in developing and shaping the organisational culture. Leaders establish their organisational culture according to their personal paradigms. Kuhn (1970, p.11) defines paradigm as a “constellation of concepts, values, perceptions, and practices shared by a community which forms a particular vision of reality that is the basis of the way a community organises itself.” Simply, it is the way we understand the world. Leaders develop organisation’s cultural paradigms from the value system they place on their individual experiences and beliefs. The culture of the organisation defines the rituals, symbols, traditions and the working atmosphere. These cultural dimensions cannot be easily discarded as rubbish because they consist of powerful rules and beliefs that will help or otherwise demolish the entire reengineering project.

2.3.3.3.3.2 POLITICAL POWER

Political power essentially helps people manipulate and shape the actions and behaviours of others. Political power may originate through authority or
personal power. The former is obtained through the position held in the work place and the latter is gained through ability, knowledge, expertise, or family backgrounds. In a reengineering effort, political power plays an important role because if the proposed changes in the physical and technical dimensions are not compatible with the existing power bases then the resistance to changes may be uncontrollable. In such situations, the activities of the workers will be useless or sometimes harmful through demonstrations, or other means of resistance. Therefore, the answer to this question is to clearly understand the organisation’s political power bases and design the value systems in a way that will reinforce and support the existing harmless political power systems. Winning the senior executive’s consent may help to solve the problem, because, as Hout and Carter (1995) suggest, senior executives:

...can finish the work that reengineering starts by managing the political conflicts that process improvement inevitably stimulate and by removing the managerial obstacles that are the biggest barrier to successful reengineering efforts (p.133).

In today’s complex and competitive business world, no single individual can do all the activities to achieve business success. So it is always important to minimise political conflicts and develop a friendly and peaceful working environment in order to achieve success.
2.3.3.3.3 INDIVIDUAL BELIEF SYSTEMS

*Individual belief systems* consist of the attitudes and mental models that individuals apply to themselves, to others and to their work. People at all levels within an organisation have mental beliefs and models that shape their attitudes towards their work and others they work with. Many cultural and individual characteristics such as openness, impatience, obedience, rigidity, flexibility, and trustworthiness have great impact on workers and their performances. In attempting to change the value systems, top managers must be knowledgeable of individual belief systems and their importance to the organisation. This is not an easy task, yet unseen, unspoken belief systems can be understood by close association with workers. It will take time. These belief systems are crucial for effective reengineering projects, as Andros *et al.*, (1992) explain in describing the reengineering system in IBM:

The challenge to financial executives now is in overcoming tradition. Some have already met the technological and social challenges and are adopting reengineering strategies. Others are pursuing the concepts, but are finding still resistance to change. Some executives have decided not to change at all (p.31).

Fully understanding these value dimensions is very important to achieve the expected radical improvements in business processes through reengineering. Especially, in corporate-wide business process reengineering, cultural changes and infrastructure changes should be given due attention. It is important to
remember that in every business reengineering process, the radical change process must be a continuous activity for a significantly long period of time if expected results are to be achieved. Such a process can be viewed as a cycle of reengineering process, which consists of design, implementation, continuous improvement, and feed-back of external and internal key elements. Figure 2.8 exhibits the continuous nature of reengineering elements.

A thorough understanding of the cyclic nature of the reengineering process is very important because all the key elements of reengineering should be integrated for reengineering to be successful. As shown in Figure 2.8, both internal and external factors that have an impact on the process should be integrated. Another important dimension that needs full consideration is continuous feedback. Continuous feedback is essential in the sense that the business world is continuously changing and so does the nature of business activities. It probably helps for action direction and ensuring measures for achieving business objectives.

2.3.3.4 TOOLS AND TECHNIQUES OF REENGINEERING

As stated earlier, there are no fixed or prescribed tools or techniques for reengineering business processes. Therefore, a firm undertaking a reengineering project should select one or more of the suitable change tools and techniques available. Not all the existing tools and techniques may be
Figure 2.8
The Business Process Reengineering Continuum
appropriate for a particular firm's requirements. The available tools and techniques can be grouped in various ways. Figure 2.9 illustrates the key reengineering tools and techniques. It also indicates the approximate focus of major tools and techniques to obtain the full benefits of reengineering.

It is important to select the most suitable tool, according to the requirements of the organisation. In selecting the relevant tools and techniques for reengineering, it is important to consider the impact of the selected tools and techniques on people, processes and technology of the company. Particular emphasis should be given to the human factor in selecting and using any tool or technique for reengineering existing business processes.

2.3.3.5 TRANSITION ORGANISATION

This section discusses the important dimensions of an organisational transition to increased effectiveness and efficiency. It covers the areas of process orientation and modern emphasis on value-adding business activities and the people element in detail.

2.3.3.5.1 PEOPLE IN THE TRANSITION ORGANISATION

Managing people's behaviour during the transition period between the functional level and process-oriented level is one of the most difficult tasks in the reengineering process. People are always reactive to any change from their...
Figure 2.9

Tools and Techniques of Reengineering

Source: Adapted from Hunt (1993, p.135).
original position. A reengineering company should expect varying degrees of resistance to change from all the employees - whether top/middle managers or workers. However, as Hammer and Stanton observe “middle managers have risen up through the ranks and have achieved their positions of authority, responsibility, and higher income and status by mastering the current system (1995, p.35)” and they may attempt to forestall or freeze any kind of reengineering attempt. Such resistance to change is not limited to people in the middle levels or lower levels of the organisational hierarchy. The higher-level people also have the risk of protecting their position in the new environment and will resist change. Hammer and Stanton propose several techniques (five Is) to address the resistance to change:

- incentives;
- information;
- intervention;
- indoctrination; and

Incentives are inducement, positive or negative, to get employees to behave as required by the reengineering project. Both financial and non-financial incentives can be included for motivating people. Information means providing people with the details of what is happening and what will happen in the organisation prior to and after the reengineering is implemented. Knowledge reduces ignorance and it will reduce resistance in turn because in
many cases, people resist change due to ignorance. *Intervention* means dealing with employees to give them support and assurance, which will help them overcome fear and discomfort of a new situation. Listening to people who have worries about changes is important in reducing their worries. *Indoctrination* means convincing employees that change is inevitable and it is not optional. Thus, people will find ways to accustom to the changed situations because they understand they have no other options. *Involvement* means making people part of the reengineering effort. Participation develops feelings of belonging to the situation and will compel participants to think as an insider of a team rather than an outside individual. Therefore, in a reengineering effort much attention has to be paid to the participant’s individual behaviour and attitudes and prevention measures should be taken to control resistance to change.

If the business processes are radically changed, then the structure and role of every organisational position need to be reviewed. We cannot predict the impact of change in a reengineering effort. According to the needs of the value-added processes, everything has to be changed. This transition effort is a very difficult and troublesome endeavour. It requires close coordination of all people involved. Throughout the transition period, management styles have to be changed. The reason is that changing organisational culture and work place conditions will require different human direction efforts and measures.
To accomplish this, early involvement of managers at all levels is important, because the greatest resistance to changes comes from them (Johansson et al., 1993, p.201). Individuals in the process-oriented company should be able to work efficiently and comfortably as teams, rather than as individuals. They will be given advanced knowledge and skills - analytical and interpersonal skills - an appreciation of each other's activities, access to wider information processes, and a better understanding of the ultimate goals of the company and how they are to be achieved. In a radically reengineered company, innovation and risk-taking are two important responsibilities of employees. For this to be achieved, continuing learning is an imperative. When the entire system changes, the employees have to learn the new ways to cope with such changes. Therefore, continuous learning will be an integral part of every individual's job.

Action-oriented processes can be of profound importance for effective business process reengineering. Such processes will necessarily assess and recommend new initiatives for implementation within organisations. For instance, they “can translate advanced management practices into practical actions, and demonstrate the value-added role of the management accountant as a champion for change and organisational success (Anonymous, 1995, p.30).” Such a program can be designed for process leaders, and the ability to practice business techniques for specific problem areas can be monitored.
example, a group might be organised to assess the opportunity to re-engineer the accounting function. They will conduct a thorough analysis of the system and give recommendations concerning the redesign of the finance function within the organisation. They can "use a number of tools and techniques that have been emerging since the early 1980s under the umbrella of "change management (Johansson et al., 1993, p.191)." Such tools and techniques will help people involved in this task to assess the values added by each process of the organisation.

2.3.3.5.2 PROCESSES - VALUE ADDING

One of the most important directions in modern organisations is the adoption of process-oriented business approaches to organisational change. According to Davenport and Beers:

... the "earliest process thinking might be attributed to pioneers of industrial engineering such as Taylor and Gilbreth; in the middle of this century processes were also adopted as the primary work unit for such pioneers of quality management as Shewhart, Deming, and Juran (1995, p.57)."

By the 1960s, Japanese companies were trying to move toward process excellence with the intention of getting quality enhancements and cost reductions. Leading the way in this effort was the Toyota Company, with its Toyota Management System (Johansson et al., 1993, p.2). With the 1973 oil
crisis, many Japanese companies applied process-oriented ideas and began to convert their production philosophies into process-driven systems. During the past decade, many western companies also learned process-oriented concepts from the Japanese and achieved significant improvements in value-chain activities. They clearly understood that improved process-based operations can strengthen competitive advantage. Today most leading organisations around the world are operating with process-oriented business philosophies.

The concept of the process orientation has created new values for customers. Doing this forces them to quantify the business’s efforts by the four new “value metrics”- improved product quality and/or service, reduced cycle time, and reduced cost to the customer, while at the same time increasing the speed of innovation and new product development (Jonansson et al., 1993, p.4). These four new value metrics are displayed in Figure 2.10.

As already pointed out, an important trend in modern business management is the realisation of the importance of value-adding processes and activities. Business processes are made up of activities. Value-added processes and activities are those that are essential to a customer’s satisfaction and that a customer is willing to pay for. Those processes and activities deliver or produce something that the customer cares about and are included in the product/service as part of the product/service offered. Thus, due to the
Figure 2.10

Customer Value Metrics

![Diagram of Customer Value Metrics]

Source: Adapted from Johansson et al., (1993. p. 4).
modern competitive environment, companies have to be more responsive to
customer needs, which involve the development of new products with
enhanced qualities.

In recent years, a number of management techniques based on the notion of
value-added processes have been developed. These techniques and
approaches are expected to improve business operations through value-added
processes. Reengineering is considered one such value adding technique.

Reengineering is the rapid and radical redesign of strategic, value-added
business processes - and the systems, policies, and organisational structures
that support them - to optimize work flows and productivity in an
organization (Manganelli & Klein, 1994, pp.7-8). Business processes have the
prime place in reengineering. In the 1990s, broad cross-functional business
processes were made the focus of corporate reengineering efforts in the work
of Davenport and Short, Hammer, and others (Davenport & Beers, 1995,
p.57). Management techniques like Total Quality Management (TQM), Just-
In-Time (JIT), and Zero Base Budgeting (ZBB) are also based on the notion
of value-added processes. Quality has become the most frequently discussed
concept in the business world. Evans and Bellamy (1995) reported:

Customer awareness of product and service quality and related
market factors has risen dramatically over the last ten years. Quality shortcomings that once caused only a limited reaction are now no longer tolerated. Competition in the marketplace
from overseas manufacturers and service providers together with the higher costs of locally produced products and services, has engendered a much higher expectation of quality by the public (p.30).

Therefore, special attention should be given to understand what value means to the customer as a basic requirement for improving organisational effectiveness and efficiency through BPR.

2.3.3.5.2.1 REENGINEERING AND BUSINESS PROCESSES

Business processes have the uttermost place in the reengineering process. It is not a short-term, moral and efficiency improvement program. Its philosophical concept is the recognition of the importance of value to the customer. However, the model lacks operational validity if it does not go beyond the managerial workshop or manual. It needs real change endeavours. Business process reengineering is basically concerned with radically improving the major (core) business processes and key supporting processes. Johansson et al., (1993) describe core business processes as follows:

A core business process, as distinct from other processes, is a set of linked activities that both crosses functional boundaries and, when carried out in concrete, addresses the needs and expectations of the marketplace and drives the organization's capabilities. Reengineering of these core business processes takes place when operational, technical, and business
knowledge are used in a unified way in order to achieve sustainable competitive advantage (p.16). [emphasis added]

In the attempt to radically improve business performance, it is of paramount importance to clearly understand the nature of core business processes and key supporting business processes. As was explained in an earlier section, continuous improvement is regarded as essential in the attempt to radical process improvement. Mere discrete improvement of the value of business processes fails to focus on the firm's strategy and, thus, will not lead to radical business improvement. Reengineering for radical continuous improvement is the management approach that sustains a competitive advantage by consistently exceeding the 'current and future' expectations of customers which is based on continuous improvement in all processes, goods and services, through the creative involvement of all people.

Fundamentally, reengineering is about business "reinvention", not business improvement through minor, incremental process improvements or other forms of business modifications or enhancements. The belief is that to win the global competition and become a world-class competitor, companies must view themselves in light of their ability to satisfy customers by enhancing the entire value chain of the organisation. Reengineering and process improvements are two different processes. Boyle (1995) explains the
importance of understanding the differences between these two concepts as follows:

Determine whether you need to reengineer a given process or whether you merely need to improve the process, that is, fundamental change vs. incremental change. Selecting the point that is right for your organization on the “organizational improvement” continuum will affect the planning, staffing, and execution of the work that lies ahead (p.25).

For a thorough understanding of the technical and behavioural aspects of reengineering, it is imperative to gain a good knowledge about the nature of radical process improvement and incremental process.

One important feature of business processes is that a process should add value to the input and create output that is useful and important to the recipient of the output. Processes are the fundamental bases from which all businesses generate wealth. Under the reengineering concept, businesses are regarded as processes rather than functions, so that managers can directly focus on value-adding processes in order to generate more value with less effort than focussing on reducing or eliminating the functional activities in order to cut cost and create profits. With reengineering, cost reduction automatically occurs through elimination and/or reduction of non-value-adding activities from business processes. It will add increased efficiency and effectiveness to core processes.
A process is "a group of related tasks that together create value for a customer (Hammer & Stanton, 1995, p.4)." Processes are structured sets of work activity that lead to specified business outcomes for customers (Davenport & Beers, 1995, p.57). Thus, a process is an interrelated set of activities that convert business inputs into business outputs which create value to the customer. For example, new product development, redesign of an existing product, or order fulfillment are business processes that include divergent activities. If we consider the development of a new product, it is a process comprised of a series of tasks: market research, laboratory research, pre-product testing, producing, quality checks, post product research, and so on. Not all these activities add value to the customer. A customer's only concern is the value of the end result - the new product created by these integrated activities.

Any business process consists of a number of activities and tasks. Processes are at the very heart of every enterprise (Hammer & Stanton, 1995, p.5). Through processes, businesses create value for the customer. However, in traditional organisations, processes can be seen as a discrete set of functions. They are not integrated in a way that creates the best possible value to the customer. Many functions are discretionary in nature. To successfully perform business processes in a functionally divided organizational structure, corporations must exercise a significant amount of coordination and control.
Reengineering identifies the value of integration of fragmented business tasks, which is the most important aspect of a business process.

If five different functional units participate in a particular process, every time the process is executed, the five units must coordinate a series of hand-offs, quality checks, reviews, and in many cases a reformatting of the information (Back & Bell, 1995, p.47).

In the sense that a business process is a set of logically connected activities, to achieve the established business outcome/s, business processes consist of plans, procedures, people, methods, materials, energy, and equipment designed to produce a specific product/service. Thus, a business process has a number of input devices and activities. At the same time, a business process has customers - both internal and external to the organisation, service providers, and well-defined business outputs as end results. A business process is, therefore, an integration of individual activities, which are known as inputs (resources) and outputs (value-added products/services).

There are a number of different activities in any kind of business process. Integration of these activities gives life to the entire business process. Business processes are of vital importance to the existence and continuity of any business organisation.
A business process is composed of a number of interrelated activities or tasks. An activity can be defined as the basic element of a process that requires resources to perform. In other words, activities are, “the major components of the work done in a process. Each activity consists of input-process-output (Manganelli & Klein, 1994, p.311).” Thus, activities are the building blocks of business processes. These activities can be regarded as events. In reengineering, identifying key business events, both economic and non-economic, enhances the value adding process because “business events are fundamental business activities that management wants to plan, control, and evaluate (Andros et al., 1992, p.29).”

These activities, tasks, or events in a business process, can be divided into three groups: value-adding activities, hands-off activities, and control activities. Value-adding activities are those that add value to the products or services produced by the process. They are the important parts of a business process in terms of customer satisfaction. The value-adding activities are the key to the customer satisfaction and organisational success. One of the major objectives of reengineering is to improve and maintain value-adding activities in a process.

Hands-off activities are activities that move work across boundaries which can be functional, departmental, or organisational. They are non-physical
activities. The more boundaries between the functional tasks, the more hands-off activities. Particularly, in hierarchical organisations, hands-off activities between the functional tasks produce non-value-adding activities - waste of time and money. Control activities are the activities created for controlling the hands-off across the boundaries. Both hands-off and control activities are non-value-adding in nature. These activities can also be viewed as management planning and control activities at different levels of the organisation. However, it is important to remember that not all planning and control activities are non-value adding.

2.3.3.5.2.2 DECISION-MAKING AND BUSINESS PROCESSES

To understand the technical and behavioural aspects of BPR, an understanding of organisational decision-making processes is necessary. Such knowledge is important to distinguish between various decision-making levels or types of decisions in an organisation. Anthony's view of a company's planning and control activities seems to be useful. He identifies three kinds of activities:

(1) *Strategic planning* is the process of deciding on organisational objectives, changes in these objectives, resources required to attain these objectives, and policies that are to govern the acquisition, use, and disposition of these resources.
Management control is the process by which managers assure that resources are acquired and used effectively and efficiently in achieving organisational objectives.

Operational control is the process of assuring that specific tasks are carried out effectively and efficiently (1965, pp.16-18).

Since this thesis focusses on decision making in these three types of activities, it is useful to regard organisational activities in terms of:

1. **Strategic**: Major acquisitions and policy decisions to govern management decisions.
2. **Management**: Optimal input and output decisions to obtain and use resources effectively.
3. **Operational**: Decisions and planning in detail to implement decisions made at management level.

Jayachandra (1994), in discussing about business activities, says that all activities of corporations and organisations take place in three different domains, regardless of the nature of the business. They are:

1. **Material processes**: Material processes are essential activities that are well rooted in the physical world. In the real world, nothing happens without physical things moving and changing state. Physical parts and components are transformed into products by material process stage.
2. **Information processes**: Since material processes alone cannot capture all essential aspects of business activities,
information processes have been introduced into business activities. With the increase in computers in the workplace in recent times, information processes have become a major activity in many businesses.

(3) Business processes: Pure information by itself is not interesting to any business. If the information process is not associated with any business activity, it is not interesting to most businesses. Information is useful only if someone can do something with it. What is important is what people do with information - linking it with materials and/or business services to achieve their respective goals or expectations (pp. 24-25).

[emphasis added]

The above discussion of decision making is very important in identifying the value-adding and non-value-adding activities. They can be presented as in Figure 2.11, in terms of added-value to the customer.

As shown in Figure 2.11, business activities produce both value-adding and non-value adding activities. To improve organisational effectiveness the number of value-adding activities should be increased while the number of non-value-adding activities should be decreased or eliminated.
Figure 2.11

Value-Adding Business Activities
2.3.3.5.2.3 VALUE CHAIN IMPROVEMENTS

Value chain improvements mean eliminating and minimising non-value adding activities and improving corporate-wide performance. Reengineering seeks to radically reinvent or improve processes that are both continuing and value-adding. Thus, reengineering can be considered a technique of value chain analysis. According to Ruchela (1995):

...business process reengineering (BRP), extends the product orientation of value-chain analysis to include all processes within the organization. BRP can involve functions that have not been tied closely to production functions in the past such as credit, finance, and customer support processes (p.38).

Value-added processes and activities are those that are essential to a customer’s satisfaction and that a customer is willing to pay for the product or service. Customers consider those activities important and they positively affect the buying decision. The primary target of reengineering is to identify the processes that are customer value-adding and supportive of the continuous improvement of business outcomes. Identification of activities that are non-value-adding and non-supportive of continuous improvement requires the help of expert business leaders. Reengineering sometimes may not be able to identify those activities by itself and may require the integrated assistance of other business tools such as Activity-Based Costing (ABC), Total Quality Management (TQM), Just-In-Time (JIT), or Zero Base Budgeting (ZBB).
These concepts are process (activity)-oriented and are very helpful in improving organisational effectiveness.

2.3.3.6 SELECTION OF BUSINESS PROCESSES FOR REENGINEERING

Once a company has decided to undertake a business reengineering project, an important area that needs special and continuous attention is the selection of business processes for reengineering. The decision to select processes requires expertise knowledge and a thorough scrutiny of the entire organisation. This step of the reengineering effort can be regarded a crucial stage because the success or failure of the entire reengineering endeavour depends on the ability to improve business performance through reengineering the selected business processes. The selection of correct processes gives the life blood for the reengineering project. As explained earlier, the main emphasis of any reengineering project is to improve value-adding activities of the business. Therefore, the decision to select a process to reengineer must necessarily depend upon the process’s ability to add value.

Thus, processes with non-value-adding activities should first be selected and eliminated. Care must also be taken to maintain, improve, or reinvent those processes that are value-adding. In this respect, another equally important
concept needing full consideration is the notion of continuous improvement. If a process cannot be improved continuously, it should be given an equal priority as those of non-value-adding because the existence of such processes will be harmful to the process improvement project. Thus, the selection of business processes for reengineering requires the prudent investigation by a Management Accountant, who can identify the costs and benefits of such processes. Figure 2.12 illustrates on how to identify the processes for reengineering based on the notions of the added-value and continuous improvement.

As the above illustration suggests, business processes may be of high, low, or negative value-adding as well as of high, low, or negative possibilities of continuous improvement. A company engaged in a BPR project should investigate the individual processes for their potential continuous improvement and value-adding capabilities. Selection of processes for reengineering will necessarily be a decision of the individual reengineering companies. To identify the processes to reengineer, a number of tools and techniques can be used. Sometimes, reengineering alone may not be able to select the processes with urgent change requirements and the integration of reengineering with one or more change management tools will be required. Organisations must select the tools and techniques that focus on the business as a set of customer-oriented core business processes rather than as a set of
### Figure 2.12

**Selection of Business Processes for Reengineering**

<table>
<thead>
<tr>
<th>Continuous Improvement</th>
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<th>High</th>
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<td>Negative</td>
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<tr>
<td>Potential Reengineering</td>
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<tr>
<td>Probable Reengineering</td>
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<tr>
<td>Primary Target for Reengineering</td>
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<td>Possible Reengineering</td>
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<td>Potential Reengineering</td>
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<td>Probable Reengineering</td>
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<tr>
<td>Successful Activities</td>
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<td>Possible Reengineering</td>
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<td>Potential Reengineering</td>
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<td>Negative</td>
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**Added-Value**
organisational functions. In this respect, a company can use one or more change management tools and techniques in combination with a reengineering model. The use of such a combined technique will probably increase the usefulness and validity of the reengineering endeavour. At the same time, such a model will increase the necessity of the role of the Management Accountant in the BPR project.

In selecting business activities to be reengineered, special care must be taken to distinguish core business processes from other supporting business processes to emphasise the importance of processes. A core business process “creates” value by the capabilities it gives the company for competitiveness (Johansson et al., 1993, p.59). Such business processes are valued by both internal and external customers. Both core processes and supporting business processes consist of a number of activities directed toward creating value-adding outputs. They take inputs, transform them, and produce output valued by the relevant customers.

Reengineering is expected to achieve radical improvements in performance - in terms of values to the customer; cost, service, quality, and cycle time. Such higher levels of performance require the emphasis on using participative management, employee full involvement, and statistical methods to achieve continuous improvements in organisational processes.
In identifying processes for reengineering, it is important to consider all the expected benefits of reengineering such processes. A valid comparison can be made if all the benefits of each process can be explored and evaluated. Figure 2.13 exhibits a model that shows the benefits of process reengineering.

The Value-Adding Process Benefit Model can be used in selecting the processes for reengineering. It is an improvement of Figure 2.12. This Value-Adding Process Benefit Model gives a better understanding of value-added processes. According to this model, there are four major value dimensions which need full consideration in selecting processes for reengineering. They are:

1. Quality of products, services, and information;
2. Empowered people - management and employees;
3. Satisfied customers; and
4. Achievement of corporate outcomes.

Each component of this model can be evaluated in terms of sub-components as exhibited in Figure 2.13. It is for the benefit of the reengineering company to analyse these major and sub-value components in detail in selecting business processes for reengineering. As can be seen from Figure 2.13, continuous improvement is an essential and inherent part of the reengineering project.
Figure 2.13

Value-Adding Process Benefit Model

- Timeliness
- User-oriented
- High reliability
- Reduced errors & defects

- High Quality
  - Continuous Improvement
  - Product, Service, and Information

- Satisfied customers
  - Continuous Improvement
  - High customer retention
  - Reduced complaints
  - Improved relations

- Empowered management and employees
  - Continuous Improvement
  - High motivation
  - Innovation
  - Dedication
  - Improved leadership
  - Knowledge & skills

- Value-added Activities
  - Continuous Improvement

- Achievement of corporate outcomes "goals"
  - Continuous Improvement
  - Increased quality
  - Services
  - Employee satisfaction
  - Safety & health
  - Productivity
  - Reduced costs
  - Employee turnover
  - Cycle time
Continuous improvement should be integrated with all the components of the model – project. Many companies approach reengineering of their business based on their success in implementing continuous process improvement (Hunt, 1993, p.32).

The adoption of value-added processes is clearly a guide to increasing customer satisfaction and improved performance. It can be utilised to make a demarcation between the more fruitful processes (value-adding) and less fruitful (non-value-adding) processes. The immediate key benefits of the value-added benefit model are quality and productivity improvement, and cost and cycle time reduction. These benefits ultimately drive the organisation to have satisfied customers and achieved outcomes. Each process can be evaluated in terms of these value dimensions.

*Improved Productivity*

An equally important benefit of value-adding processes as quality improvement is the increase in productivity. Any good BPR project should increase organisational effectiveness.

*Improved Quality*

The ability to provide high quality products and services is the key to have increased competitive advantage in the current competitive market. The level
of quality expected by many customers continues to increase as leading competitors raise their standards of quality (Hunt, 1993, p.30). The importance of quality has been highlighted by a number of researchers. Hunt reveals that some researchers have found the following:

(1) Product quality is an important determinant of business profitability.
(2) Business offering premium quality products and services usually have high large market shares and are early entrants into their markets.
(3) Quality is positively and significantly related to a higher return on investment for almost all kinds of products and market situations.
(4) A strategy of quality improvement usually leads to increased market share, and at a least cost in terms of reduced short- run profitability.
(5) High-quality producers can usually charge premium prices (1993, p.31).

These survey results indicate the benefits that improved quality promises for a company. Value-adding processes help the company achieve most of the quality sub-component benefits.

Reduced Cost

The cost impact of the reengineering project is tremendous due to the reduction of waste. When a company initiates a reengineering project, cost savings can occur in various areas. Quite visible cost reductions can occur in the following areas:
(1) Costs reduction by reducing scrap, rework, and elimination or reduction of non-value-adding activities.

(2) Cost avoidance or reduction due to process improvement.

(3) Reduced cost during manufacture and assembly.

(4) Cost reduction through simplification of processes, creating non-repetitive work and integration of work and structures.

Reduced Cycle Time

When processes are reengineered, reduced waste, simplified manufacturing and operating designs result in reduced cycle time. The time taken for a company to innovate a new product or service and bring it to the market is a significant factor in achieving competitive advantage. Reduced cycle time means "best" technology and "least cost". Successfully reengineered companies have achieved significant reductions of cycle time and they have been able to compete with their competitors with greater potential.

2.3.3.7 BREAK POINT FRAMEWORK OF REENGINEERING

One of the very important models found in the reengineering literature is the Break Point Framework developed by Johansson et al., (1993). This model is called Break Point Framework because it is designed to achieve dramatic
break-through improvements in quality, service, cost, and cycle time. Figure 2.14 presents an outline of the Break Point Framework consisting of three phases.

According to Johansson et al., (1993), during the Discover Phase, the company creates a strategic vision for dominance or renewed competitiveness in the market and decides what should be done to the business processes to accomplish that vision. The second phase, Redesign, details and plans the actual reengineering process. The third phase, Realize, is the implementation stage of the reengineering effort. These three phases consist of a number of key issues. Different steps in the phases of Discover, Redesign, and Realize are exhibited in Figures 2.15, 2.16, and 2.17 respectively.

2.3.4 MYTHS AND MISCONCEPTIONS OF REENGINEERING

After considering all the factors relating to reengineering, a reengineering company should pay attention to the myths and misconceptions of reengineering to gain full advantage from reengineering principles. Section 2.3.4 is devoted to a discussion of the myths and misconceptions of reengineering. Without a clear understanding of the concepts involved in reengineering, a company may find it difficult to integrate human and other resources into a successful project.
Figure 2.14

Break Point Framework

Figure 2.15

Break Point Framework: Steps within phase 1 - Discover

Figure 2.16

Break Point Framework: Steps within phase 2 - Redesign

Figure 2.17

Break Point Framework: Steps within phase 3 - Realize

In their book *Reengineering the Corporation*, Hammer and Champy emphasized the need for radical redesign of processes to achieve dramatic improvements in business results. Unfortunately, this definition has become significantly diluted by the popularity and publicity that has followed the introduction of the concept (Myers, 1995, p.11). There are many misconceptions about the real nature of business process reengineering. Some believe that reengineering is “downsizing”. Downsizing means getting rid of people and jobs to improve short-term financial result (Hammer & Stanton, 1995, p.10). Myers (1995) says about reengineering “It is not just laying off people (p.11).” Many companies think they are reengineering if they reduce personnel or install a new information system. However, this is not reengineering. It means “something much more fundamental and much more dramatic (Myers, 1995, p.11).”

It is rethinking of work, activities to identify the value of them to the customers. Reengineering eliminates non-value-adding activities and not people or jobs. It is true that in some situations, when a company is reengineering its business it may need to reduce unnecessary job titles reform its activities. Under the new situation, it may need fewer people to perform the activities. However, reengineering is not intended to reduce the work force in any organisation.
Reengineering is also not “restructuring”. Restructuring means changing the organisational structure. Reengineering is concerned with the business activities and processes and how efficiently and effectively they are undertaken, not about changing the organisational chart.

Another important misunderstanding of reengineering is that many assume that reengineering is business process automation. This is also misleading. Reengineering is not automation of business. Technology plays an important role in eliminating non-value-adding activities and reengineering the business enterprise. However, “technology alone does not lead to business success (Myers, 1995, p.11).” Modern efficient computers and other devices are of profound value to the reengineering project, but the objective of reengineering is not complete business automation and elimination of manual work. Myers (1995) is centrally concerned about the rationale of reengineering. He discusses about AM (Automated-Mapping), FM (Facilities-Management) and GIS (Geographic-Information-System) technologies as examples. He says that the violation of reengineering principles is one reason for the failure of many AM/FM projects. Myers (1995) points three most common offenses:

* The “cart-before-the-horse” syndrome. The first serious violation is to initiate a feasibility study for GIS technology before studying the overall business processes and finding out the business problems. The result is to jump right to a technical solution—to put the cart in front the horse.
* Shortsightedness. The second most common violation of reengineering principles is to look at today’s business processes and not at how we will need to do business in the future. We need to concentrate management on the organisation’s sound vision extending to the future.

* Adherence to the old paradigm. In truth, the term “automated mapping” contradicts what Hammer says about re-engineering in his Harvard Business Review article, “Don’t Automate, Obliterate.”

In the article, Hammer says we shouldn’t automate a manual function, we should rethink the process, obliterate it and figure out how to do without it. Automated mapping describes the automation of a manual function within a process. But, to draw on Hammer’s argument, the mapping function should be obliterated, not automated (pp.12-13).

The differences between reengineering and downsizing, restructuring and automation can easily be understood from Figure 2.18 that is the result of an extensive survey of senior executives conducted by the Gateway Research Institution in 1992, 1993, and 1994.

These survey results show that reengineering is the number one initiative taken by senior executives in achieving their strategic goals. Figure 3.18 displays that automation, restructuring and downsizing are different managerial techniques themselves as well. Therefore, when a company initiates a reengineering project, it is of great importance to clearly understand what reengineering and what reengineering is not.
Adapted from Manganelli and Klein (1994, p.13)
At this stage it is important to quote Hammer and Stanton (1995):

Make sure that you know what reengineering really is before you attempt to do it - and then do it, not something else (p.16).

2.4 SUMMARY

This chapter has provided definitions of Business Process Reengineering (BPR) and other related technical jargons. It also discussed in brief the nature of organisations in order to gain an understanding of the organisations involved in reengineering. It also described several models of effectiveness which can be used in integration to achieve organisational effectiveness. Four types of reengineering efforts -- business process, human, product and corporate-wide -- were described and contrasted. Key elements of corporate-wide reengineering were identified. The concept of dimensions of business process reengineering (BPR) used by Andrews & Stalick was described as an aid to understand the Discover phase of the reengineering model developed in the next chapter. The cyclical nature of the reengineering process was identified. The chapter also discussed the technical and behavioural aspects of reengineering in detail, which have been identified as relevant to the current research project and will be of profound importance in the Design and Implementation Phases of the proposed model. The Break Point Framework
(Figure 2.14) discussed in this chapter is used as the basis of the proposed model of reengineering.

The present research empirically explores the relationship between the involvement of the Management Accountant(s) in reengineering project and the success of the reengineering endeavour. The next chapter presents the reengineering model developed, with a discussion of a cost management system - Activity-Based Costing. It also describes the role of the Management Accountant in a BPR project.
CHAPTER THREE

A MODEL OF

THE MANAGEMENT ACCOUNTANT’S ROLE

IN BUSINESS PROCESS REENGINEERING

We must dramatically improve business results, now! "Now" has no traditions, no precedents, no time-tested formulas (Champy, 1995, p.10). One thing we can do “now” is to change the role of the Management Accountant.

3.1 INTRODUCTION

The expected outcome of a radical business process reengineering effort is the improvement of business processes that will lead the company toward best in class performances. In other words, improving organisational efficiency and effectiveness is the aim of a reengineering project. As already pointed out, there are no magic ways to achieve such performances and each individual organisation will follow diverse change management tools and techniques specific to its own culture and management style. One important feature of any successful reengineering effort is the continuity of the processes that will encourage customer satisfaction and organisational goal congruence. The role of the Management Accountant in the success of a reengineering effort is also considered an important aspect of the project.
This chapter develops a reengineering model of the role of the Management Accountant which is empirically tested through a survey questionnaire for its validity. The proposed reengineering model is based on one of the basic business process reengineering approaches found in the literature. The chapter also discusses Activity-Based-Costing (ABC) as a means to understanding the underlying cost structures of the processes involved in BPR. It proposes that ABC can be used in conjunction with A-B-C Analysis of Cost Break Down Structure to gain accurate cost information in relation to the BPR project. This is followed by a discussion of the importance of the role of the Management Accountant in the different phases of the BPR project, especially the importance of the Management Accountant’s knowledge of the underlying cost structures of the business processes being reengineered. At the same time, three research hypotheses are developed relating to the role of the Management Accountant in BPR for empirical substantiation.

3.2 REENGINEERING AND DECISION MAKING

Reengineering can be regarded as a decision making process consisting of a number of decision steps. Therefore, it can be discussed in terms of decision rules or decision theories. A number of decision making processes have been developed in the management literature. Methlie (1976) discusses decision making as a process consisting of a number of phases.
A similar classification has been given by Davis (1974, p.141). The phases of these different decision making processes are not essentially sequential, and at any time, it is possible to return (feedback) to the previous phases for better decision making. Each of these phases needs information. It is a difficult task to analyse the information requirements for all these stages and, thus, more limited essential areas can be chosen for detailed information gathering and analysis.

Since it appears necessary to discuss management decision making in detail, a distinction between different decision-making levels or types is warranted. Anthony's framework discussed in Chapter Two is thought to be useful. Although Anthony uses the term "planning" in one case and "control" in the other two definitions, he stresses that both of these activities are included in
all these three phases. Since the primary objective of this thesis is to develop a model of the role of the Management Accountant in business process reengineering, the terms “management planning and control” are found to be important because the ultimate objective of any reengineering effort is to achieve improved performance through the assurance of obtaining and using of resources effectively and efficiently. Therefore, as discussed in Chapter Two, an understanding of the following phases of the decision making process is important for a successful reengineering project:

1. Strategic Decision Making
2. Management Decision Making
3. Operational Decision Making

Relating to these three areas, it is understood that a vast number of decisions have to be made in a properly structured radical business process reengineering project. In a reengineering effort, all business activities should be reviewed to understand the processes essential for the achievement of outcomes. After understanding the nature of the core business processes, non-core business processes and supportive processes, a complete analysis of the values added by these business processes should be made.
3.3 A MODEL OF THE MANAGEMENT ACCOUNTANT’S ROLE IN BPR

In this thesis, the Break Point Framework Model developed by Johansson et al., (Figure 2.14) is used as the basis for the proposed reengineering model because the Break Point Framework Model represents most of the aspects of reengineering discussed in the literature review. From the researcher’s viewpoint, the model developed by Johansson et al., covers most of the important elements necessary for a BPR project. The proposed model of the Management Accountant’s Role in BPR is exhibited in Figure 3.1. It consists of three phases: Discovery, Design, and Implementation. Figure 3.1 also exhibits the various steps of the three phases of the model. This reengineering framework is used to empirically validate the role of the Management Accountant in the reengineering project.

As noted in Chapter Two, a company must decide the scope of the reengineering efforts - process, human resource, new product, or radical corporate-wide, - and develop a well established reengineering project to achieve the expected outcomes of the effort. The three phases - Discovery, Design, and Implementation - of the proposed model are introduced in the following section.
Figure 3.1

Model of the Management Accountant's Role in BPR

(The three phases are amplified in Figs. 3.2, 3.3, & 3.4).
(1) **Phase 1: Discovery** - in this phase, the company should understand the existing environment, both internal and external - identify customers’ unique characteristics and their needs, create a vision and assess the feasibility of achieving these outcomes.

(2) **Phase 2: Design** - during this stage, the company should establish a reengineering team, develop strategies, identify the available reengineering tools and techniques, and assess the availability of resources for the project.

(3) **Phase 3: Implementation** - the phase during which the reengineering process is planned, implemented, and developmental strategies are undertaken.

### 3.3.1 PHASE 1: DISCOVERY - LEARNING PROCESS

Phase one, “Discovery”, is essentially an analysis and examination of the business organisation that is intended to identify the opportunities and scope for business process reengineering. The reengineering company must create a strategic plan for dominance or renewed competitiveness in the market. The prospective company should determine what processes have to be reengineered and how it should be done, and it should identify the problematic processes in terms of values to the customer. Therefore, in the first place, it is...
of paramount importance to conduct a thorough survey of customer needs and wants and how they can be served by the firm's activities. This phase is very similar to the first two phases - problem recognition and problem definition - of the decision making process (Methlie, 1976). Figure 3.2 shows the steps in this phase so that it is easy to understand the logic of the flow. During the customer needs survey, customer needs and wants can be measured in terms of the four value metrics - cost, quality, time, and service - described in Figure 2.10. An interesting point is that these value metrics do not remain unchanged and they often change with changes in customer behaviour and perceptions. Therefore, it is important to pay constant attention to the respective value metrics. Customer needs and wants can be defined in terms of:

(1) finish;
(2) lead time;
(3) reliability;
(4) information systems;
(5) service facilities;
(6) price;
(7) flexibility;
(8) product design;
(9) process design;
(10) optimality; and
(11) quick response to customers.
Figure 3.2

Model of the Management Accountant’s Role

in BPR: Steps Within Phase 1
Figure. 3.3

Model of the Management Accountant’s Role in BPR: Steps Within Phase 2

Phase 2: Design

Step 1: Establish a reengineering team
Step 2: Identify processes & resources
Step 3: Analyse tools & techniques
Step 4: Develop unique strategies
Figure 3.4

Model of the Management Accountant’s Role

in BPR: Steps Within Phase 3

Phase 3:

Implementation

Step 1
Develop & communicate plans

Step 2
Implement & measure

Step 3
Continuous improvement
Another important issue in this first phase is the evaluation of the firm’s competitive ability in terms of value metrics. It will be very useful to understand the strengths and weaknesses of each business process in terms of ability to add values to the final output. This can easily be done by an examination of the position of the firm in the industry. Figure 3.5 shows a simplified way to measure the firm’s position in the industry using a hypothetical example. Figure 3.5 also exhibits the potential of reengineering relevant business processes.

As already pointed out, reengineering is concerned with the radical redesign of important business processes, it is very important to understand the business priorities. Figure 3.5 is very useful in understanding a prospective reengineering company’s position in the industry in relation to various value metrics. For example, process design of the company is in a high position when compared with that of the industry. Therefore, it is very unlikely to decide to reengineer the company’s process design.

The Discovery phase is necessarily an initial learning stage because during this stage a thorough examination of customer needs, business activities, and the organisation’s expected outcomes should be carried out to understand the
Figure 3.5

Industry Best Practice vs. Firm’s Practice

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
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<tbody>
<tr>
<td>Price</td>
<td>▪▪▪▪▪</td>
<td>✗</td>
</tr>
<tr>
<td>Finish</td>
<td>■▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪</td>
<td>❌</td>
</tr>
<tr>
<td>Reliability</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
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<tr>
<td>Product design</td>
<td>▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪</td>
<td>❌</td>
</tr>
<tr>
<td>Process design</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
</tr>
<tr>
<td>Flexibility</td>
<td>❌</td>
<td>▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪</td>
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<tr>
<td>Optimality</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
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<tr>
<td>Service</td>
<td>❌</td>
<td>▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪</td>
</tr>
<tr>
<td>Response to customers</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
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<tr>
<td>Lead time</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
</tr>
<tr>
<td>Information</td>
<td>▪▪▪▪▪</td>
<td>❌</td>
</tr>
</tbody>
</table>

- ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ Industry best practice
- ❌ Current or potential company practice

Adapted from Johansson et al., (1993, p.124).
current position and desired direction of the business. There are three steps in this phase as shown in Figure 3.2. They are:

1. Identify customer requirements;
2. Define outcomes and create specific goals; and
3. Assess feasibility.

3.3.1.1 IDENTIFICATION OF CUSTOMER REQUIREMENTS

Identification of customer requirements is the heart of any business process reengineering project. Since reengineering is concerned with radical redesign of business processes, it requires the company to focus on meeting customers' expectations. Customers may be internal or external to the organisation. Their expectations are their needs and wants. The customer/supplier model shown in Figure 3.6 is an excellent tool for understanding the customers' needs and wants.

The customer/supplier model can be applied to analyse internal and external customers' needs. According to Hunt, this model consists of five steps:

* Define what customers expect in terms of value.
Figure 3.6

The Reengineering Customer/Supplier Model

* Define your value-added contribution to that process.
* Define your process, task, or reengineering approach.
* Define your customer's expectations—i.e., negotiate specific "requirements" and define appropriate feedback measurements.
* Communicate with your supplier and negotiate your requirements and feedback mechanisms just as you did with your customer (1993, p.196).

Therefore, in designing and implementing the reengineering process, special attention should be paid to clearly understanding customers' requirements. An easy way to identify customer requirements is to conduct a survey of the key customer value indicators (quality, cost, cycle time, and defects). This should be a continuous process because understanding the changes in customer requirements is very important to achieve competitive advantage. For instance, Nielsen Company, the only Pan-European provider of market information to producers of fast moving consumer goods, discovered that the "customer satisfaction level is the key basis of competition (Johansson et al., 1993, p.87)." Thus, in order to improve customer satisfaction, it is necessary to understand their needs before undertaking any major important change process in business processes. Achieving profitable and sustainable competitive advantage through business reengineering requires the organization to be truly customer focused (Jury & Sturdivant, 1995, p.37). There are three operating strategies which can be helpful in achieving a competitive advantage: cost strategy, value strategy, niche strategy. A
business can use a cost strategy by producing at the lowest cost while maintaining quality. Or it can use a value strategy by offering more value than competitors are able to offer, or it can use a niche strategy by a combination of the first two strategies. Regardless of the selected strategy, "it is readily apparent that understanding what "value" means to the customer is a key factor in gaining a competitive advantage (Jury & Sturdivant, 1995, p.34)."

Efficient and effective customer focus calls for prioritising, quantifying and categorising the opportunities identified through the customer value analysis process. Timely and accurate feedback of customer requirements is also of profound importance for the achievement of competitive advantage. Therefore, it is essential to remember that the customer is the most important person in the reengineering process and giving him/her the due attention will improve the success of that process.

3.3.1.2 DEFINE OUTCOMES AND CREATE SPECIFIC GOALS

Another equally important step of the Discover Phase is the creation of expected outcomes and specific goals. Businesses achieve their outcomes through the satisfaction of customer needs. Thus, a good understanding of what the organisation wants to achieve and where it is bound to is the road-map to its future success. A clear statement of the outcomes and goals will
become the basis of the next step of the reengineering process. The reengineering outcomes and vision can be expressed in terms of value-adding activities. The customer value metrics described in Chapter Two (Figure 2.10) is a useful guide for creating outcomes and the vision statement. As explained in Chapter Two, (Figure 2.6) there are three types of major reengineering goals:

(1) Process improvement;

(2) Achieving best-in-class performance; and

(3) Break Point.

Whatever the expected vision or outcome of the reengineering process, it should be expressed in clear, specific terms and communicated throughout the organisation frequently for best results. Particularly, top management must have a positive understanding of the expected outcomes of the project.

3.3.1.3 ASSESS FEASIBILITY

In the Discovery Phase, it is very important to assess the feasibility of implementing the proposed reengineering project. Since reengineering is about change, it is necessary to assess the current culture in order to understand the organisation's needs for ability and readiness for change. An important aspect
in this stage, to which adequate attention should be paid, is the top management commitment. Without top management's full consent and support the entire reengineering attempt will be a futile task. The reason is that innovative leadership is essential in every phase of the reengineering project. For the reengineering project to be a success, active and supportive involvement of the top management is very important and essential. Leadership is the key ingredient for reengineering success (Hammer & Stanton, 1995, p.56). Thus, it is not reasonable to undermine the role of the top managers in any phase of the reengineering project. After assessing the feasibility of getting top management's full support - in the form of instructions, time, money, innovative ideas or personnel, if it seems that top management support is not enough to achieve the outcomes of reengineering it is important to take necessary actions to educate them regarding the impact of how reengineering can be helpful in competing and achieving the organisational outcomes successfully.

A very important area that should be investigated is the resistance of people to change. Reengineering fails because people resist change (Reger et al., 1994, p.35). When doing radical changes to the existing organisational settings and processes a company must necessarily accept resistance to it. Reengineering will change all aspects of the organisation. Therefore, assessment of resistance
to change and taking necessary remedial steps are of paramount importance in the Discovery Phase of the reengineering project.

Another equally important area is the assessment of organisational “Strengths”, “Weaknesses”, “Opportunities”, and “Threats”, (SWOT analysis). This analysis is useful to understand the direction of the actions that the organisation should take. Understanding of old processes will help recognise the existing weaknesses and invent new processes. After the SWOT analysis is carried out, if any weaknesses or threats are found, the company can take necessary steps to eliminate or reduce their harmful effects. At the same time, opportunities and strengths of the organisation can be improved and retained through the understanding of the feasibility study. Finally, in this phase the existing values and culture of the organisation should be understood in order to begin the Design Phase of the reengineering project.

The dimensions of business reengineering discussed in Chapter Two (Figure 2.7) are of particular importance to learn about the existing situation of the business undertaking a BPR project. During the learning phase of the BPR initiative, physical/technical, infrastructure, and value layers of the organisation should be clearly understood and the underlying knowledge of the organisation’ existing situation should be used to:
(1) Identify customer requirements;

(2) Define outcomes and create specific goals; and

(3) Assess feasibility.

### 3.3.2 PHASE 2: DESIGN - PLANNING THE REENGINEERING PROCESS

The Design Phase is the most important of all the phases of the reengineering project because it consists of data collection, analysis, evaluation and developing the actual plans for reengineering. It will be very useful to use computer-based analysis in case of complex designing of the process. As shown in Figure 3.3, there are four steps in this phase. They are:

(1) Establishment of a reengineering team;

(2) Identify processes and resources;

(3) Analyse tools and techniques; and

(4) Develop unique strategies.

For a successful designing of the reengineering process, it is important that all these steps are planned and coordinated properly.
3.3.2.1 ESTABLISHMENT OF A REENGINEERING TEAM

Establishing a team for reengineering project facilitates the integration and improvement of the reengineering project. The reengineering team will guide the organisation towards the new position. This team must have a reengineering leader and the supporters. The structure of the team should necessarily reflect the specific requirements of the individual organisations. Hammer and Stanton (1995, p.59) identify several characteristics of a good reengineer as follows:

<table>
<thead>
<tr>
<th>The Profile of a Reengineer</th>
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<tr>
<td>Process-orientation</td>
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<tr>
<td>Holistic perspective</td>
</tr>
<tr>
<td>Creativity</td>
</tr>
<tr>
<td>Restlessness</td>
</tr>
<tr>
<td>Enthusiasm</td>
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The ability to organise and coordinate team members is another important characteristic of the team leader. The understanding of the organisational culture and existing situation will be a guide to establish the reengineering team. In designing the reengineering team, it is important to get the maximum involvement and support of employees at all levels of the organisation. Within this team there could be several other sub-teams according to the
requirements of the project. The team should be established in a way that will help improved communication, higher participation and actual commitment of the people in the organisation.

3.3.2.2 IDENTIFY PROCESSES AND RESOURCES

At the very beginning of the Design Phase, the company must select the processes relevant to the reengineering project. The entire reengineering process will be based on the processes selected by the reengineering team for change. The Design Phase includes identifying the potential opportunities, weaknesses, setting priorities, and choosing processes for reengineering. Once a process is selected, the team must identify the major and minor problems and the level of change required. Processes with the need of immediate change for the accomplishment of organisational outcomes should be selected firsthand. Since Business Process Reengineering is concerned with the radical redesign of the core business process, it is essential to begin with a clear view of the business priorities (Johansson et al., 1993, p.95). As discussed earlier, identification of processes for immediate reengineering can be done through the use of techniques such as Value-Added Analysis, ZBB, ABC, TQM, Marginal Costing, and Profitability Analysis. In addition, the reengineering company should be alert to integrate the knowledge of the customer requirements where necessary to identify the processes relevant for
reengineering. Continuous scrutiny is very helpful in identifying value-adding and non-value-adding processes. By this time, the reengineering team must have a clear view of the scope of the reengineering project.

Therefore, the team should decide on the core business processes for improvement and the desired level of the scope of the project. It is important to place great emphasis on the importance of establishing primary focus for improvement. However, it is even more important to remember that, “the greater challenge is to sustain that focus, to drive that strategy relentlessly through the organization, to develop the internal consistency, and to confront radical change (Treacy & Wiersema, 1993, p.88).”

In this stage, it is very important to identify the availability of resources for the radical process improvement project. Unless the required human and other resources are available adequately and in time, the project can not be successfully carried out. The project should analyse the amount and time of the required resources. Special attention should be paid to this step because sometimes the project will have to compete with other requirements of the organisation to acquire the necessary resources. At this stage of the project, the support of the top management is vital for the continuing of the project.
3.3.2.3 ANALYSE TOOLS AND TECHNIQUES

Once the processes for radical reengineering are selected, the team should be able to identify the relevant tools and techniques for the development process. They must decide what tools and techniques will be used for each phase of the reengineering project. In the management world there are a number of tools and techniques for changing the existing business strategies. As explained in Chapter Two, reengineering has divergent impacts on the organisation's people, processes, and technologies. These impacts are in part due to the tools and techniques used for reengineering. Therefore, in the Design Phase particular attention should be paid in recommending the relevant tools and techniques. It is in the Design Phase that every thing should be planned accurately to eliminate or minimise errors and waste.

3.3.2.4 DEVELOP UNIQUE STRATEGIES

As already mentioned in the previous chapters, there are no magic ways to achieve best performances through business process reengineering. Therefore, no one is able to prescribe one right method to implement the reengineering process. Although the approach described in this thesis is considered a logical flow of the phases, it is accepted that an organisation can change the processes or phases in any reengineering model to meet the unique requirements of that particular organisation. This flexibility of the
reengineering philosophy is a unique feature that helps organisations focus on the most strongly needed improvement opportunities. The key to the Design Phase is confirming the company's unique strategy. The management style, product, service, culture, people, technology, and outcomes differ greatly from company to company. Therefore, it will be a futile effort to try to develop an "ideal" strategy suitable for all the companies undertaking a reengineering project. Thus, much effort should be put in obtaining a clear understanding of what drives competitive advantage in the firm's industry, industry's value chain, the basis of competition, and how to obtain competitive advantage. According to the results of a thorough analysis of these factors, a company should develop strategies to implement the reengineering plan. The best plans are those that result in action - action that improves the processes of the organization and results in better services and products for the customer (Hunt, 1993, p.197). In developing such plans, it is always advisable to have up-to-date information about customer requirements and the key performance indicators.
3.3.3 PHASE 3: IMPLEMENTATION - IMPLEMENTING AND IMPROVING THE REENGINEERING PROCESS

This is the final phase of the reengineering framework. After discovering and designing the reengineering process, the next phase is the actual development of plans, implementation, and improvement of the reengineering process in a way that will achieve organisational reengineering outcomes. The Implementation Phase has three steps, as shown in Figure 3.4. They are:

1. Develop and communicate plans;
2. Implement and measure; and
3. Continuous improvement.

3.3.3.1 DEVELOP AND COMMUNICATE PLANS

During this stage, plans for reengineering should be developed and communicated to all the relevant people in the organisation. In developing the plans, it is of particular importance to identify performance measures to guide the reengineering process. These performance measures must be in compatible with the established outcomes and specific goals of the reengineering process. As already mentioned in a previous section, specific performance measures
relating to customer values must be developed. In developing performance measures, factors such as customers' views and attitudes of the company's products and services, employee empowerment and satisfaction, and organisational productivity should be reviewed. These factors measure the success of the organisation in meeting the goals of reengineering. Next step is the development of the reengineering plan according to the designed strategies, outcomes and performance measures. Documentation of the reengineering plan creates a living status for the reengineering project in the organisation.

Another equally important step of the Implementation Phase is the communication or selling of the plan throughout the organisation. The developed plan should be available to all managers in the organisation. This should ensure that the established goals, approaches and measures are communicated to all in the organisation. Note that communication means receipt of the message, understanding of, and agreement with the message by all people in the organisation. This is particularly important in the sense that the success of reengineering depends on the actual commitment and support of all involved in the organisation. The reason is that in reengineering, "interaction and involvement are central elements" for its success (Schneider, 1994, p.118). Therefore, collaboration is very important because it puts
greater effort and attention to understanding organisational expected outcomes, and customer requirements, and developing good work relationships. In this step, it is useful to plan to create multifunctional teams to facilitate the integration of the reengineering process. These teams can improve the active involvement and full cooperative participation of the workers. Team work can necessarily make a positive difference to an organisation’s approach. Nicholos (1992) reports:

At Greater Southeast Community Hospital in Washington, D.C., most of the work is done by various teams. According to Tom Chapman, CEO of the Greater Southeast Health Care System, the Hospital’s success is in team work: [We] work in teams that are focussed on the patient. For example, each elderly patient is treated by a geriatric team that includes a doctor, a nurse, a social worker, a dietitian, and a physical therapist. In effect, the patient picks the team leader. If the patient’s most critical needs are emotional, then the social worker leads the team—not the doctor. That, of course turns the traditional hierarchy of a hospital upside down. It also allows for an integrated approach to health care... What makes us unique at Greater Southeast is a shared mind-set that says working together we can solve these problems, whether it is the problem of one patient or the whole community (p.94).

The success of this hospital is in part the collaboration developed through mutual understanding of the work of the organisation and employees. Any organisation can achieve this type of success through effective communication of plans.
3.3.3.2 IMPLEMENT AND MEASURE

The next stage of the Implementation Phase is implementation and evaluation of the reengineering process. Reengineering is for implementing change to achieve increased performance. Implementation means executing the established reengineering plan; that is, setting the stage for implementing the plan. It involves leadership, reengineering training, and barrier reduction.

Setting the stage means that the organisation must create the environment for changes. At multifunctional team and individual levels, reengineering always requires special training in reengineering philosophy, new tools and techniques, and new culture. Implementation should ensure that all individuals involved are capable of doing their assigned activities.

After the reengineering plan has been executed, the reengineering team should assess the performance of the attempt thoroughly. This assessment is to ensure that expected reengineering benefits are realised. This can be a useful guide for the follow-up actions or subsequent reengineering efforts. This measurement can take a number of forms and necessarily it should include the identification of the nature and changes in the organisation's culture, external and internal customers, people, resources, and management style. Recognition is a means to demonstrate respect and appreciation for all employees, whether design guru or janitor, and the value they add to your business (Hunt, 1993, p.
214). This assessment helps the reengineering team recognise the success of the project.

3.3.3.3 CONTINUOUS IMPROVEMENT

The final stage in the reengineering framework is the continuous improvement of the reengineering process. Continuous process improvement addresses the creation of positive change to the reengineering achievements. Through the assessment step, the reengineering team can recognise the degree of importance the organisation has placed on its reengineering project. Once the assessment is completed, the processes with further significant improvement requirements should be improved. Some processes may need to be designed with different tools and techniques or some may have to be eliminated. With regard to people in the organisation also this holds true. Some may have been very successful in their jobs. Some may not be able to adapt to the changes. Recognition provides both motivation and support for all the employees, whether blue collar or white collar. Accordingly, positive reinforcements can be designed for all those who were successful in accomplishing their perceived missions. Such reinforcements let them be alert to themselves and their work. For other employees who need further development, suitable training and educational programs should be arranged. Therefore, the reengineering effort must not be a fixed, locked one. All the time, it requires scrutiny, recognition,
and remedy. For individuals to grow, develop, and change, they must engage in a "continuous and never-ending process of stringent self-examination (Peck, 1978, p.51)." The same holds true for an organisation. The more fully an organisation knows itself, the greater its potential for positive change and increased effectiveness (Schneider, 1994, p.142). As the organisation understands more about its strengths and weaknesses, it can change the reengineering effort to reflect the feedback, and once again if the results are not as expected then it can reevaluate the problem and the entire reengineering project. This will lead the firm towards success. Therefore, pushing for more and more effectiveness is the continuous improvement process.

The various aspects of reengineering discussed in Chapter Two, literature review, are very important in the actual designing and implementation of the proposed model of the role of the Management Accountant in BPR. In the next section of this chapter, the Activity-Based-Costing technique is reviewed as an important aid for the Management Accountant in understanding the underlying cost structures of the business processes involved in the BPR project.
3.4 BUSINESS PROCESS REENGINEERING AND ACTIVITY-BASED COSTING (ABC)

This section provides an insight into Activity-Based Costing (ABC), one of the highest profile developments of management accounting in recent years, as the background for the Management Accountant to understand the underlying cost structures of a Business Process Reengineering (BPR) project. Before considering the nature of the activity-based costing model, it is necessary to identify the inadequacy of the conventional cost accounting model in the modern competitive world. This will provide the rationale for using ABC by the Management Accountant in the BPR project. Therefore, the first part of this section reviews the literature pertaining to the cost accounting aspects of conventional production system. Because the inadequacy of the conventional cost accounting model stems from the current worldwide competitive pressures, the second part of Section 3.4 focusses on the impact of the changes on the cost structure of manufacturing organisations. This is followed by a discussion of the decline in usefulness of conventional cost management and performance measurement systems. Another part is devoted to a discussion of the literature on ABC. Finally, the main forces behind ABC and BPR are examined and the role of the Management Accountant is reviewed in terms of improving performance and
reducing cost associated with business processes, i.e. improving effectiveness and efficiency.

3.4.1 CONVENTIONAL COST ACCOUNTING

Conventional cost accounting systems were based mainly on absorption costing or variable costing. Absorption (full) costing and variable (direct) costing systems were frequently used in important decisions such as inventory valuation, determination of product costs, and pricing decisions. However, the appropriateness of the use of these costing instruments for managerial decision making purposes was highly debated in the accounting literature during the 1950s and 1960s. A literature survey carried out by Klemstine and Maher (1984) reveals that “approximately 67% of all product costing research was conducted before 1966 and mainly focused on the direct versus absorption cost issue (p.14).”

Very few empirical studies concerning the use of product costing methods can be found in the accounting literature. One such study was conducted by the National Association of Accountants in 1961 in response to the increased interest in variable costing. The NAA found that 21 of the 50 companies used direct or prime costing (1961, p.93).
Although very little empirical research has been conducted of the issue, a general assumption found in the accounting literature is that variable costing is the most suitable costing method for internal information purposes. Kaplan (1982) also argued that variable costing is “more relevant for internal decision making and control (p. 2).”

3.4.2 COMPETITIVE PRESSURE AND CHANGING COST STRUCTURE

The debate over the most appropriate method of cost management system has been a critical issue in the accounting literature. In recent years, manufacturing processes have become more and more complex due to increased competition. Competition has been the vital issue which has played an important role in increasing pressure on manufacturing activities to provide products of the highest quality, at a reasonable price, and on time. As a result of changing manufacturing techniques, manufacturing cost structures have changed remarkably and the need for better cost management systems has become apparent. Today, many manufacturing companies pay attention to the notion of world-class manufacturing. Another important trend in modern business management is the realisation of the importance of value-adding processes and activities.
Many organisations have realised that to survive in a highly-competitive world, they have to invest in strategic initiatives involving new technology, automation, and advanced manufacturing techniques such as Just In Time (JIT) and Total Quality Management (TQM). The focus of manufacturing has changed from a product basis to a wider process basis. An associated consequence of this new shift is that in many situations the cost structures of manufacturing organisations have changed remarkably where overhead and technological costs are higher than direct labour costs.

Although manufacturing cost structures have changed significantly, a key area of accounting - cost accounting and cost management systems - has changed little in most organisations. Traditional cost accounting has hardly changed since the 1920s by then most of the tools and techniques we use today have been developed (Hayde, 1990, p.52). Kaplan too noted that cost accounting systems were developed when direct labour was a major component of production cost (1982, p.11). Therefore, traditional cost management systems no longer adequately provide the information needed by today’s business managers.

Global competition has increased rapidly in the last few decades and is very likely to continue at an increasing rate in the future. The late twentieth century
is a time in which the number of companies taking an ever-more global perspective has risen steadily (Morrow, 1992, p.3). To face world competition, today, the entire world must be treated as a single market.

3.4.3 THE FAILURE OF TRADITIONAL COST ACCOUNTING

In their book, *Relevance Lost: The Rise and Fall of Management Accounting*, Johnson and Kaplan argue that the importance of cost management has been overtaken by cost accounting for most of the twentieth century. They show how management accounting plays the "role of simply reporting on costs and performance and so on (Corrigan, 1996, p.29)."

During the last few decades, significant changes have been taken place in the field of management decision making. There has among other things, been an accelerating trend towards the use of complex information technology and scientific method to management decision making specially in the area of manufacturing. In many ways, traditional cost accounting has not considered these changes and it seems to be insufficient as an information system. Hayde sees this failure in three areas:

* Traditional cost accounting finds it extremely difficult to cope with advanced manufacturing technologies such as flexible
manufacturing systems, computer integrated manufacturing, flexible flow lines and optimised manufacturing.

* We split costs into fixed and variable costs. Variable costs are usually directly traceable to production because they vary with the volume of production. But in today's manufacturing environment, these volume-related allocators are no longer reliable.

* There is a conflict between traditional cost accounting and modern manufacturing philosophies which aim to optimise production, minimise waste and reduce inventory (1990, p.52).

Clarke (1995) also bears the same views:

* that product costs in multi-product companies are incorrect due to traditional overhead absorption methods;

* that management accounting fails to capture a company's progress towards world-class manufacturing performance (p.46).

The way by which manufacturing overhead costs are allocated to products is considered one of the biggest limitations of modern management accounting. Brismon views the current cost management systems as "roadblocks that make the transition to an automated factory difficult (1986, p.25)." At an International Conference, two prominent academics have called cost accounting "the number one enemy of productivity (Edwards & Heard, 1984, p.44)."
Since overhead costs have increased and direct labour costs have decreased, the use of direct labour as a basis for allocating overheads has become inappropriate. In many cases, direct labour cost is less than 10% of total manufacturing cost. The literature shows that traditional cost management systems do not serve the information needs of the managers sufficiently.

The traditional method of costing allocates production overheads to products using volume-based measures. This method may be useful if a large share of overhead is volume-related. However, an increasing amount of overhead cost relates to the number of 'transactions' (some are non-value-adding activities) taking place within the factory such as machine set-ups, material handling, and quality control, etc. Also, an increasing amount of overhead cost relates to the more modern sophisticated business operations.

3.4.4 MODERN EMPHASIS ON VALUE-ADDED PROCESSES AND NEW MANAGEMENT TECHNIQUES

As discussed in Section 2.3.3.5.2, an important trend in the management field is the identification of the importance of value-adding activities and business processes. Management techniques like TQM and JIT are also based on the
notion of value-added processes. These techniques are process (activity)oriented and are very helpful in value-chain improvements. TQM seeks to create an environment in which “doing it right the first time” is the goal, where quality is designed and built into each activity rather than being inspected after production is completed. The focus of TQM is on reducing the cost of quality by developing a continuous improvement philosophy. JIT is concerned with eliminating waste. To quote Linnegar:

... JIT is the constant and relentless pursuit for the elimination of waste, with waste being defined as anything that does not add value to a product (1988, p.2).

3.4.5 ACTIVITY-BASED COST MANAGEMENT SYSTEMS

It is accepted that a cost accounting system should reflect reality by recognising the true cost drivers (causes of costs) and provide the management with information that it really needs to manage the business. Recently, a number of new costing methods with emphasis on processes rather than products have been developed including “Activity Based Costing” (ABC), as alternatives to the traditional costing methods. These systems recognise that activities - not products - cause costs and by managing activities these costs can be managed. Activity-Based Cost Systems assign
costs to products on the basis of multiple “cost drivers” which may or may not be proportional to the volume of output (Noreen, 1991, p.159). In fact, volume becomes just another cost driver (cause of costs).

In the past, when most labour costs were direct and proportionate to the product, the matching of the cost with the product was quite simple. Costs could be easily allocated to the product or service or cost center. The overhead costs were assumed to vary either with direct labour or machine hours. The cost of a product or service was determined by adding direct material and direct labour, and allocating all other product or process costs on the basis of volume of activity usually measured by direct labour or machine hours. New costing systems like ABC operate on the notion that activities and processes carried out within the organisation add costs and value to the products and services.

In the 1990s, activity-based costing has become the most widely discussed topic in management accounting. ABC is a methodology for providing insights into how efficiently managers use scarce resources and how activities contribute to the cost of doing businesses. This costing method is based on the premise that products and services create the need for performing activities, and, thus, results in the consumption of human and material
resources. ABC is concerned with "activities" instead of "cost centers", and "cost drivers" instead of "bases of cost allocation." Kaplan (1992) explains:

Activity-based cost management is not an accounting exercise. An activity-based cost model is a system designed to inform management about the economics of its past, current, and future operations (p.58).

Much emphasis should be placed on the notion of activity based-cost management. ABC focusses attention on the cost of activities, and this allows managers to review if they can perform an activity more efficiently by changing the manufacturing process, or if they can perform an activity less frequently by changing product design or product mix so that non-value-adding activities are eliminated. This expanded role of ABC information is known as Activity-Based Cost Management (ABCM).

ABCM is also concerned with determining customer profitability since the needs of different customers may vary significantly. Using ABC information, overhead costs can be assigned to the customer for whom the service is provided. The ultimate result is the establishment of a customer-profitability scenario. ABC information can also be used to evaluate various dimensions of supplier performance and reliability.
In the literature on ABC systems, Activity-Based Costing itself is subject to varying interpretations and its definition seems to be evolving over time. For the purpose of this research, an ABC system is regarded as a two-stage allocation process that fully allocates costs to products or some other cost object. Figure 3.7 illustrates a two-dimensional Activity-Based Costing Model which has two main views; Cost Assignment View and Process View.

### 3.4.5.1 THE COST ASSIGNMENT VIEW

In Figure 3.7, the cost assignment view is illustrated in the vertical part of the model depicted. It provides information about resources, activities, and cost objects. The underlying assumption is that cost objects create the need for activities that need resources (Reeve, 1995, p.155). The knowledge of the cost of activities makes it easier to understand why resources are used. The cost assignment view reflects the organisation’s need to trace resources to activities and then to cost objects to analyse important decisions relating to:

1. Pricing;
2. Product Mix;
3. Sourcing;
4. Product Design; and
5. Setting Priorities for Improvements.
Figure 3.7

Two-Dimensional Activity-Based Costing Model

Cost Assignment View
- Resources
  - Resource Cost Assignment
    - Activities
      - Activity Cost Assignment
        - Cost Objects
          - Performance Measures

Process View
- Cost Drivers
  - Activity Trigger (Action)

Source: Adapted from Reeve (1995, p.156).
Reeve (1995) further identifies that the information provided by ABC makes it much easier to address such questions as:

* Which activities require the most resources?
* What types of resources are required by these activities?
* Where do opportunities exist for cost reduction? (pp.156-157).

In summary, the cost assignment view allows the Management Accountant to gather information in relation to the following areas:

* High-cost activities;
* Opportunities for improving product and service design to reduce cost; and
* Opportunities for shifting the focus toward more profitable products, services, and customers.

The cost assignment view is constructed from three main building blocks -

(1) Resources;
(2) Activities; and
(3) Cost Objects - as shown in Figure 3.7.
Resources are economic elements that are directed to the performance of activities. Resource costs are assigned to activities. Activities are procedures that cause work to be performed in an organisation and a cost object is the final point to which activity costs are assigned (e.g., a process, or a product or service).

Understanding the cost of activities and business operations was itself a major advance over traditional costing systems (Kaplan, 1992, p.59). Activity-based costing systems assign overhead to products using multiple allocation bases as a result of understanding the relationship between costs and activities and business processes. This is in contrast to the typical cost system found in practice in which all overhead is allocated on the basis of direct labour or some other measure of activity that is highly correlated with unit volume (Noreen, 1991, p.160). ABC systems are based on the concept that products incur costs by giving rise to activities which generate costs. In the following section these activities and their relationship with ABC systems are discussed.

### 3.4.5.2 THE PROCESS VIEW

The horizontal part of the model illustrated in Figure 3.7 contains the process view. It provides information about the work done in an activity and the relationship of this work to other activities (Reeve, 1995, p.160). A process is
a collection of activities that are linked to perform a specific task. *Each activity is considered a customer of another activity.* The process view of ABC consists of information about cost drivers and performance measures of each activity or process in the customer link. This information is mainly non-financial and of profound importance in improving the performance of activities and the process as a whole.

### 3.4.5.3 COST DRIVER ANALYSIS

ABC recognises that instead of having one overhead cost allocation basis, the cost driver or drivers cause costs to occur. Cost drivers are any events that cause a change in the total cost of an activity (Noreen, 1991, p.161). These cost drivers explain why the amount of cost incurred in a particular cost center is there. Cost drivers are simply activities. Cost drivers are very useful since they reveal opportunities for improvement of activities and the process as a whole.

### 3.4.6 PROCESS ORIENTATION VIEWS OF ABC AND BPR

Activity-based costing provides a unique support for achieving reduced cost and improved performance through business process reengineering because
both ABC and BPR are centrally concerned with business processes. Leonard (1994), wrote of “applying activity-based costing and performance measurement to business process reengineering:

ABC is a powerful tool for establishing linkage between costs incurred and benefits achieved, and an improved ability to justify investments in business process improvements (p.1).

Many companies now use ABC information to help in re-engineering their operations. The reason is that “ABC models can play many different roles to support a company’s operational improvement and customer satisfaction programs (Kaplan, 1992, p.58).” The Management Accountant can help eliminate inefficient non-value-adding activities from the company’s operations by estimating the cost of inefficient operations using the ABC technique.

In an ABC environment, all the activities and processes in the organisation are analysed, e.g., purchasing, manufacturing, inspection, distribution, financial, etc., to see the extent to which they are necessary and value-adding and how they can be done more efficiently and effectively. This information clearly provides an opportunity for cost reduction. A related suggestion in the

In order to test the importance of cost management in a BPR project, a question on underlying cost structures of the processes being reengineered was included in the survey instrument which was used to empirically test the proposed model of the role of the Management Accountant. This helped to measure the importance of the Management Accountant’s knowledge of the underlying cost structures of business processes in a BPR project.

3.5 BUSINESS PROCESS REENGINEERING AND THE MANAGEMENT ACCOUNTANT

The purpose of this section is to discuss the role of the Management Accountant in the BPR project. The discussion begins with an examination of the importance of the work of the Management Accountant as the major provider of cost information. It also reviews the role of the Management Accountant in various phases of the BPR project. This is followed by a discussion of the importance of the Management Accountant’s understanding of the underlying cost structures of BPR. The A-B-C technique, a cost model, which can be used in conjunction with Activity-Based Costing as a guide to
the Management Accountant’s role of collecting cost information is introduced in the final section.

### 3.5.1 THE CHANGING ROLE OF THE MANAGEMENT ACCOUNTANT

The role of the Management Accountant is evolving according to the needs of the changing environment. Traditionally, Management Accountants have provided staff services to management in the areas of planning, control, measurement and evaluation. The management accounting function often adopts a supportive and monitoring role, not a more active one as proponents have suggested (Cooper, 1996, p.36). Birkett (1995) takes a similar view:

> Historically, management accountants provided support services to management in the areas of decision making (and planning) and control (or evaluation). These services were both advisory (tendering opinions, assisting in making evaluations, forming expectations, or developing norms or objectives) and informational (providing “neutral” information on past or present occurrences, on variations from norms, on opportunities under consideration, or alternatives being evaluated) (p.44).

Until recently, Management Accountants played staff roles and did not engage in line management activities. However, the growing importance of cost management is changing the practice of management accounting significantly.
(Cooper, 1996, p.40). With the changing emphasis on business processes, the role of the Management Accountant is also changing. Cooper (1996) points out:

To survive, they must develop skills in system design and implementation, change management, and strategy, and they must be knowledgeable about cost management and management accounting. It is this skill set that will enable them to play the important role that modern management accounting demands (p.40).

With the changes in socio-economic factors, the Management Accountant is expected to provide more and more non-traditional services to the corporate culture and the society as a whole. One important aspect of these changing social issues is ethics. Ethical issues have influenced the role of the Management Accountant. Society expects the Management Accountant to contribute to the protection of society from non-ethical activities. Epstein (1993) is concerned about this issue:

Management accountants need to develop systems to monitor and report ethical violations through their companies. They must be sensitive to such issues when designing performance evaluation systems so that ethical violations are discouraged and that whistle-blowing is encouraged (p.24).
Birkett (1995) describes the changing nature of the Management Accountant’s role:

By the mid-1980s, however, the traditional roles and methods had been challenged. Many organizations were changing, for a variety of reasons. Internal operations and processes were refocusing strategically on customers and competitors. Attempts were made to integrate internal tasks and operations as part of broader business processes that incorporated suppliers and customers as components of an extended “value chain”. Organizational processes were reconfigured to emphasize and facilitate change by flattening management structures, using cross-functional teams, making information available immediately by capturing it on operations, and empowering the workforce (p.45).

In modern organisations, the Management Accountant is given more responsibilities and higher status as a member of the management team. To meet the challenges of the next century, controllers must advance from Management Accounting to strategic business accounting (Pipkin, 1989, p.21). According to Pipkin’s view, with these expanding responsibilities and knowledge, the Management Accountant will be an integral part of the business decision making process and his office will be the strategic intelligence centre of the organisation. Pipkin (1989) states:

On one hand, the controller is a line manager of a large function, processing large quantities of accounting reports required by corporate management and government
regulations. On the other hand, the controller is evolving into the “chief business intelligence officer.”

In the future, the scope of the controllership will be widened, and you will be more than just a staff provider of information. Controllers already have the unique viewpoint and perspective for handling this new role. For example, information is the blood of the company and, a high percentage of it already runs through the accounting system (p.22).

Demonstrating Pipkin’s forecast of the role of the Management Accountant, in today’s business organisations Management Accountant’s service has been imperative to the well being of corporate and wider society. Specifically, in the era of process-oriented business management, the service provided by the Management Accountant in the form of cost information about business activities is of profound importance for the well-being of the organisation.

3.5.2 THE ROLE OF THE MANAGEMENT ACCOUNTANT IN REENGINEERING

Whatever the expected benefits of reengineering attempts, whether to improve service, to improve quality, to reduce cost or increase revenue, the Management Accountant as the internal information provider has an important role to play to make the reengineering effort a success. The central objective of radical redesign of processes “is to eliminate the fragmentation that
occurred in the past and to unify work activities located in different functional silos into overall processes (Angus et al., 1996, p.28).”

In such an effort, the Management Accountant’s function is to provide all the relevant and important information necessary to eliminate waste and non-value-adding activities. As a key member of the leadership group, the Management Accountant has a vital role to play in the reengineering project. May (1995) identifies the role of the Management Accountant in BPR as follows:

*The role of the management accountant as leader of business process re-engineering (BPR) ..., can contribute significantly in building trust and breaking down functional barriers, acting as a catalyst, researching and providing analysis, assessing improvement proposals, facilitating workshops, improving communication by bringing together service providers and service receivers (internal customers and suppliers) in order to effect improvements (p.14).*

Resource allocation is an important area to which the Management Accountant should essentially contribute by providing the relevant information. By radically redesigning the resource allocation process, an organization can minimize the use of limited resources (Horsch, 1995, p.58). Modern organisations are emphasising the relationships among resource
allocation, change management, and strategy formation. These relationships are known as strategic resource management. The Management Accountant can extend his services to use scarce resources efficiently and effectively and be an active strategic resource manager in the organisation.

The Management Accountant can not only provide information on how to eliminate extraneous work, reduce delays in performing activities, allocate scarce resources, and minimise the number of people involved in processes but also actively participate in all the phases of a reengineering effort.

3.5.2.1 STATEMENT OF RESEARCH HYPOTHESES

The hypotheses of this research are based on determining the importance of the Management Accountant in the success of the BPR project. These hypotheses propose that the active involvement of the Management Accountant in all the phases of the reengineering project has significant impact on its success. They also take into account the importance of the Management Accountant’s knowledge of the underlying cost structures of the BPR project.

On the basis of the discussion of the Management Accountant’s role in reengineering, the first hypothesis is proposed.
HYPOTHESIS 1:

The greater the involvement of the Management Accountant in the reengineering project, the more likely the reengineering project will succeed.

3.5.2.2 THE MANAGEMENT ACCOUNTANT’S ROLE IN DIFFERENT PHASES OF THE REENGINEERING PROJECT

As discussed in Section 3.3 (Figure 3.1), there are three phases - Discovery, Design, and Implementation, in the proposed reengineering model. The objective of this section is to review the role of the Management Accountant in these phases. The different phases of the BPR project along with key involvement areas of the Management Accountant are described below.

3.5.2.2.1 DISCOVERY

In this phase, the company recognises the need for change. Executives identify customer requirements, develop expected outcomes and create specific goals and assess feasibility that help the organisation recognise the gap between what is and what should be. The key is to focus on what customers want and to define the company’s competitive advantages (Angus et al., 1996, p.29).
Customer satisfaction is of paramount importance to the reengineering project and so also is effective and efficient performance by the company's people. The outcomes and specific goals can be developed on the basis of benchmarking, activity based costing/management, and gap analysis. The feasibility studies can be done based on past performance, benchmarking, value chain analysis, and various cost management studies.

As a leading manager of the organisation, the Management Accountant can help every one understand what resources have been consumed, what outputs were produced and revenues generated by each activity and process in the past, enabling better decision making towards discovering the existing conditions of business performances and hence discovering current problems which are susceptible to reengineering. The Management Accountant can help identify the value-adding business processes, which are the building blocks of any reengineering project. In BPR, all activities are directed at value generation through making fundamental changes in business processes. The Management Accountant can participate "in resource-related direction setting for an organization, for example, strategy formation, project appraisal, business planning, budgeting, and operational decision making (Birkett, 1995, p.45)."

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3.5.2.2.2 DESIGN

This phase of the reengineering project consists of establishing a reengineering team, identifying processes and resources, analysing tools and techniques which can be used in the reengineering attempt and developing unique strategies. As an information provider within the organisation, the Management Accountant facilitates this process by providing information in relation to alternative uses of resources. Birkett (1995) identifies the role of the Management Accountant in the Design phase as follows:

Participate in organizational change and design processes, for example, implementing process reengineering and continuous improvement initiatives, benchmarking and monitoring change processes and outcomes, establishing gain sharing/reward systems, restructuring, and the like (p.45).

3.5.2.2.3 IMPLEMENTATION

This phase consists of developing and communicating plans, implementing and measuring the reengineering effort, and continuous improvement. Using various techniques such as activity-based costing (ABC), priority-based budgeting (PBB), activity-based budgeting (ABB), executive information systems (EIS), and benchmarking, the Management Accountant can improve decision making by providing information about what resources are consumed
and what outputs are produced by each process within the organisation. Ownership of information empowers the workforce to learn and make changes that continuously improve activities and processes by removing constraints (May, 1995, p.14).

As an information producer within the organisation, the Management Accountant facilitates the reengineering process, helping not only in the assessment of ideas for improvement but also "sensing and monitoring of activity/process budgets, performance measures and best practice targets, non-financial as well as financial, qualitative as well as quantitative, short-term as well as long-term in line with overall organizational objectives (May, 1995, p.14)."

From the above discussion of the Management Accountant’s role in different phases of the reengineering project, the following hypothesis can be developed for empirical testing.

**HYPOTHESIS 2:**

*The greater the involvement of the Management Accountant in the following phases of the reengineering project:*

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A. Identifying (Discovering) processes needing improvement;
B. Designing the new processes; and
C. Implementing the reengineered processes,

the more likely the reengineering project will succeed.

3.5.3 BPR AND THE MANAGEMENT ACCOUNTANT’S KNOWLEDGE OF UNDERLYING COST STRUCTURES

As already noted above, the role of the Management Accountant is very important for the success of a BPR project. The reason behind this importance is that the Management Accountant can provide all the necessary cost-benefit information of the processes of a BPR project in a summarised form to make the decision making process effective. The Management Accountant’s knowledge of the underlying cost structures is of profound importance for the success of a BPR project. This can be easily understood by the following discussion of the BPR failures (see also Section 3.5.2).

Restructuring seems to be an unavoidable and inevitable part of doing business today (Marshall & Yorks, 1994, p.81). It has been the hot topic in almost every major consulting or accounting firm. Too often, companies
develop good systematic methods for their reengineering projects. However, the end results have not always been very successful. Shays (1994) points out:

Yet both consultants and clients report too many BPR programs fail. Some programs may fail outright and be aborted. Most fail to achieve the benefits, expected, or find that achieving them was a greater struggle than it should have been, resulting in excess costs and expended energies (p.43).

The high failure rate of reengineering projects is a cause for concern, yet, reengineering does not deserve discarding simply because of its high failure rate. Reengineering is a valuable change management tool and many companies are involved with some kind of business process reengineering. Many organizations conduct business process reengineering because the ability to change an organization successfully and dramatically may become the key indicator of success in the coming decades, and reengineering is all about change (Boyle, 1995, p.24).

Knowing why BPR projects fail can help the companies design and implement successful change to their operations. Literature on reengineering reveals a number of reasons for reengineering failure. Boyle (1995) identifies several obstacles to the success of BPR as follows:
Survey respondents further recognized several conditions as serious obstacles to the success of business process reengineering, thus, leading to less than satisfactory results. Chief among the obstacles cited were organizational resistance to change, inadequate executive sponsorship, unrealistic expectations, and inadequate project management (p. 25) [emphasis added].

It is obvious that the people in the organisation and their actions are directly responsible for the failure or success of reengineering. Thus, much attention should be paid to the people factor in designing and implementing a reengineering project in any organisation.

As discussed earlier, the three Cs, Customers, Competition, and Change have been the guiding forces of the modern business world. Most organisations have experienced many fundamental and structural changes in recent years as a result of the adaptive measures to these forces. Customers and competition are the center of all business activities. The ability to satisfy customers while facing the competition successfully promises to reduce costs and increase market share. However, “the purpose of the process being re-engineered is a business purpose, not to decrease costs or increase customer satisfaction (Shays, 1994, p.45).” Cost reduction and customer satisfaction may be the goals of a BPR project. One could decrease costs by shutting down the business, but that wouldn’t achieve the business purpose (Shays, 1994, p.45).
Therefore, the overall objective of reengineering should be improving organisational efficiency and effectiveness through the effective use of scarce resources and not mere cost reduction.

One of the major ingredients of being competitive is to lower the costs of production and service delivery (Ahmed, 1995, p.261). Costs have become a critical factor to an organisation's survival. Cost is a vital factor for the success of any BPR project. Cost reduction has been a major outcome of many reengineering projects. To satisfy customers and face the competition successfully, reduced costs of production and service delivery is very important. BPR is concerned with business processes, not organisational functions. Therefore, for any BPR project the knowledge of the actual costs underlying business processes is of paramount importance for its success.

As the chief information provider to the BPR project, the Management Accountant should have a thorough knowledge of the underlying cost drivers (causes) and the related cost structures. This understanding is essential in every phase of the reengineering project - discovering processes needing improvement, designing the reengineered processes, and implementing the reengineered processes. Gaining a thorough understanding of the underlying
cost structures of the processes being reengineered is inevitable and failure to do so will be a major reason for BPR failure. Cost management is crucial for the success of any BPR project and so is the knowledge of the cost structures of business processes. The role of the Management Accountant being the "information gate-keeper is no longer valid (Corrigan 1996, p.29)."

Management Accountants must design and implement a cost management system for the entire life cycle of the reengineering project. This is the major task of the Management Accountant in the BPR project. To fulfill this task, the Management Accountant must set cost goals, and control them. However, often in the reengineering companies "the cost goals are not achieved due to lack of proper planning and control of management tasks at different stages of the life-cycle (Ahmed, 1995, p.261)." It is important that cost goals are achieved through proper planning, and execution of management activities (Ahmed, 1995, p.262). Various cost management systems such as activity-based cost management, treatment protocols, and target costing exist that attempt to analyse different cost factors analytically. For the BPR project, the Management Accountant can develop a framework based on activity-based cost management because of the promising features of that cost management model. One major reason for recommending activity-based cost (ABC) model
is simply that both BPR and ABC are primarily concerned with business processes and not organisational functions.

On the basis of the discussion of BPR and the Management Accountant’s knowledge of underlying cost structures, the final hypothesis is proposed.

**HYPOTHESIS 3:**

The Management Accountant’s knowledge of underlying cost structures of the processes being reengineered is important in reducing the risk of BPR failure.

### 3.5.4 A COST MODEL FOR THE BPR PROJECT

Figure 3.8 provides an outline of a framework that a Management Accountant can use in developing a cost model for a reengineering project. As shown in Figure 3.8, the cost collection process can be divided into three phases: Discovery, Design, and Implementation.

The basic idea of the above cost planning framework is from A-B-C Analysis, which identifies and distinguishes between the “vital few” and “trivial many” cost items. The Management Accountant can develop a cost model for the
Figure 3.8
A Cost Planning Framework for Reengineering

Source: Adapted from Ahmed (1995, p.262).
reengineering project using the basics of the A-B-C model. That is, first, for the entire reengineering project all the activities and business processes must be analysed and the underlying cost drivers identified. Second, the value-adding and non-value-adding activities should be recognised. Finally, measures should be taken to eliminate non-value adding activities.

In developing a cost model, the Management Accountant can use both the Activity-Based Costing model (ABC) and the A-B-C Analysis in combination because these instruments have valuable components which are useful in cost planning and control. In the initial effort to develop an ABC model, the analyst must develop a structure for the model and identify available data sources (Kaplan, 1992, p.58). In doing so, the Management Accountant can combine the A-B-C Analysis of Cost Break Down Structure Model presented in Figure 3.9 with the Two-dimensional Activity-Based Costing Model (Figure 3.7). This will enhance the validity of underlying cost information of the BPR project. The various phases of the A-B-C model are described in the following sections.

3.5.4.1 DISCOVERY PHASE

This phase consists of establishing cost goals, developing a cost data base, estimating cost targets, and discovering critical success factors. These steps
are explained below.

3.5.4.1.1 ESTABLISHING COST GOALS

Cost goals are determined in this phase. It consists of the target minimum for various categories of costs throughout the life cycle of the reengineering project. The important vehicle for establishing cost goals is the cost breakdown structure (CBS) (Blanchard, 1978, p.20).

3.5.4.1.1.1 COST BREAK-DOWN STRUCTURE

Developing a cost break-down structure is very important to plan and control the total cost of the reengineering project. The idea is to breakdown the total cost into hierarchical cost categories. According to Ahmed (1995), a cost break-down structure should satisfy three major requirements:

1. identify major items or significant activities and be well defined having the same meaning throughout the entire organization
2. be designed in such a manner that it is possible to identify the impact of cost change in a particular area without affecting the other areas.
3. be compatible with the data requirements for management cost reporting and control (p.264).
3.5.4.1.1.2 A-B-C ANALYSIS OF COST BREAK-DOWN STRUCTURE

A-B-C analysis is a technique frequently used in the quality control and operational management fields. It is derived from a simple but very important concept called the "pareto" principle (Ahmed, 1995, p.264). This analysis says that a manager responsible for costs should identify and distinguish between the "vital few" and the "trivial many" cost items. Ahmed (1995) explains the A-B-C items as follows:

The "A" items are those that are few in number but critical, in the sense that they constitute a significant portion of the costs. "B" items number more than "A" items and are moderately critical. "C" items may number in the hundreds but together constitute a minor portion of the total cost (p.264).

In any reengineering effort, the Management Accountant can use the A-B-C analysis to identify the underlying cost structures of the project. Figure 3.9 shows a hypothetical cost break-down structure (CBS) for a BPR project. In figure 3.9 "A" items are marked with "***", "B" items are marked with "**" while "C" items are not marked.
Figure 3.9

A-B-C Analysis of Cost Break-down Structure (CBS)

3.5.4.1.2 DEVELOPING A COST DATA BASE AND ESTIMATING COST TARGETS

It is important to develop a cost database estimating cost targets of the processes being reengineered for cost planning and control purposes. The cost break-down structure is an important device for the design of a cost information system relating to the BPR project. The cost data base should be designed in a way that will ensure that the cost information system provides relevant summary information to top management, provides routine reports to departmental managers, and continuously monitors critical cost components and provides exception reports of the BPR project. Cost targets are the actual values of the cost components in the cost framework. CBS is very useful in establishing cost targets. Developing cost targets consists of the following steps:

1. Within each cost category in the cost break-down structure, establish the cost element time matrix. This is the projection of cost for each cost element over the life-cycle.
2. For each cost category estimate relevant factors for such variables as inflation, effects of learning curves, discount rate etc., and adjust the cost projection accordingly.
3.5.4.1.3 DISCOVERING CRITICAL SUCCESS FACTORS

Understanding the Critical Success Factors (CSF) is critical in the design and implementation of any BPR project. This should be achieved at each management level under the leadership of the Management Accountant. CSF for different levels of management should emphasise different aspects of the cost structure. CSF for top management should emphasise policies and guidelines, for middle management should transform policies into strategies while at the operational level, strategies should be transformed into specific actions. For each phase of the BPR project the specification of CSFs in terms of policies, strategies, and operational guidelines is vital for the success of the second phase of the cost designing framework - Design phase. Table 3.1 provides a profile of CSFs.

3.5.4.2 DESIGN PHASE

The major task in this phase is the designing of the cost system. It involves the designing of the actual cost system according to the guidelines specified under the Discovery phase. The actual involvement of all individual managers affected by the BPR project is of profound importance to the successful implementation of the designed cost system.
### Table 3.1
Examples of Mapping of Critical Success Factors at Policy, Strategic and Operational Levels

<table>
<thead>
<tr>
<th>Phase/Level</th>
<th>Policy</th>
<th>Strategic</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition</strong></td>
<td>1.0 Acquisition cost variation should be less than 1%</td>
<td>1.1 Construction cost variance should be less than 1%</td>
<td>1.1.1 Monitor vendor purchase cost weekly</td>
</tr>
<tr>
<td></td>
<td>1.2 No construction delay should be allowed</td>
<td>1.1.2 Monitor construction cost weekly</td>
<td>1.1.3 Report exception and take immediate action</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.1 Compare progress with schedule weekly</td>
<td>1.2.2 Project future monthly schedule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3 Report exceptions and anticipated actions</td>
<td>1.2.3 Report exceptions and anticipated actions</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>2.0 First two year cost should be within budget</td>
<td>2.1 Monthly cost variance should be less than 2%</td>
<td>2.1.1 Monitor departmental cost weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 No quarterly cost overrun in “A” items</td>
<td>2.1.2 Project cost on a monthly and quarterly basis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.1.3 Report exceptions, anticipated exceptions and actions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.2.1 Review cost of “A” items weekly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.2.2 Project cost of “A” items on a monthly and quarterly basis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.2.3 Report exceptions and actions</td>
</tr>
</tbody>
</table>

3.5.4.3 IMPLEMENTATION PHASE

The major management tasks in this phase are modifying the cost system and monitoring and controlling costs. Most of the costs relating to the BPR project are incurred during the actual implementation of it. It is very important that effective planning and control efforts are aimed at attaining the cost goals during the implementation phase.

3.5.4.3.1 MODIFYING THE COST SYSTEM

During the Implementation phase, modification of the cost goals and targets, critical success factors, and the cost database as the system suggests should be done. The modification process should be preceded by an examination of the information about major cost items ("A” and “B”) routinely.

3.5.4.3.2 COST MONITORING AND CONTROL

The continuous monitoring and control is essential to ensure that the different activities progress according to the scheduled plan of action (Ahmed, 1995, p.267). To achieve this, the Management Accountant must be actively involved in establishing proper monitoring and control procedures such as timely report generation, tracking of critical success factors, and developing incentive systems. Developing and maintaining a cost information system is
very complex. Thus, the Management Accountant should be able to incorporate the most effective and efficient cost management systems in the BPR project.

3.6 SUMMARY

This chapter developed a model of reengineering which can be used to empirically evaluate the role of the Management Accountant in BPR. It discussed the individual phases and stages of the reengineering model. In the second part of the chapter, different approaches to cost management were briefly discussed and research on the inadequacy of traditional cost management techniques was reviewed. The Activity-Based-Costing model was reviewed as an acceptable alternative to the traditional cost management models. This discussion and review forms the basis for a broader model of cost control in the BPR project that will lead to the selection of a strategy construct by the Management Accountant. In the last part of the chapter, the role of the Management Accountant in BPR and the importance of the Management Accountant’s understanding of the underlying cost structures were discussed. On the basis of the above information, the chapter developed three research hypotheses. The discussion also forms the basis for the review of a broader model of cost structures which can be used in developing a strategically powerful cost management information system. In Chapter Four, the methodology used to empirically test the role of the Management Accountant in the BPR project is discussed.
4.1 INTRODUCTION

This research focusses on the role of the Management Accountant in Business Process Reengineering (BPR) in the private sector. The extent of knowledge about the topic gained through the review of literature was a crucial consideration in planning the research design of this study. *Business Process Reengineering is defined as the rapid and substantial redesign of important existing business processes.* The association of business process reengineering with cost management systems was studied in order to understand the context in which the role of the Management Accountant is most likely to operate.

Different cost management systems may be appropriate for the achievement of different types of performance improvements through business process reengineering. For the current study, the relationship between Activity-Based Costing and Business Process Reengineering was considered from the point of view that (a) the criterion of effectiveness employed by Management
Accountants in judging their companies is *cost* effectiveness, and (b) the type of improved performance Management Accountants perceive their companies to have is improved *business processes* through reengineered operations.

The purpose of this chapter is to outline the research methodology. The research methodology is presented in three sections. The first section introduces the survey instrument used for empirically testing the research hypotheses developed in Chapter Three. This is followed by a discussion in section two of the sample selection and data collection procedures. The third section describes the nature of the selected sample of the companies.

4.2 INSTRUMENT

Although there are many factors affecting the role of the Management Accountant in BPR, only three major factors are covered in this survey: the involvement of the Management Accountant in the reengineering project; the particular involvement of the Management Accountant in the particular phases of the reengineering project; and the importance of the Management Accountant’s knowledge of underlying cost structures. A survey instrument was constructed to collect data regarding the role of the Management Accountant in BPR. This section describes the instrument designed to measure the hypotheses developed. In the development of the instrument, the following aspects were considered and incorporated to improve the response.
rate. The ideas were generated from Dillman's (1978) writings on designing mail surveys.

(1) Develop the instrument in a way that leads the participants from a simple beginning to progressively more difficult positions.

(2) Carefully design the first question, which will set the respondent's mood for the remainder of the responses which may in fact decide whether the survey is to be ultimately completed and returned.

(3) Provide the participants with simple directions on how to answer the questions.

(4) Use multiple columns where appropriate to conserve space and present a more professional appearance to the participant.

(5) Insure the participant that his or her confidentiality will be maintained.

(6) Provide a cover letter which explains the purpose of the survey, stressing its usefulness and offering to provide a copy of the survey on request.

The following description of the instrument is based on the questionnaire, exhibited in Appendix One. The questionnaire is divided into three sections.
Section I includes four questions used to identify individual company's reengineering projects according to the types of reengineering projects, their current status, and the involvement of the Management Accountant in them. Section II consists of three questions designed to evaluate the Management Accountant's opinion of the involvement of the Management Accountant in the BPR project and the success of BPR. It also evaluates the importance of the Management Accountant's knowledge of the underlying cost structures of the processes being reengineered. Section III consists of an open question in which the respondent can express his/her views of the role of the Management Accountant in Business Process Reengineering. Section III also offered a copy of the summary results of the survey. To improve the attention of the respondents, the questionnaire was printed on light blue paper. The anonymity of respondents was guaranteed.

The questionnaire was confined to eight survey questions in order to attract the respondents' attention and increase the response rate. The two-page-eight-question questionnaire was sent to relevant Management Accountants of the selected companies. The questionnaire was highly-structured to force respondents into a limited list of answers. It was revised more than ten times to improve its standard. The questionnaires were numbered to provide unique identifiers for later retrieval.
The research design of this thesis can be described as formal, based on well-developed hypotheses resulting from reviews of relevant literature on management accounting. The survey instrument reflects this research. Unique aspects of this research and research design include the integration of the research into a single model of Business Process Reengineering.

4.3 SAMPLE SELECTION AND DATA COLLECTION

The data source for this study was a field survey of Management Accountants employed by 60 private-sector companies in Australia which had undergone some form of reengineering. These individuals were considered ideal participants for this study because they are expected to have a concern and an interest in internal information supply, specialisation in financial affairs, and impact on organisational efficiency and effectiveness. The 60 companies across Australia incorporated a wide variety of strategic situations. These companies were selected from the Company Annual Reports, Australian Business Review, and the Australian Business Information Data Bases of the University of Wollogong. In selecting these reengineered companies, the "search words" tool was used with the words "reengineering," "restructuring", and reorganising".

In addition to Management Accountants, those with the titles of Financial Director, Financial Manager, Financial Controller, Head of Finance, Chief
Financial Officer, were selected because they are expected to expose themselves to internal information supply and strategic considerations. In addition, this assured a relatively uniform set of personal characteristics among the respondents, since people holding these titles in the private-sector typically have an undergraduate accounting or business degree. Further, the population was limited to companies in Australia to reduce any variation caused by differences in cultural strategies. Of course, factors such as industry, geographical location, etc. may introduce variations in the results.

The data were collected through a mail-back survey. In total questionnaires were mailed to 60 respondents. The 60 members represented 31 different industries (see Section 4.4. & Table 4.1). A packet was prepared for every questionnaire. Each packet contained an explanatory cover letter, the questionnaire, and a self-addressed, post-paid return envelope. The response rate was perhaps increased by personalising and typing the outside envelope, inside address, salutation, and the self-addressed post-paid return envelope. The addresses were extracted from the 1995 Company Annual Reports. The respondents' names were extracted from telephone conversations with the receptionists of the selected companies. The mail survey data collection approach was selected because it allows for access to executives at a time of their choosing and requires a limited amount of their time due to the shortness of the questionnaire.

Chapter Four: Research Methodology
Initially, on September 12, 1996, 36 packets of questionnaires were mailed to individual respondents at their workplace addresses. Four weeks after the initial mailing, on October 9, 1996, a second batch of questionnaires was mailed to 24 respondents at their workplace addresses under the title: Management Accountant, without their real names. This was helpful in comparing the response rate between the two strategies. All questionnaires were delivered to candidate respondents using normal Australia Post.

The cover letter briefly explained the research project, and guaranteed that confidentiality of both the company and the individual would be strictly maintained. It was typed on University of Wollongong letterhead. It was prepared using a laser printer. Each of the 60 letters was individually prepared and printed. An attempt was made to convey the importance and necessity of attaining a high response rate. The cover letter indicated who should complete the questionnaire and promised confidentiality. A copy of the cover letter appears in Appendix Two.

To further increase the response rate, a follow-up mailing was made on November 20, 1996, approximately ten weeks after the initial mailing, to 38 respondents who had not responded. Identification of non-respondents was possible because the first packets were numbered. The follow-up mailing directed the packets to the participants' personal names. The purpose of this
was to ensure that the participants received a packet on the follow-up mailing if not the initial. The follow-up cover letter is shown in Appendix Three. Each survey was returned by self-addressed (care of the supervisors), postage-paid envelope to the Accounting and Finance Department at the University of Wollongong.

4.4 INDUSTRY SECTORS IN THE POPULATION

The 60 companies are distributed across 31 industry categories as Industrial Sectors Classification Code. The distribution is shown in Table 4.1. All these companies operate in Australia and have undergone some form of reengineering during the past seven years.

4.4.1 LIMITATIONS OF SAMPLE SELECTION

The reader of this thesis should be aware of the factors limiting the sample selection of this study. The sample selection procedure was biased by the following factors:

(1) The sample was selected using the University of Wollongong data access methods only. Other possible sources of data were not considered in selecting the sample of the reengineered companies.
(2) The key words “reengineering,” “restructuring”, and reorganising" were used in selecting the sample. This sometimes may not represent the entire population of the reengineered companies.

(3) The time period considered in selecting the sample ranged from 1990 to 1996. This can be considered a limiting factor of the sample selection.

These limitations are further summarised in Section 5.4.2.

4.5 SUMMARY

This chapter described the methodological procedures used to collect data using a sample of Management Accountants in private sector companies as the basis for this study. A survey instrument consisting of a number of questions was developed to examine the role of the Management Accountant in BPR. Sixty Management Accountants in 60 companies were selected as the respondents of the survey. The chapter discussed the initial cover letter and the follow-up cover letter. The sample of the reengineered companies was divided into several categories according to their nature of business activities. The next chapter discusses the research results and presents the analysis of the data collected as well as the limitations and the conclusions of the research.
Table 4.1

Sample Companies Classified by Industry Sectors

<table>
<thead>
<tr>
<th>Industry</th>
<th>Cases</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Industry</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Aluminium</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Printing / Packaging</td>
<td>4</td>
<td>6.67</td>
</tr>
<tr>
<td>Copper</td>
<td>1</td>
<td>1.66</td>
</tr>
<tr>
<td>Communications</td>
<td>1</td>
<td>1.66</td>
</tr>
<tr>
<td>Uranium</td>
<td>1</td>
<td>1.66</td>
</tr>
<tr>
<td>Insurance</td>
<td>4</td>
<td>6.67</td>
</tr>
<tr>
<td>Building Products/Services</td>
<td>3</td>
<td>5.00</td>
</tr>
<tr>
<td>Pharmaceutical/ Medical Optical Supplies</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Publishing</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Mining</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Banking &amp; Finance</td>
<td>7</td>
<td>11.66</td>
</tr>
<tr>
<td>Investment</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Diversified Industrial</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Heavy Engineering</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Aerospace</td>
<td>1</td>
<td>1.66</td>
</tr>
<tr>
<td>Film Industry</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Wholesale</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Distribution/Manufacturing</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Airlines</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Automotive</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Brewing</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Construction/Building Materials</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>High Technology</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Clothing</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Services</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Cable &amp; Wire Products</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Smelting</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Computers</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Transport</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Gas Supplies</td>
<td>3</td>
<td>5.00</td>
</tr>
<tr>
<td>Metal &amp; Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.00</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

RESEARCH RESULTS AND CONCLUSIONS OF THE STUDY

The Results indicate that an effective Management Accountant in BPR is important for its success.

5.1 INTRODUCTION

This chapter concludes the study. First, a profile of the returned questionnaires is presented in which responses to the initial and follow-up mailings are analysed and compared for similarity. Then, the results of the survey of the perceived role of the Management Accountant in BPR are discussed in the second section. This is followed by a discussion of the testing of the research hypotheses. Then, the limitations of the study and the conclusions reached follow. Comments are also made regarding factors in this study which enhance the external validity of the research results. Also discussed are suggestions for future research in the area of Business Process Reengineering.
5.2 PROFILE OF THE RETURNED QUESTIONNAIRES

The results of the empirical survey are described in this section which is divided into several sub-sections.

5.2.1 INITIAL RESPONSES

Ten usable responses (27.77%) were received by November 20, 1996 from the first set of survey instruments mailed on September 12, 1996, to 36 respondents.

In total, fourteen responses were received from the first mailing of which 10 were willing to participate in the survey and 4 asked to be excluded from the survey. Of those asking to be excluded from the survey, all stated a reason, such as the company was in the process of being acquired, or being liquidated, or company policy did not allow them to participate in the survey, or the respondent was no longer at that address. Of the ten respondents participated in the survey, 6 requested a copy of the summary results of the survey.

Six usable responses (25%) were received by November 20, 1996 from the second set of survey instruments mailed on October 9, 1996, to 24 respondents.
In total, eight responses were received from the second set of mailing of which 6 were willing to participate in the survey and 2 asked to be excluded from the survey. Of the two asking to be excluded from the survey, one stated that his company had not undertaken any BPR project at the head office and the other declined to state a reason. Of the six respondents participating in the survey, 2 requested a copy of the summary results of the survey. In this initial mailing, in total, 16 usable responses were received. As can be seen from Table 5.1, there is no discernible difference between the response rate of the first set of initial mailing and that of the second set although in the second set of the initial mailing, the respondents' real names were not used in the outside envelope. The above information is summarised in Table 5.1.

Table 5.1

Summary of Questionnaires Mailed and Returned

<table>
<thead>
<tr>
<th>Packets Mailed by Type</th>
<th>Mailed Assumed</th>
<th>Delivery Assumed</th>
<th>Total Responses</th>
<th>Usable Responses</th>
<th>Rate of Usable Responses</th>
<th>Declined</th>
<th>Willing to Receive Summary Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Set</td>
<td>36</td>
<td>36</td>
<td>14</td>
<td>10</td>
<td>27.77%</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2nd Set</td>
<td>24</td>
<td>24</td>
<td>8</td>
<td>6</td>
<td>25.00%</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Set</td>
<td>22</td>
<td>22</td>
<td>5</td>
<td>3</td>
<td>13.64%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2nd Set</td>
<td>16</td>
<td>15</td>
<td>5</td>
<td>5</td>
<td>31.25%</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter Five: Research Results and Conclusions of the Study
5.2.2 FOLLOW-UP RESPONSES

Follow-up requests were mailed on November 20, 1996 to 38 respondents who had not responded to the initial mailing. Of the 38 respondents, 22 were included in the first set of mailing and 16 were included in the second set of mailing. In this request, 8 usable (21.05%) responses were received.

Of the 22 1st set of respondents, in total 5 responses were received by December 20, 1996. Of the total of 5 respondents 3 (13.64%) were willing to participate in the survey, 2 asked to be excluded from the survey. Of those asking to be excluded from the survey, all stated a reason, such as the company was in the process of being acquired, or the respondent was no longer at that address. Of the 3 respondents participating in the survey, one requested a copy of the summary results of the survey.

A total of 5 responses was received from the 16 2nd set of respondents by December 20, 1996. All these 5 respondents were ready to participate in the survey. Thus, the usable rate of this set of the follow-up mailing responses was 31.25%. Of the 5 respondents participated in the survey, all requested a copy of the summary results of the survey.
The above information is also summarised in Table 5.1. As can be seen from the data in Table 5.1, there is a gap between the number of packets mailed and delivery assumed. This is due to the return of a packet because of the participant Management Accountant’s departure from the company.

The overall rate of usable responses of the initial mailing was \( \frac{16}{60} = 26.67\% \). The overall rate of usable responses of the follow-up mailing was \( \frac{8}{38} = 21.05\% \). The final result was 24 usable responses (40\%). The response rates for each of the two mailings broken down by mailing type and in aggregate are presented in Table 5.2.

<table>
<thead>
<tr>
<th>Packets Mailed by Type</th>
<th>Initial Mailing</th>
<th>Usable Responses from Initial Mailing</th>
<th>Follow-up Mailing</th>
<th>Usable Responses from Follow-up Mailing</th>
<th>Total Usable Responses Mailing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Set</td>
<td>36</td>
<td>10</td>
<td>22</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>2nd Set</td>
<td>24</td>
<td>6</td>
<td>16</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>60</td>
<td>16</td>
<td>38</td>
<td>8</td>
<td>24</td>
</tr>
</tbody>
</table>

Usable rate of responses of initial mailing = \( \frac{16}{60} = 26.67\% \)
Usable rate of responses of follow-up mailing = \( \frac{8}{38} = 21.05\% \)
Overall Usable Response Rate of the Survey = \( \frac{24}{60} = 40\% \)

Ideally, a statistical comparison should be made between the responses from the two mailings for check for any non-response bias. However, traditional
statistical tests were not made between the initial and follow-up mailings because of the limited sample size of the survey and no knowledge of the distribution of the population.

5.3 DATA PROCESSING METHODS AND RESULTS

In this section, the results of the empirical survey are summarised. The section is divided into eight sub-sections, one for each question of the survey instrument. As the data were received from the returned questionnaires, they were summarised in tables which would aid in understanding the analysis of survey results.

5.3.1 QUESTION 1

The first question concerns the nature of the systems which have been reengineered in the selected companies. The participating Management Accountants were instructed to describe the current status of the reengineered systems. Many companies had more than one system reengineered. The majority of the systems were in progress with respect to the reengineering project. Some were already completed. Several systems were in the introductory stage and one BPR project had been abandoned. The resulting data are presented in Table 5.3.
Table 5.3

Reengineered Systems & Their Current Status

<table>
<thead>
<tr>
<th></th>
<th>Introductory</th>
<th>In Progress</th>
<th>Completion</th>
<th>Discontinued</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Financial</td>
<td>3</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Production</td>
<td>1</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>Human Resource Management</td>
<td>1</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>Marketing</td>
<td>-</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>Research &amp; Development</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>Other (Purchasing) (Sales &amp; Services) (Policies &amp; Procedures)</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5</td>
<td>51</td>
<td>16</td>
</tr>
</tbody>
</table>

5.3.2 QUESTION 2

The second question deals with the types of reengineering projects undertaken for each system reengineered. The types of reengineering projects considered in this study are:

1. Restructuring (e.g., redesigning systems, policies, and organisational structures)
2. Downsizing (e.g., reducing the magnitude of operations)
3. Outsourcing (e.g., seeking outside parties to provide services traditionally provided by in-house expertise)

This division of the types of reengineering projects is in contrast with the discussion of the myths and misconceptions of reengineering (Section 2.3.4). It was noted then that the terms "restructuring", "downsizing", and
"outsourcing" represented different techniques and were not components of Business Process Reengineering. However, in practice, these techniques are considered different types of reengineering projects. This is indicated by the responses given by the participant Management Accountants. They had clearly identified this division of reengineering projects.

The resulting data are shown in Table 5.4. The great majority of the reengineered systems were restructuring projects. Downsizing and outsourcing projects were the second and third in popularity respectively.

Table 5.4

<table>
<thead>
<tr>
<th>Reengineered Systems</th>
<th>Restructuring</th>
<th>Downsizing</th>
<th>Outsourcing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Financial</td>
<td>19</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>B Production</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>C Human Resource Management</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>D Marketing</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>E Research &amp; Development</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F Other (Purchasing)</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>17</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

5.3.3 QUESTION 3

The third question explores whether the respondents were involved in the phases of the above mentioned reengineering projects. The phases of reengineering projects are:
A. Identifying (Discovering) processes needing improvement;

B. Designing the new processes; and

C. Implementing the reengineered processes.

According to the received responses, the Management Accountant has been involved in the above phases of the majority of the reengineered systems. The results are exhibited in Table 5.5.

Table 5.5

<table>
<thead>
<tr>
<th>Phase of the Reengineering Project</th>
<th>Possible Involvement</th>
<th>Actual Involvement</th>
<th>% of Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Identifying (Discovering) processes needing improvement</td>
<td>24</td>
<td>19</td>
<td>79.17%</td>
</tr>
<tr>
<td>B. Designing the new processes</td>
<td>24</td>
<td>17</td>
<td>70.83%</td>
</tr>
<tr>
<td>C. Implementing the reengineered processes</td>
<td>24</td>
<td>16</td>
<td>66.67%</td>
</tr>
</tbody>
</table>

5.3.4 QUESTION 4

This question deals with the respondents' opinion of how important it was to have Management Accountants involved in the reengineering project. The responses are recorded in Table 5.6.
Table 5.6

Importance of Having Management Accountants Involved in the Reengineering Project

<table>
<thead>
<tr>
<th>Level of Importance</th>
<th>No. of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1   Not Important At All</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2   Not very Important</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3   Of Some Importance</td>
<td>6</td>
<td>25.00%</td>
</tr>
<tr>
<td>4   Very Important</td>
<td>14</td>
<td>58.33%</td>
</tr>
<tr>
<td>5   Essential</td>
<td>3</td>
<td>12.50%</td>
</tr>
<tr>
<td>6   Did not Respond</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

5.3.5 QUESTION 5

The fifth question deals with the relationship between the involvement of the Management Accountant in the reengineering project and its success. The respondents' opinions are presented in Table 5.7.

Table 5.7

A Reengineering Project Without the Involvement of Management Accountants Has a Greater Chance of Failing

<table>
<thead>
<tr>
<th>Level of Agreement</th>
<th>No. of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1   Strongly Disagree</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2   Disagree</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>3   Undecided</td>
<td>2</td>
<td>8.33%</td>
</tr>
<tr>
<td>4   Agree</td>
<td>15</td>
<td>62.5%</td>
</tr>
<tr>
<td>5   Strongly Agree</td>
<td>5</td>
<td>20.83%</td>
</tr>
<tr>
<td>6   Did not Respond</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
5.3.6 QUESTION 6

This question explores whether Management Accountants should be actively involved in the phases of the reengineering project. The resulting data are shown in Table 5.8.

<table>
<thead>
<tr>
<th>Phase of the Reengineering Project</th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
<th>Did not Respond</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Identifying (Discovering) processes needing improvement</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>15</td>
<td>6</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>B. Designing the new processes</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>11</td>
<td>7</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>C. Implementing the reengineered processes</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>24</td>
</tr>
</tbody>
</table>

SD = Strongly Disagree
D = Disagree
U = Undecided
A = Agree
SA = Strongly Agree

5.3.7 QUESTION 7

The seventh question concerns the importance of the Management Accountant's knowledge of actual costs underlying business processes in:
A. Identifying (Discovering) processes needing improvement; and

B. Designing the new processes.

The participants' opinions are recorded in Table 5.9.

Table 5.9
Importance of the Management Accountants' Knowledge of the Actual Costs Underlying Business Processes In:

<table>
<thead>
<tr>
<th>Phase of the Reengineering Project</th>
<th>SD</th>
<th>D</th>
<th>U</th>
<th>A</th>
<th>SA</th>
<th>Did not Respond</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Identifying (Discovering) processes needing improvement</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>9</td>
<td>13</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>B. Designing the reengineered processes</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>24</td>
</tr>
</tbody>
</table>

SD = Strongly Disagree
D   = Disagree
U   = Undecided
A   = Agree
SA  = Strongly Agree

5.3.8 QUESTION 8

This an open question which deals with the role of the Management
Accountant in Business Process Reengineering. The received opinions are as follows:

A. Management Accountants are aware of the needs of management in terms of the final output. They are needed to ensure that the final reporting process after changes is in line with requirements.

B. ...(Company) does not employ a management accountant as the Chief Financial Officer. My background is in management accounting. The main input of myself and my staff was on project evaluation and best implementation review.

C. Management Accountants like any other “users” of underlying processes must form part of the reengineering team of financial processes being analysed.

D. The reengineering process entered into was the redesigning and implementation of a reporting system for both Management and Financial Accounting. The process was driven by the Head Office accounting division with input from the operating business and rolled out to the … Group.
E. A key contribution is developing before and after cost measurement for (1) continuous and (2) post-implementation costs.

F. Measure its success.

Respondents opinion of receiving a copy of the summary results of this survey is as follows:

* Please send me a copy of the summary results of the survey

Yes 14

5.4 ANALYSIS OF RESULTS, CONCLUSIONS, AND IMPLICATIONS

Given the empirical results set forth in Section 5.3, the primary purpose of this section is to analyse the results in terms of the developed hypotheses, and draw conclusions concerning the acceptability of the hypotheses. Also discussed are various limitations of the study and suggestions for future research. The purpose of this study has been to develop a model of the role of the Management Accountant in Business Process Reengineering. The questionnaire was based on the proposed model of the role of the Management Accountant in Business Process Reengineering (Figure 3.1) in order to empirically test the model.
5.4.1 ANALYSIS AND INTERPRETATION OF DATA

The research results were presented in Section 5.3 (Tables 5.3 - 5.9) of this chapter. These results are used to test the three research hypotheses. For the sake of clarity, the hypotheses are restated with the related group of results. The first hypothesis is stated as follows:

Hypothesis 1:

The greater the involvement of the Management Accountant in the reengineering project, the more likely the reengineering project will succeed.

Data in Table 5.10 are used to test Hypothesis 1. According to the results, the hypothesis appears, based on the sample, to have been supported. That is, there is significant association between the involvement of the Management Accountant in the reengineering project and the success of the reengineering project. The majority of the Management Accountants are in agreement (20 respondents, 83.33%) that there is significant association between the involvement of the Management Accountant in the reengineering project and the success of the project. However, this may not be the reality. The survey data represent only the opinions of the respondent Management Accountants.
A significant number of respondents (5 respondents, 20.83%) strongly believe that there is significant association between the involvement of the Management Accountant in the reengineering project and the success of it. These results are in supportive of the first hypothesis. Only one respondent disagrees with the relationship between the involvement of the Management Accountant in the reengineering project and the success of it. None of the respondents strongly disagrees with the relationship between the involvement of Management Accountant in the reengineering project and the success of the project. The results presented in Table 5.10 are consistent with Hypothesis 1. Therefore, it can be concluded that the survey results support Hypothesis 1.

Table 5.10
Analysis of Data Relevant to Hypothesis 1

<table>
<thead>
<tr>
<th>Level of Agreement</th>
<th>No. of Respondents</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>Undecided</td>
<td>2</td>
<td>8.33%</td>
</tr>
<tr>
<td>Agree</td>
<td>15</td>
<td>62.50%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>5</td>
<td>20.83%</td>
</tr>
<tr>
<td>% of Respondents</td>
<td>20</td>
<td>83.33%</td>
</tr>
<tr>
<td>who Agree &amp; Strongly Agree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter Five: Research Results and Conclusions of the Study
The result of the testing of Hypothesis 2 is quite similar to that of Hypothesis 1. The second hypothesis is stated as follows:

**Hypothesis 2:**

The greater the involvement of the Management Accountant in the following phases of the reengineering project:

- A. Identifying (Discovering) processes needing improvement;
- B. Designing the new processes; and
- C. Implementing the reengineered processes,

the more likely the reengineering project will succeed.

The analysed survey data, in Table 5.11, are positive, as expected. These results suggest that the involvement of the Management Accountant in the following phases of the reengineering project:

- A. Identifying (Discovering) processes needing improvement;
- B. Designing the new processes; and
- C. Implementing the reengineered processes,

has significant effect on the success of the reengineering project.
In general, the majority of the respondents are in support of Hypothesis 2. 21 respondents (87.5%) agree or strongly agree with the statement that the involvement of the Management Accountant in identifying (discovering) processes needing improvement is important for the success of the reengineering project. 25% of the respondents (6 respondents) strongly believe that the involvement of the Management Accountant in identifying (discovering) processes needing improvement is important for the success of the reengineering project.

Similarly, 75% (18 respondents) of the respondents are in support of the statement that the involvement of the Management Accountant in designing the reengineered processes is important for the success of the project. 29.17% (7 respondents) of the respondents strongly agree that the involvement of the Management Accountant in designing the reengineered processes is important for the success of the project.

Again, 66.67% (16 respondents) of the respondents are in support of the statement that the involvement of the Management Accountant in implementing the reengineered processes is important for the success of the project. 29.17% (7 respondents) of the respondents strongly agree that the involvement of the Management Accountant in implementing the
reengineered processes is important for the success of the reengineering project.

Likewise, there are 1, 5, and 7 respondents respectively who are unable to decide the importance of the involvement of the Management Accountant in the above mentioned three phases of the reengineering project and the success of the project. None of the respondents disagrees with the relationship between the involvement of Management Accountant in the phases of the reengineering project and the success of the project. Thus, it can be concluded that there is considerable acceptance of Hypothesis 2.

Table 5.11
Analysis of Data Relevant to Hypothesis 2

<table>
<thead>
<tr>
<th>Phase of the Reengineering Project</th>
<th>Number and % of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Identifying (Discovering) processes needing improvement</td>
<td>-</td>
</tr>
<tr>
<td>Designing the reengineered processes</td>
<td>-</td>
</tr>
<tr>
<td>Implementing the reengineered processes</td>
<td>-</td>
</tr>
</tbody>
</table>

(Refer to page 213 for definitions of SD, D, U, A, and SA).

Hypothesis 3:

The third research hypothesis is as follows:
The Management Accountant's knowledge of underlying cost structures of the processes being reengined, is very important in reducing the risk of BPR failure.

As shown in Table 5.12, the results of the testing of this hypothesis are positive. In general, the majority of the respondents are in support of Hypothesis 3. 22 respondents (91.66%) agree with the statement that the Management Accountant's knowledge of underlying cost structures in identifying (discovering) processes needing improvement is important in reducing the risk of BPR failure. Of these, 13 respondents (54.17%) strongly believe that the Management Accountant's knowledge of underlying cost structures in identifying (discovering) processes needing improvement is important in reducing the risk of BPR failure.

Similarly, 17 respondents (70.83%) agree with the statement that the Management Accountant's knowledge of underlying cost structures in designing the reengineered processes is important in reducing the risk of BPR failure. Of these, 10 respondents (41.66%) strongly believe that the Management Accountant's knowledge of underlying cost structures in designing the reengineered processes is important in reducing the risk of BPR failure.
There are 1 and 4 respondents respectively who are unable to decide the importance of the Management Accountant's knowledge of underlying cost structures in identifying (discovering) processes needing improvement and designing the reengineered processes in reducing the risk of BPR failure. Only one respondent disagrees with the relationship between the Management Accountant’s knowledge of underlying cost structures and the risk of BPR failure. *None of the respondents strongly disagrees with the relationship* between the Management Accountant’s knowledge of underlying cost structures and the risk of BPR failure.

**Table 5.12**

*Analysis of Data Relevant to Hypothesis 3*

<table>
<thead>
<tr>
<th>Phase of the Reengineering Project</th>
<th>Number and % of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>D</td>
</tr>
<tr>
<td>----</td>
<td>---</td>
</tr>
<tr>
<td>Identifying (Discovering) processes needing improvement</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Designing the reengineered processes</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Refer to page 213 for definitions of SD, D, U, A, and SA).
In analysing the results of the testing of Hypothesis 3, attention should be paid to those respondents who disagree or are unable to decide the importance of the Management Accountant's knowledge of underlying cost structures in identifying (discovering) processes needing improvement and designing the reengineered processes is reducing the risk of BPR failure. However, because the majority of the respondents are supportive of the hypothesis, it can be concluded that there is some acceptance of Hypothesis 3. The overall results of the testing of the three hypotheses are summarised in Table 5.13.

### Table 5.13

**Summary Results of Testing of Hypotheses**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Association</th>
<th>Level of Acceptance</th>
<th>Level of Support*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The greater the involvement of the Management Accountant in the reengineering project, the more likely the reengineering project will succeed.</td>
<td>83.33%</td>
<td>Supported</td>
</tr>
</tbody>
</table>
| 2          | The greater the involvement of the Management Accountant in the following phases of the reengineering project:  
  A. Identifying (Discovering) processes needing improvement;  
  B. Designing the new processes; and  
  C. Implementing the reengineered processes, the more likely the reengineering project will succeed. | 87.5% | 75.00% | 66.67% | Some Support |
| 3          | The Management Accountant's knowledge of underlying cost structures in:  
  A. Identifying (Discovering) processes needing improvement; and  
  B. Designing the new processes. is important in reducing the risk of BPR failure. | 91.66% | 70.83% | Some Support |

* **Supported:** the evidence is consistent with the hypothesis.  
  **Some Support:** the evidence is consistent with the hypothesis. However, there are respondents who do not fully agree with the statement.

Chapter Five: Research Results and Conclusions of the Study
5.4.2 LIMITATIONS OF THE STUDY

Although this study goes far beyond anecdotal evidence to provide empirical validation of the model developed, it has several limitations. The most important limitations of this research study are as follows:

(1) A simple model was used to explain a real-world situation. The variables included in the model represent only some of the variables found in an organisational setting. This limitation implies that this study is only a partial evaluation of the concepts and theories involved. However, the simplicity of a model has some value as Hinkle and Kuehn (1967) point out:

It may be easily surmised from reading current management literature that model-builders feel compelled to increase the complexity of all models on the assumption that intricacy is positively correlated with usefulness. While this premise is valid for some systems, we believe that it is a mistake to ignore simpler approaches which frequently will serve as well or almost as well. Furthermore, elaborate models are likely to be useful only when they are the result of a long-term program of research and development (p.60).

(2) Another limitation of the study is that the model developed was not applied to a real-world situation. Therefore, culture and other organisational variables, although somewhat included in strategic considerations, were not independently considered within the study. Most of the other reengineering models have been developed and successfully applied
by some large manufacturing companies that were willing to achieve dramatic improvements in their operations and to expend the required resources to implement and develop the reengineering processes. However, such models are not publicly available for managers of small manufacturing companies and educators.

(3) Non-validation of the model in government and not-for-profit organisations. To limit the amount of complexity, the empirical testing of the model was restricted only to the private sector companies. The applicability of this model to government and not-for-profit organisations was not considered. This is a limitation of the study.

(4) The sample chosen to test the model was drawn from the population of Management Accountants in the private sector companies in Australia. This sample was selected to limit the number of extraneous variables within the sample and maintain constant feedback with the participants. However, there are several limitations of this approach:

(a) The external validity of the study is reduced;

(b) The role of the other important participants in BPR projects was neglected;
(c) The impact of personal characteristics of the respondents such as economic and cultural background, relative age, and other personal and work experiences were not considered within the study.

At the same time, the sample selection was biased by a number of factors as explained in Section 4.4.1:

(a) The sample was selected using the University of Wollongong data access methods only. Other possible sources of data were not considered in selecting the sample of the reengineered companies.

(b) The key words "reengineering, "restructuring", and reorganising" were used in selecting the sample. This sometimes may not represent the entire population of the reengineered companies.

(c) The time period considered in selecting the sample ranged from 1990 to 1996. This can be considered a limiting factor of the sample selection.
The selection of Senior Management Accountants may sometimes limit the generalisability of the study. However, attempts were made to select respondents with limited differences in their professional background.

(5) The instrument used to administer the model is a eight-question questionnaire. The content of the questionnaire had to be confined to a few issues to maintain the simplicity of the research. It was also thought, considering the seniority of intended respondents, that a short questionnaire had a greater chance of being completed and returned. Also, by limiting the content of the instrument it was possible to keep the research effort at a manageable size, and allowed a more concentrated effort on investigating the selected areas.

(6) Another limitation is that measures of the variables were exclusively on a self-reporting basis by a presumed decision maker. A structured interview with Management Accountants which ensures that they understand the questions, would significantly increase the quality of the data. It seems a few respondents did not understand what reengineering really meant.
(7) The seventh limitation is that this study was conducted only at the company headquarters. Many companies have a number of subsidiaries and/or branches. At the same time, only one Management Accountant was invited to be participated in the survey. Many companies have more than one Management Accountant. As one respondent pointed out, there were a number of reengineering projects at the subsidiaries unknown to the respondent Management Accountant.

(8) The survey results were not statistically tested, specially due to the limited number of the sample which can be regarded a as great limitation of the research attempt.

(9) Further limitations include the election not to statistically test the research results and non-response bias. If such tests were made, different conclusions might have been made.

(10) The conclusions drawn by this research study are based on the opinions of the Management Accountants participated in the survey. They may or may not represent the reality.
Another limiting factor of the study is the exclusion of the proposed cost model from the empirical survey.

The overall results of this study must be viewed in light of these limitations and its limited scope. Although the ability to generalise is constrained in a number of ways, the study nevertheless provides some empirical evidence about the role of the Management Accountant in Business Process reengineering. Historically, the extent of empirical evidence about the role of the Management Accountant in BPR has been scarce and this research is a step in the direction of filling this void.

5.4.3 CONCLUSIONS

In light of the study’s findings and the limitations of the study, this section provides a brief statement of the major conclusions of this research effort. The observations are necessarily not the only conclusions that may be made from the study. Instead, the section is presented as a wrap up of the entire research effort prior to suggesting implications for future research.

The objective of this research was to develop a model of the Role of the Management Accountant in Business Process Reengineering and ascertain its empirical validation. The model developed in Chapter Three can be considered adequate for the purpose of the research because it covers all the
important aspects of a business process reengineering project. The model consists of three major phases: "Discovery", "Design" and "Implementation". Each phase consists of a number of steps. It was suggested that the model can be further developed by integrating a cost model as a guide to the work of the Management Accountant.

The results reported in Section 5.3 describe the nature of the reengineering projects and the involvement of the Management Accountant in them for a sample of 60 companies. These results must be generalised cautiously. Though the research results appear valid, extrapolating the results of this experiment beyond the actual data can, at best, be done only with great reservation. However, certain aspects of this study do enhance its external validity or representativeness.

First, Management Accountants were not removed from their normal working environment. They were free to analyse the reengineering projects their companies had undertaken.

Second, based on the questionnaires returned, it appears that most of the Management Accountants took the survey seriously and actually engaged in
some type of effectiveness analysis before arriving at decisions about their involvement in the reengineering projects.

Also, data were gathered from sixty different companies rather than one. The greater the number of companies involved in a study of this sort, the more confidence the researcher can have in the conclusions. Presumably, these factors enhanced the representativeness of the data collected.

The survey tested the empirical validation of the model developed. The research tested three hypotheses relating to the role of the Management Accountant in BPR. This section presents the final results of the study. Inspection of the analysis of research results leads to conclusions in three broad areas:

**Area 1**

The greater the involvement of the Management Accountant in the reengineering project, the more likely the reengineering project will succeed.
Area 2

The greater the involvement of the Management Accountant in the following phases of the reengineering project:

A. Identifying (Discovering) processes needing improvement;
B. Designing the new processes; and
C. Implementing the reengineered processes,
the more likely the reengineering project will succeed.

Area 3

The Management Accountant's knowledge of underlying cost structures of the processes being reengineered, is very important in reducing the risk of BPR failure.

Factors limiting this research must be considered when interpreting these conclusions. In light of the findings reported in this research endeavour, the researcher's overriding conclusion is that both educational institutions and accounting firms should continue and perhaps heighten their efforts in the training of Management Accountants in the area of Business Process Reengineering and in research devoted to that area. The next section completes this study with suggestions for future research.
5.4.4 IMPLICATIONS FOR FUTURE RESEARCH

The study represents an entry into a relatively new field of research. The effort reported in this study merely scratches the surface of the role of the Management Accountant in BPR. This particular study could be expanded in a variety of ways to resolve and understand many issues relating to the study. Among more significant research avenues identified are:

- a possible extension of the present research is to statistically estimate the significance of the research results. Such a replication could indicate the extent to which the measurement error associated with the role of the Management Accountant in BPR estimation procedure impacted the present results;
- another possibility is to do an empirical survey of the BPR model in government and not-for-profit organisations;
- once judgment models such as the one developed in this survey report have been created, it is possible to investigate a model by applying it to a real-world situation;
- development of a measurement tool for determining the effectiveness of the model after several years of application in a BPR project;
test the effect of intensive training for managers (including Management Accountants) in a single BPR project and the application of the model;

do a field study of one or two reengineered companies to test the appropriateness of the techniques of BPR;

consider individual differences of the underlying cost structures and the BPR projects as components of the research;

another possible extent of the present research is to sit on a BPR project as an observer to identify the real world issues;

interview the Management Accountant to empirically understand their experiences in reengineering; and

to include the proposed cost model in the empirical survey.

there are also similar approaches which can be made into the role of Management Accountants in ongoing management strategies such as Total Quality Management, Just-In-Time, Activity Based Management, Flexible Management Systems etc. Further, there are many interesting initiatives about cost systems, e.g., the near (net) value of ABC, value chain and extended value chain costing.
APPENDIX ONE

QUESTIONNAIRE
This survey addresses Business Process Reengineering (BPR): the rapid and substantial redesign of important existing business processes.

Section One

Please answer the following questions with reference to your company’s reengineering project.

1. Indicate which systems have been reengineered by circling the stars that best describe their current status:

<table>
<thead>
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<th>Introductory</th>
<th>In Progress</th>
<th>Completion</th>
<th>Discontinued</th>
</tr>
</thead>
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<tr>
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<td>*</td>
<td>*</td>
</tr>
<tr>
<td>B</td>
<td>Production</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>C</td>
<td>Human Resource Management</td>
<td>*</td>
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<td>D</td>
<td>Marketing</td>
<td>*</td>
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<td>*</td>
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<tr>
<td>E</td>
<td>Research &amp; Development</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>F</td>
<td>Other</td>
<td>*</td>
<td>*</td>
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</tbody>
</table>

Other (please specify) ----------------------------------------------------------------------------------------------------------------------------------

2. For each system reengineered, identify the type of reengineering project undertaken by circling the appropriate star. The types are:

i. Restructuring (e.g., redesigning systems, policies, and organisational structures);

ii. Downsizing (e.g., reducing the magnitude of operations); and

iii. Outsourcing (e.g., seeking outside parties to provide services traditionally provided by in-house expertise).

<table>
<thead>
<tr>
<th></th>
<th>Restructuring</th>
<th>Downsizing</th>
<th>Outsourcing</th>
<th>Other</th>
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</thead>
<tbody>
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<td>*</td>
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</tr>
<tr>
<td>B</td>
<td>Production</td>
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<td>C</td>
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<td>*</td>
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<td>F</td>
<td>Other</td>
<td>*</td>
<td>*</td>
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</table>

Other (please specify) ----------------------------------------------------------------------------------------------------------------------------------
3. As a management accountant, were you involved in the following phases for any of the above reengineering projects? (circle one or more, if applicable)
   A. Identifying (Discovering) processes needing improvement;
   B. Designing the new processes; and
   C. Implementing the reengineered processes.
   
4. How important are having Management Accountants involved in the reengineering process? (circle one number)

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
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<td>Not very</td>
<td>Of Some</td>
<td>Very</td>
<td>Essential</td>
</tr>
<tr>
<td>At All</td>
<td>Important</td>
<td>Importance</td>
<td>Important</td>
<td></td>
<td></td>
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</table>

**Section Two**

Please indicate your opinion for each of the following questions by circling the appropriate abbreviated response.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>D</td>
<td>U</td>
<td>A</td>
<td>SA</td>
</tr>
</tbody>
</table>

5. A reengineering project that does not include Management Accountants has a greater chance of failing.

6. Management accountants should actively participate in the following phases of the reengineering project.

   A. Identifying (Discovering) processes needing improvement
   B. Designing the new processes
   C. Implementing the reengineered processes

7. Knowledge of the actual costs underlying business processes is important in:

   A. Identifying (Discovering) processes needing improvement
   B. Designing the reengineered processes
Section Three

8. Please make any other statement you feel is important with regards to the role of the Management Accountant in Business Process Reengineering.

* Please send me a copy of the summary results of this survey. Yes

AGAIN, THANK YOU FOR YOUR TIME AND ASSISTANCE.
Dear Mr/Mrs…

Business Process Reengineering (BPR) in the Private Sector

Recently in the media, your organisation was reported as being involved in a BPR project. In relation to this project, we would appreciate the participation of a senior Management Accountant within your organisation in a study on the role of Management Accountants in BPR. Participation is by way of completing the attached eight-question questionnaire. The aim of this study is to provide insight into the role of management accountants in organisational change.

Once you have completed the questionnaire, please return it in the enclosed postage-paid envelope. All responses will be held in strict confidence.

Please accept my thanks for your cooperation. If you would like a summary report of this research, please answer the last survey question.

Yours sincerely,

Siriyama Kanthi Herath

University of Wollongong

Department of Accounting & Finance

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Dear Sir/Madam

Follow-up Letter Business Process Reengineering (BPR) in
the Private Sector

Recently in the media, your organisation was reported as being involved in a BPR
project. In relation to this project, we would appreciate the participation of a senior
Management Accountant within your organisation in a study on the role of
Management Accountants in BPR. Participation is by way of completing the attached
eight-question questionnaire. The aim of this study is to provide insight into the role
of management accountants in organisational change.

Once you have completed the questionnaire, please return it in the enclosed postage-
paid envelope. All responses will be held in strict confidence.

Please accept my thanks for your cooperation. If you would like a summary report of
this research, please answer the last survey question.

Yours sincerely,

Siriyama Kanthi Herath
University of Wollongong
Department of Accounting & Finance


Linnegar, G.J. (1988). *An Investigation into the management of Change In Cost Accounting Information System Requirements During the Transition from Traditional*, Ph.D Dissertation, Mississippi State University, Mississippi State.


