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**DEVELOPMENT OF BUSINESS
PROCESS REENGINEERING METHODOLOGY
FOR
A COMMERCIAL AIRLINE**

**Thesis submitted in accordance with the requirement of the
University of Huddersfield for the degree of
Doctor in Philosophy**

By

Ayed T. Al-Amri

**School of Engineering
March 1998**

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ABSTRACT

Over the past few years, much attention has been given to the concept of Business Process Reengineering (BPR) and its implementation by various companies as a key strategy to regain or improve their competitive edge in the marketplace. BPR is a new business concept for organizational review that involves a fundamental rethinking and systematic redesign of core business processes supported by advance information technology to achieve sustainable step improvements in measures of performance .

The aim of this research was to develop a BPR methodology for a commercial airline that could be used for the various levels and types of operation within the airline business today. The increasing complexity and variety of operations and processes within the airline industry and at the same time the increased interest in BPR as a way to change and improvement to meet current and future challenges are all facts that emphasis the need to tailor a generic BPR methodology to suit the particular requirements of a commercial airline.

To achieve the research aim, an extensive review of literature was undertaken to understand the basics and roots of the BPR concept and to establish the need for a BPR methodology for airline companies. The research method also involved a review of current BPR practice and comparison of some famous BPR methodologies. This review and comparison had contributed to develop the basis for the proposed BPR methodology. A comprehensive review and comparative analysis of both American Airlines and Saudi Airlines BPR methodologies was undertaken to stress on their strengths and to overcome their shortcomings which used later to form the basis for the proposed BPR methodology for a commercial airline. In addition to the findings of each stage of this research, another factor was contributed to the development of the proposed methodology is the extensive experience gained by the author in managing and implementing the BPR projects in Saudi Airlines .

The proposed BPR methodology represents a business process management model that ensures for the airline the achievement of process awareness, process ownership and process alignment with the airline vision and strategies. It helps to focus the airline effort on core business processes that add value to the end customer of the airline and maintain the required incremental improvement during the continuous improvement phase which is well defined and linked to the entire BPR effort .

In addition, the proposed methodology was developed within the airline industry. This involves the application of the roots of this methodology in both American Airlines and Saudia in major BPR projects. Therefore, the proposed BPR methodology has the characteristic of being evolved and tested within airline industry which increase the probability of successful implementation of this methodology for any commercial airline. Indeed, this research has contributed a lot to the development and success of the BPR program within Saudi Arabian Airlines and produced many tangible benefits. Recommendations for further work with respect to some key tools and techniques that needed to support and facilitate the implementation of the proposed BPR methodology are provided .

To My Father
who have encouraged and motivated me
to do this research

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CHAPTER ONE

Introduction

1.1 Introduction

Over the past few years, companies have had the problem of how to increase productivity, provide higher levels of service and responsiveness and ,at the same time, reduce costs. Despite of the different techniques used by these companies to solve this problem, they are increasingly coming to realize that incremental improvements, traditional organizational structures, downsizing and traditional cost cutting techniques are no longer effective solutions in today's global and competitive market place.

Today, hundreds of companies and organizations around the world are implementing business process reengineering as one of the most effective approaches to survive and compete. Business Process Reengineering (BPR), the subject of this research, is a new business concept for organizational review that was first introduced in 1993 and perhaps considered the most influential business concept of the 1990's.

This research aims to develop a BPR methodology for a commercial airline. Indeed, airlines are operating in an industry that faces major financial difficulties, globalization, prices war, open skies policies, rapid technological changes and ,most important, the increasingly high expectations of passengers. These changes are forces that emphasise the need to implement the BPR concept within the airline industry.

This research will involve the study of the application of BPR in two major airlines, namely American Airlines and Saudi Arabian Airlines (Saudia). These two airlines are considered pioneers in implementing and developing the concept of business process

reengineering in the airline industry. It is important to mention here that Saudia, the largest airline in the Middle East and Africa, is sponsoring and supporting this research as part of its major BPR program that aims to help the airline to achieve its new ambitious mission to be a world class airline. The following section presents the characteristics of the airline business which is the subject of the proposed BPR methodology. This includes a highlight of the products and services provided by airlines and the key business processes that are used by any typical airline to provide them.

1.2 Characteristics of Airline Industry

The airline industry is a segment of the broader air transportation industry. It consists of a vast network of routes that connect cities and countries throughout the world. Over this network, a large number of airlines carry passengers and cargo on scheduled and non-scheduled services. According to Wells [1], the structure of the airline industry involves three main types of carrier. These types are shown in Figure 1.1.

Type	Scope of Operation	Annual Gross Revenue
Major Carriers	<ul style="list-style-type: none"> • International & Domestic networks. • Long-haul flights • Serve large population centers and major airports. • Operates mostly wide-body aircraft. 	Over \$ 1 billion
National Carriers	<ul style="list-style-type: none"> • Domestic networks. • Medium/short-haul flights. • Serve between smaller population centres and major airports. • Operates mostly narrow-body aircraft. 	100 million to \$ 1 billion.
Regional/Commuters Carriers	<ul style="list-style-type: none"> • Regional networks. • Short-haul flights. • Operates small aircraft. 	Under \$ 10 million to \$ 99.9 million.

Figure 1.1 The structure of the airline industry [1].

Whereas this thesis aims to develop a BPR methodology for a commercial airline, it is important to understand the nature and characteristics of the airline industry, its products and services, and the key business processes within any typical commercial airline.

1.2.1. Nature of Airline Industry

The nature and main characteristics of the airline industry are summarized in the following aspects:

a) Service/Customer Oriented

The airline industry is in the heart of the service sector where customer service is one of the major critical success factors of this industry. The chain of services provided by the airline to fly passengers from one place to another emphasises the need for airlines to be customer driven if to survive and compete in the market place. Figure 1.2 shows the chain of the basic services to be provided by any airline to its passengers. Indeed, this also places stress on the important role of the front-line staff of the airline to ensure a high quality service that represents better value for money for the customers of the airline.

b) Competitive market place

With the easing of skies regulations and start of airline deregulation, the airline industry entered an era of intense competition. As a result of this competitive environment, market share declined, discount fares proliferated, prices war began, and total traffic increased dramatically as passengers took advantage of this situation. In the United States, for example, 160 carries out of 234 were either merged, liquidated, decertified, or dismissed including some of the larger airlines such as Eastern and PanAm. With deregulation and open skies policy, airlines will have relatively free access to new markets and the age of dominating individual market by a specific airline will disappear soon [1,157].

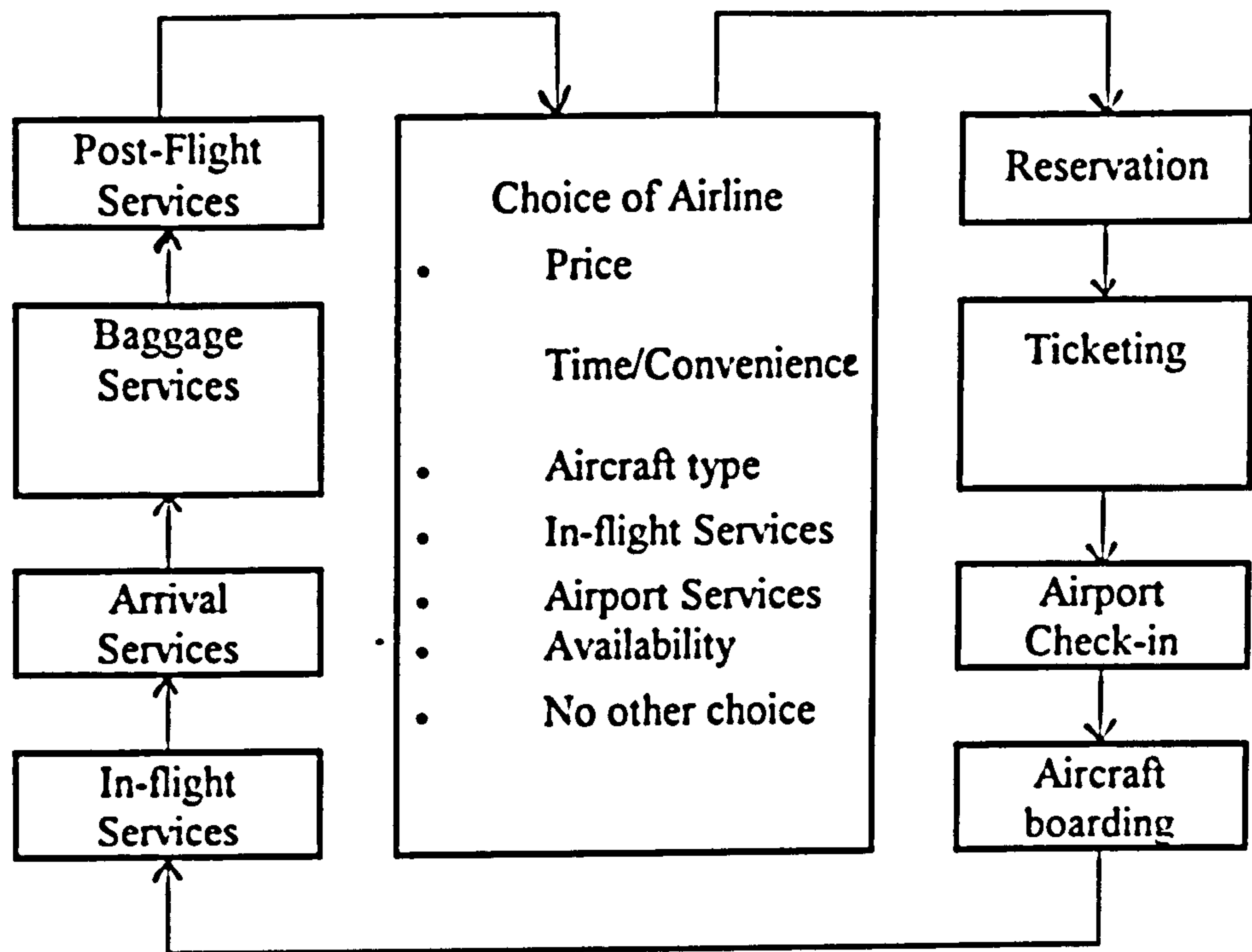


Figure 1.2 The chain of the basic passenger services

Growth through merger is another characteristic of the airline industry where merger is one of the strategies used by airlines to eliminate competition on certain route segments and to help airlines to reduce seasonality problems where one airline's routes complement to other. Code sharing is another strategy used by airlines to build marketing partnerships between each other that create an integrated service linking their networks in the competitive market place of this industry.

c) Logistic Operation

Logistics is the process of managing effectively the flow of goods or services from point-of-origin to point-of-consumption [7,31,35,55,105]. The nature and logical sequence of the various activities achieved by the airline to fly passengers, baggage and cargo emphasises and confirms that an airline's operation is a form of business logistics. Logistics plays an important role in customer satisfaction since it aims to

provide the right service, at the right condition, at the right place, at the right time, for the right customer, at the right cost. Efficient management of the flow of passengers, baggage and cargo from station-of-departure to station of arrival requires successfully planning implementation, and control of all the logistics activities within the operation of any typical airline.

Understanding and realizing the importance of this characteristic of the airline business will be an essential part of any effort to improve or reengineer the key business processes within any commercial airline.

d) The Significance of Load Factor

Load factor is one of the most vital statistics in the airline business. It measures utilization by expressing the relationship between available seat miles and revenue passenger miles realized. Load factor has a critical impact on the cost and quality of airline services offered. Approximately 65 percent of an airline's costs are directly related to the operation of aircraft and are independent of the number of passengers on the aircraft. Therefore, a high load factor will allow the allocation of these costs over a large number of passengers, resulting in lower costs per passenger, which allows for lower fares. There are number of factors that affect the average load factor figure of any airlines such as:

- traffic peaks and valleys
- effective flight scheduling
- capacity versus demand
- passenger no-show
- over booking policy
- off-break pricing

e) Contribution to the economy and Society

Like any other industry, airlines make a direct contribution to the economy through its employment and revenue generation and an indirect contribution through its purchase of goods and services from supplies industries. Indeed the real contribution of airlines industry to the economy goes beyond this where it makes contributions such as:

- Improving the efficiency of business by expanding the potential geographic area of personal contact, communication, and supervision of activities.
- Enhancing life-styles by broadening opportunities for vacations, educational travel, and visiting friends and relatives.
- Supporting travel-related industries.
- Improving communications and mail.
- Assisting in commerce by providing fast delivery of Cargo.

1.2.2. Product and Services of Airline Industry

The airline product is not a physical item at all but services for which consumers are willing to pay money. Safety, on-time performance, convenience in terms of airport proximity or seat availability, frequency of departures, in-flight services, ground services including ticketing and baggage handling, aircraft type, and even the airline's image are part of the airline product as services that satisfy certain customer needs. For Cargo users, the product will include cargo ground handling systems, aircraft loading systems and monitoring and tracing system to check on a consignment's progress in its transit [1,171]. In marketing the airline product, there are certain unique characteristics that must be recognized:

- a) The product (service) cannot be kept in inventory to match fluctuations in demand.
- b) The service is usually personalized.
- c) There is no replacement of a bad service.
- d) It is difficult to check the quality of the service before the final sale.
- e) Delivery of the product cannot always be guaranteed.
- f) The service can be provided only in batches, as opposed to individual units.

These characteristics have prompted the airlines in today's extremely competitive market to intensify their efforts in two areas: (1) greater qualitative and quantitative service to passengers, and (2) enhancing their image.

1.2.3. Key Business Processes of Airline Industry

The key business processes of a typical commercial airline could be classified to five basic categories:

a) Passenger-related business processes

These are business processes which will contribute to a passenger's satisfaction with his journey. They include the following processes:

1) Pre-flight booking process

This process involves two of the key airline services namely, airline reservation and ticketing or what is known lately as electronic ticketing.

2) Airport processes

These processes which enable the airline to transfer the passengers and their baggage smoothly from surface transport, check-in and obtain a boarding pass, and wait in comfort until their flight is called. When they arrive for an international flight they must be able to move through government facilities of customs and immigration quickly so that delays at the arrival airport are kept

to a minimum. On both the outbound and inbound sections of the flight the passenger requires fast and efficient baggage handling, with a late close to check-in, a fast retrieval of baggage at the destination without any misdirection and loss. Indeed airport services has become one of the major problem areas of the air transport system due to many reasons such as terminal's capacity, airport security, limited runways, multi-operations of airport terminals, and the labour-intensive activities of airport handling. These processes need a special consideration by airlines and has a high potential for reengineering and improvements.

3) In-flight Services Process

In-flight service process is a series of services and activities provided to passengers on board during the flight in a specific logistics. This process is of fundamental importance to airlines because of the obvious need for it by passengers especially on long flights and it became an essential part of airline advertising and promotional policies.

b) Aircraft - related business processes

These are the key business processes which contribute to the operation of the airline's fleet. They include the following processes:

1) Flight Operation Processes

These processes involves flight dispatch, flight safety, flying, and crew scheduling.

2) Aircraft Maintenance Processes

These processes aim to keep the airline's fleet in condition to provide safe and salable air transportation. These processes include engineering, maintenance planning, aircraft checks and overhaul, fueling and engines overhaul.

3) Catering Processes

Today catering or food service is a major business for any large airline where many airlines are operating their catering units as profit centers.

4) Fleet Planning & Scheduling Process

This process is one of the most difficult processes within airline business. It aims to determine the right fleet size, select the appropriate aircraft types, and to maximize the utilization of this fleet.

c) Cargo - related business processes

These are the key business processes which contribute to the handling of air cargo within any typical commercial airline. They include the following:

- 1) Outbound Cargo Process**
- 2) Inbound Cargo Process**
- 3) Transit Cargo Process**
- 4) Airmail Handling Process**
- 5) Cargo Sales Process**

d) Marketing Processes

Marketing processes direct the flow of services provided by the airline to the customer in order to satisfy customers needs and wants and to achieve airline objectives. These processes include:

- 1) Market research and routes development
- 2) Pricing
- 3) Yield management and seats control
- 4) Advertising and promotion
- 5) Flight scheduling
- 6) Customer relations and complaints handling.

e) Management and Support Processes

These are processes which run across the following division:

- 1) Human resources planning and administration
- 2) Training
- 3) Information technology support and development.
- 4) Airline finance processes
- 5) Other processes run within the following support divisions:
 - Legal
 - Security
 - Safety
 - Public relation
 - Medical Services
 - etc.

Figure 1.3 shows a summary of the key business processes of a typical commercial airline.

1.2.4. Other Unique Characteristics of the Airlines

Like any other industry, the airline industry has some unique characteristics that need consideration, wherever possible, during any study of this industry. These unique characteristics are summarized as follows:

Passenger - related Processes	Aircraft - related Processes
<ul style="list-style-type: none"> • Pre-Flight booking Process <ul style="list-style-type: none"> - Reservation - Ticketing • Airport Processes <ul style="list-style-type: none"> - Check-in - Boarding - Baggage handling - Arrival activities • In-flight Services Process 	<ul style="list-style-type: none"> • Flight Operation Processes <ul style="list-style-type: none"> - Flight dispatch - Flight Safety - Flying - Crew Scheduling • Aircraft Maintenance Processes <ul style="list-style-type: none"> - Engineering - Maintenance Planning - Aircraft check - Aircraft overhaul - Engine overhaul - Feeding • Catering Processes • Fleet Planning • Fleet Scheduling
Cargo - related processes	
<ul style="list-style-type: none"> • Outbound Cargo • Inbound Cargo • Transit Cargo • Airmail handling process • Cargo sales 	
Airline Marketing Processes	Management & Support Processes
<ul style="list-style-type: none"> • Market Research and Routes development • Yield management • Advertising & Promotion • Flight scheduling • Customer relations & complaints handling • Pricing 	<ul style="list-style-type: none"> • HR Planning & Administration • Training • IT support & development • Airline finance processes • Other Processes in: <ul style="list-style-type: none"> - Legal - Safety - Medical Services - Public Relations - etc.

Figure 1.3 The key business processes of a typical commercial airline.

- a) Extensive interaction with government and other agencies in providing services to its customers. This impacts the ownership of business processes especially in the airport area.
- b) High technological turnover where technological advances and competition have forced the airlines to undertake a re-equipment cycle on an average of every eight years.
- c) High labour and fuel expenses where airlines usually employ staff with highly developed skills and with corresponding by high incomes. In addition, no other industry has been so sensitive to the severe increase in fuel prices the airlines have experienced over the last 15 years. Labour and fuel costs typically represents around 60 percent of a airline's operating expenses.
- d) Sensitivity to economic fluctuations especially during recession periods.

1.3 Research Aim and Objectives

This research is based on two hypotheses. The first one is that Business Process Reengineering (BPR) must be considered as a key agent for change in companies that are looking for a strong competitive edge in the international market place.

The second hypothesis is that there is a need to develop a BPR methodology that fits the operation of commercial airlines and meets the specific requirements of this type of business.

The aim of this research is to develop a Business Process Reengineering methodology for a commercial airline that could be used for the various levels and types of operation within the airline business today.

To achieve this aim the following research objectives were established:

1. To establish the need for a Business Process Reengineering methodology for a commercial airline.
2. To study current BPR practices and review some BPR methodologies in order to develop the basis for the proposed BPR methodology.
3. To study the BPR methodology of American Airlines.
4. To study and discuss the application of the BPR concept within Saudi Arabian Airlines as the main case study of the research.
5. To conduct a comparative analysis between American Airlines and Saudi Arabian Airlines BPR methodologies and use its findings in the process of developing the proposed BPR methodology.

1.4 Research Approach

In order to achieve the aim and objectives of this research a six-stage methodology was developed and followed during the period of the study.

The first stage of the research was to conduct an extensive and comprehensive review of available literature on Business Process Reengineering and its current practices.

The literature review covers the following areas:

- BPR roots and definitions.
- The need for BPR.
- BPR and other continual improvement techniques.
- BPR methodologies.
- BPR tools.
- BPR and Information Technology.
- BPR limitations and difficulties.

This comprehensive literature review built the basis to understand fully the BPR concept and to establish the need for a BPR methodology for airline companies which takes into account the wide range of their activities.

The second stage was to study the American Airlines BPR methodology . American Airlines is considered one of the pioneer airlines in the world to introduce and implement BPR.

This involved a review of the major steps and tools used during each stage of this methodology and discussion of its strengths and shortcomings. The purpose of this stage is to develop the basis for the proposed BPR methodology.

The third stage was to study and discuss the application of the BPR concept within Saudi Arabian Airlines as the main case study of this research.

This stage includes review and discussion of the following:

- What methodologies and tools should be used and why?
- What was done?
- Explanation of major steps and tools used during each stage of the Saudia BPR methodology.
- Discussion of the strengths and shortcomings of the Saudia BPR methodology.
- Organizational and cultural issues related to the implementation of BPR.
- What was achieved?
- Lessons learned (good and bad)

The fourth stage was to conduct a comparative analysis between the American Airlines and Saudia BPR methodologies

The fifth stage of this research was to develop the proposed Business Process Reengineering (BPR) methodology for commercial airlines.

This methodology was the result of studying and analysing the findings and facts collected and observed in the previous stages of the research. This stage also includes a full explanation and justifications for each element and step of the proposed BPR methodology.

In the final stage, the initial hypotheses of the research were examined in light of the research work undertaken and the conclusions of this thesis were presented.

Figure 1.4 presents the research approach and the structure of this thesis.

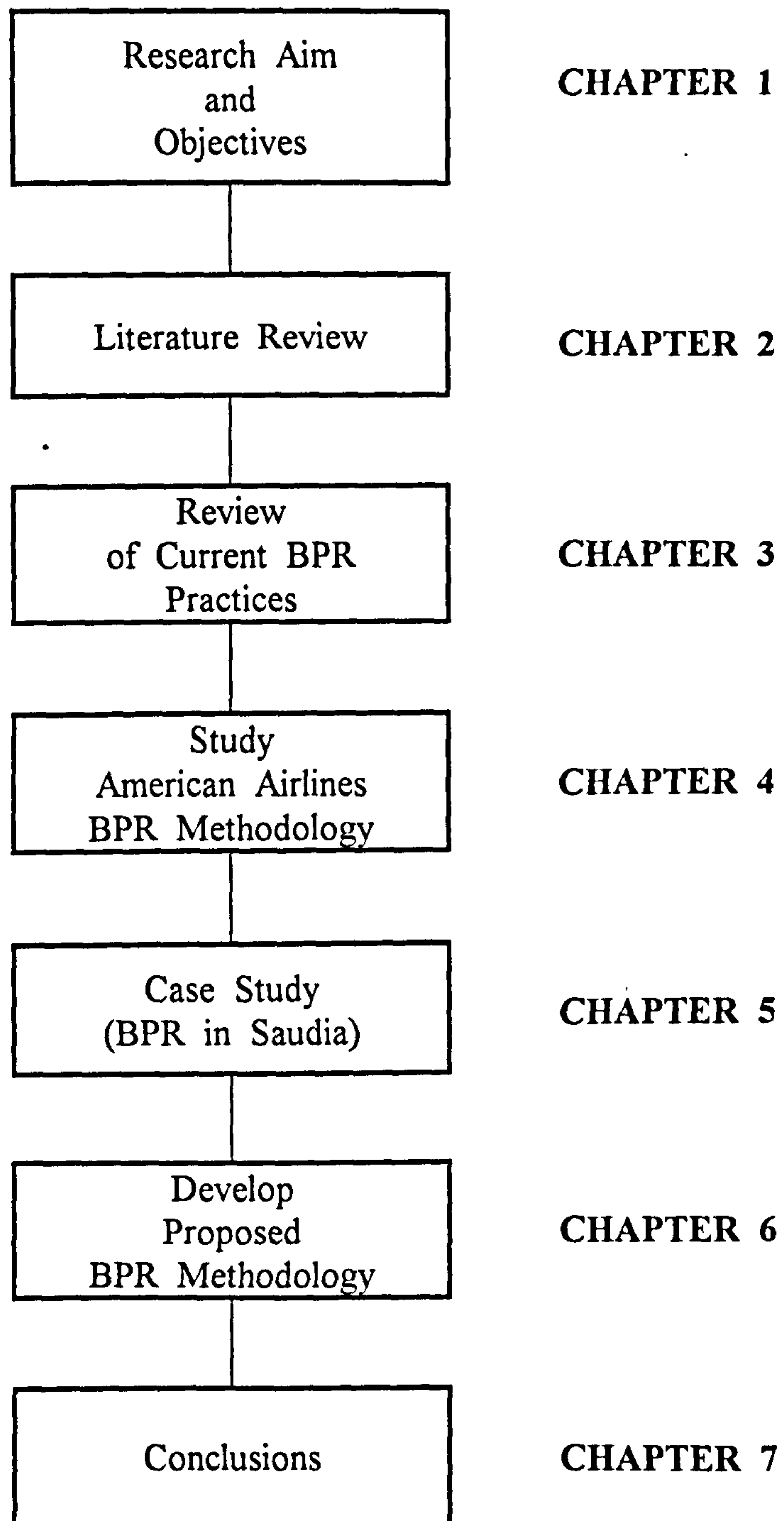


Figure 1.4 The Research Approach

CHAPTER TWO

Literature Review

2.1 Introduction

Today most manufacturing and commercial organisations are reviewing the effectiveness of their organisation and operations to meet the different challenges arising in the market place worldwide. Business Process Reengineering (BPR), is a new business concept for organisational review that was first introduced in 1993. It is, perhaps, the most influential business concept of the 1990's because of its linkage of strategy and the organization necessary to achieve that strategy. The current financial difficulties that face business today, globalization of manufacture and services, rapid technological change, short life cycle of products and services, increasingly high expectations by customers and many other winds of change are the reasons behind the emphasis on the application of the BPR concept to a wide range of companies in both service and manufacturing sectors.

Because this thesis presents research aimed at the development of a Business Process Reengineering methodology for airline companies, it was important to start the literature review by examining the objectives of BPR and to cover the different issues raised by the application of BPR. Consequently this chapter starts with the roots of BPR, its definition and ends with the relationship between BPR and TQM.

Another important objective of this literature review is to establish the need for a flexible BPR methodology for airline companies which takes into account the wide range of their activities and the complex nature of their operation.

2.2 The Need for BPR

The need for Business Process Reengineering is linked to the need for change or organizational transformation. Companies that are doing well today and looking for a better future in the market place, or companies that are currently facing difficulties and trying to overcome them, both will find BPR an effective approach to achieve their goals.

Drawing on extensive surveys of senior executives conducted recently [120] it was identified that reengineering is the number one initiative taken by senior executives to achieve their strategic goals (Figure 2.1).

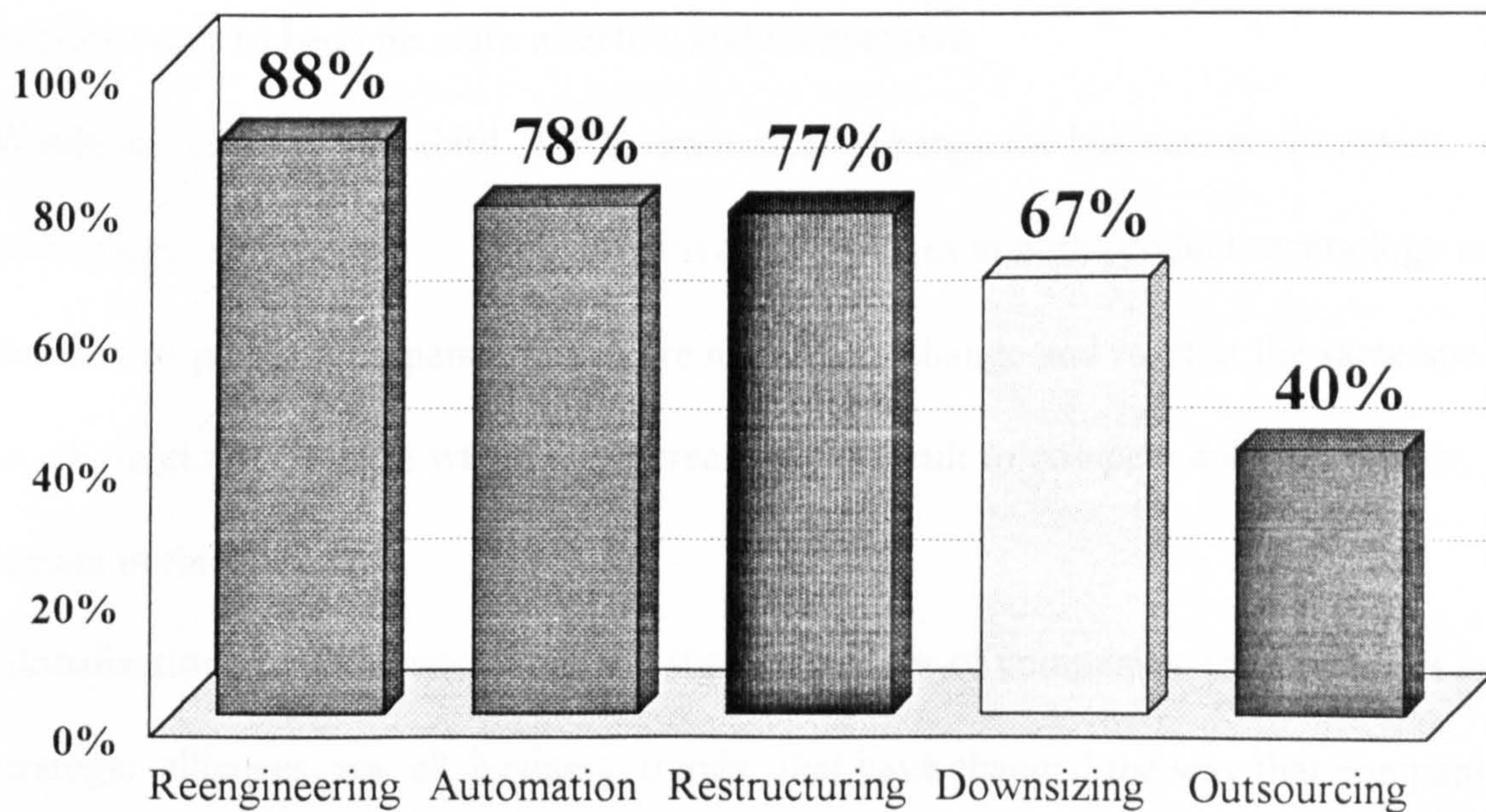


Figure 2-1 Initiatives For Change [120].

Hammer and Champy [78] identified that three forces, separately, and in combination, are driving today's companies and their success in the market place. These forces: the "3Cs" are Customers, Competition and Change and exist in a highly competitive market place. Companies today have customers - business customers and individual

consumers - who know what they want, what they want to pay for it, and how to obtain it on the terms they demand.

Graham [72] asserted that conventional business process structures lack the integration needed to maintain sufficiently high levels of quality and services that meet or exceed the expectation of customers today. BPR enables companies to streamline business process structures and activities to create faster and more efficient customer services in line with customer requirements.

Competition, the second force, necessitates the need for constant innovation and development of products and services. The increasing trend for globalization of economic markets yields more and tougher competition that forces companies to explore ways to become more effective and competitive.

Winds of change, the third force, dramatically change the business environment, its technology and people. They are driven by changes in both product technology and the market place. Companies which are not able to change and react at the same speed to these global changes will find it increasingly difficult to compete and, ultimately, to remain in the market.

Globalization, privatization, time to market, merger of companies, joint ventures and strategic alliances are all business trends that have changed the way that companies operate and also emphasise the need for business process reengineering [18,29,33,78,120].

Surveys have showed that competition; profitability and market share are the issues cited most frequently by senior executives for turning to BPR as a solution to their difficulties (Figure 2.2).

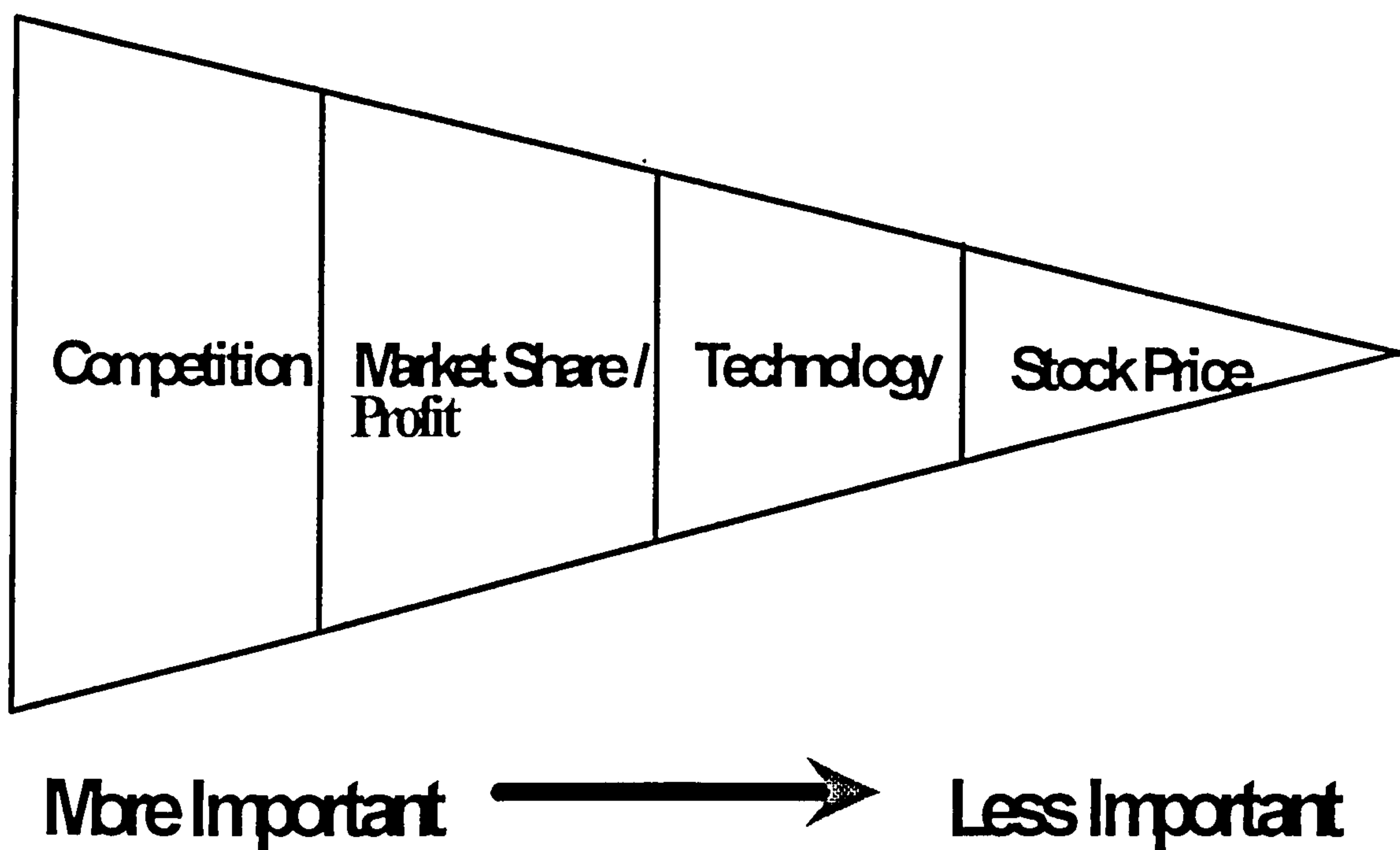


Figure 2-2 Reasons For Initiating BPR Projects [120].

Another reason behind the popular movement to implement BPR in business today is the encouraging and dramatic results achieved in customer satisfaction and cycle time as well as big cost reduction by companies that have succeeded in implementing the concept effectively. However, this must be set against the many companies that have not achieved successful implementation and taken as an indication of the many problems inherent in undertaking a major BPR project.

Another way of looking to the need for BPR is presented in the framework developed by Nolan Norton and Company [147]. This framework, illustrated in Figure 2.3, plots the business need for reengineering against the organizational readiness for change.

More details on how to use this frame work are presented in Appendix - 2.

Finally, some BPR advocate [25,33,78,148] believes that companies will reengineer either by choice, initiative, reinvestment or in a panic mode to survive.

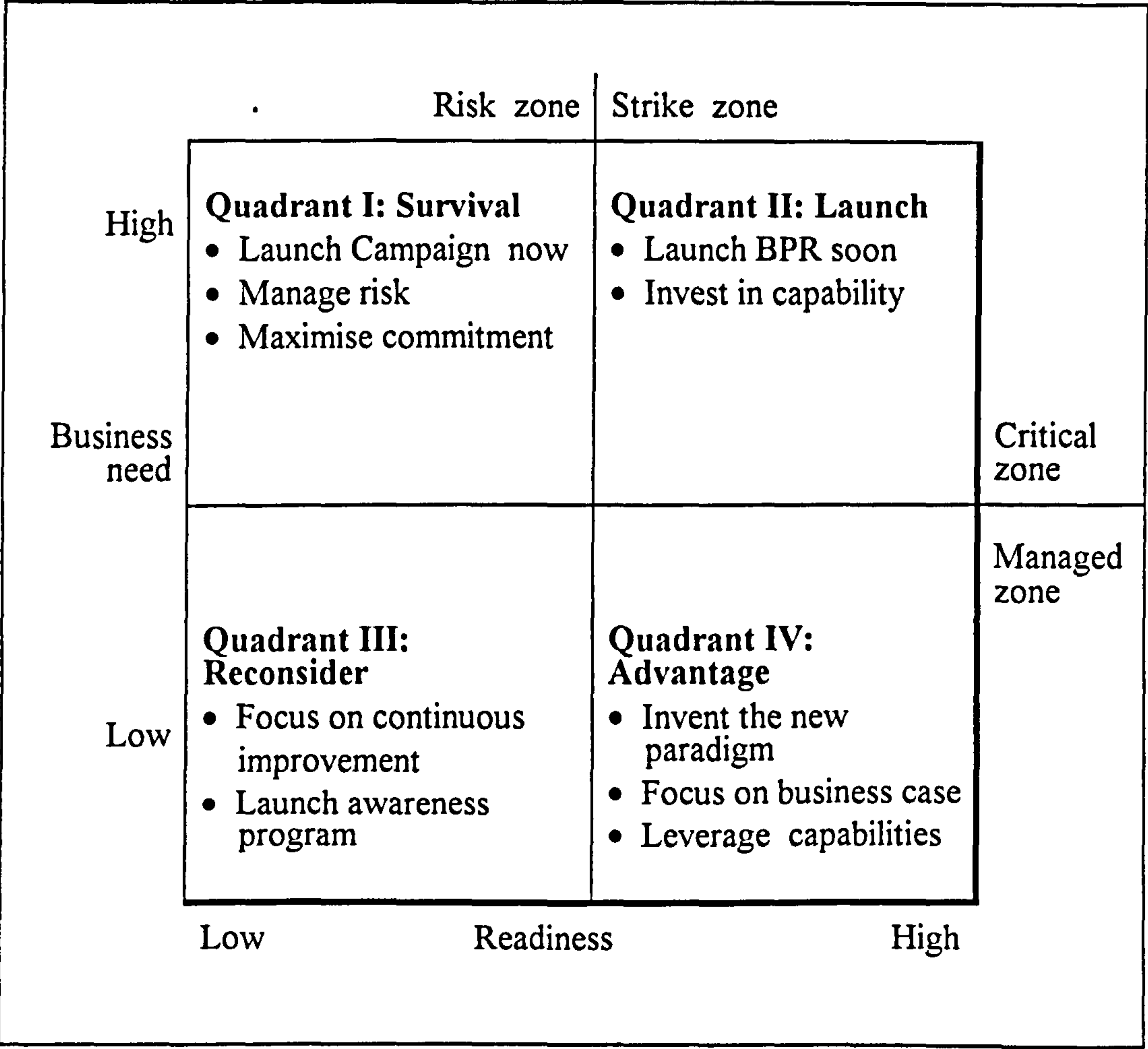


Figure 2.3 BPR business need/readiness analysis framework [147].

2.3 The Roots of BPR

In itself, BPR is a very new phenomenon. The first reference to be found in the literature introducing BPR is by Hammer and Champy [78] who state that BPR 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”.

and so emphasizes the revolutionary nature of the approach when compared to that of continual improvement (kaizen) which held sway over the 1980s.

Although BPR is new and has a process focus, it is based upon a strategic review of a business, its direction and the subsequent alignment of the organisation and systems in support of the revised mission.

In this way it may be considered to have its main antecedents in the areas of :

- Strategic analysis
- Organisation and methods
- Systems analysis and design and, more recently, Total Quality Management.

The rise of BPR does not mean the end of these concepts, but for BPR to succeed it has to be as an umbrella that uses and utilizes most of these concepts to meet the challenges facing business today.

The following sections present a review of these concepts which have built the basis for most contemporary business process reengineering approaches.

2.3.1 Strategic Analysis

Today most business organizations engage in strategic analysis to develop their corporate strategy, although the degrees of sophistication and formality vary considerably. The use of strategic planning and analysis emerged due to the challenges that face organisations to achieve an edge over competitors in the market place.

Strategy according to Hax and Majluf [87] is a coherent, unifying and integrative pattern of decisions that determines and reveals the organizational purpose in terms of long- term objectives, action programs and resource allocation priorities. It also selects the businesses the organization is in or wishes to be in. Indeed, the concept of strategy embraces the overall purpose of an organization.

Lorange & Vancil [114] determined that an effective statement of strategy has three characteristics that are not commonly recognized as set out below:

- 1. Operational guidance.** The strategy must provide guidance to all the managers in the organization in sufficiently explicit terms to allow each manager to proceed with his tasks in the knowledge that his actions are consistent with the objectives of the organization.
- 2. Personal Commitment.** Effective strategy usually is drafted by the manager who must carry it out. A personalized strategy engenders a personal commitment.
- 3. Expectation of Change.** An effective strategy should recognize explicitly that it is a temporal document. Whereas the objectives of the organization, particularly if carefully drawn, may not change perceptibly over time, the scope of its activities is likely to change in an expansionist fashion and the organization's major plans are

almost certain to change as it continues to adapt to its dynamic environment.

Dyson [53] had defined strategic planning as a management process that involve consultation, negotiation and analysis which are aimed at ensuring effective strategic decision making.

Another definition by Hax and Majluf [87] stated that the strategic planning process is a disciplined and well defined organizational effort aimed at the complete specification of a firm's strategy and the assignment of responsibilities for its execution. A formal planning process should recognize the different roles to be played by the various managers within the business organization in the formulation and execution of the firm's strategies.

In Figure 2.4, Hax and Majluf [87] presented a model for the formal strategic planning process which recognizes the three essential layers of managerial decision making. It also serves to illustrate the different nature of planning tasks undertaken by each level, and a possible sequence for the execution of those tasks. Individual responsibilities have to be assigned at all levels in the organization, for developing, implementing and controlling the proper strategic tasks.

As a part of understanding the process of strategic planning, it is important to know the basic concepts that involve or influence the formulation of any business strategy.

Some of the major concepts that are covered by most of the literature on the subject of strategic planning today [14,53,87,165] are summarized as follows:

Hierarchical Levels of Planning	Structural Conditioners	Planning Cycle		
		Strategy Formulation	Strategic Programming	Strategic and Operational Planning
Corporate	①	②	⑥	⑨
Business	③	④	⑦	⑩
Functional		⑤	⑧	⑪

- ① (a) Vision of the firm: mission of the firm, business segmentation, horizontal and vertical integration, corporate philosophy, special strategic issues.
(b) Managerial infrastructure, corporate culture, and management of key personnel.
- ② Strategic posture and planning guidelines: corporate strategic thrusts, planning challenges at corporate, business, and functional levels, and corporate performance objectives.
- ③ The mission of the business: business scope, ways to compete, and identification of product-market segments.
- ④ Formulation of business strategy and broad action programmes
- ⑤ Formulation of functional strategy: participation of business planning, concurrence or non-concurrence to business strategy proposals, broad action programs.
- ⑥ Consolidation of business and functional strategies, portfolio management, and assignment of resource allocation priorities.
- ⑦ Definition and evaluation of specific action programs at the business level.
- ⑧ Definition and evaluation of specific action programs at the functional level.
- ⑨ Resource allocation and definition of performance measurements for management control.
- ⑩ Budgeting at the business level
- 11. Budgeting at the functional level
- 12. Budgeting consolidations, and approval of strategic and operational funds.

Figure 2. 4 A Formal Strategic Planning Process [87].

1. **Mission of the firm:** It is a statement of the current and future expected product scope, market scope, and geographical scope as well as the unique competencies the firm must develop to achieve a long-term sustainable advantage.
2. **Vision of the firm:** It is a permanent statement to communicate the nature of the existence of the organization in terms of corporate purpose, business scope and competitive leadership; to provide the framework that regulates the relationships among the firm and its primary stakeholders; and to state the broad objectives of the firm's performance.
3. **Organizational Culture:** It is a complex set of basic underlying assumptions and deeply held beliefs shared by all members of the group that operate at a preconscious level and drive behavior in important ways.
4. **Value Chain:** This usually refers to Porter's model [152] of five primary activities which together with support activities generate customer value. A full representation of the value chain is given in Figure 2.5.

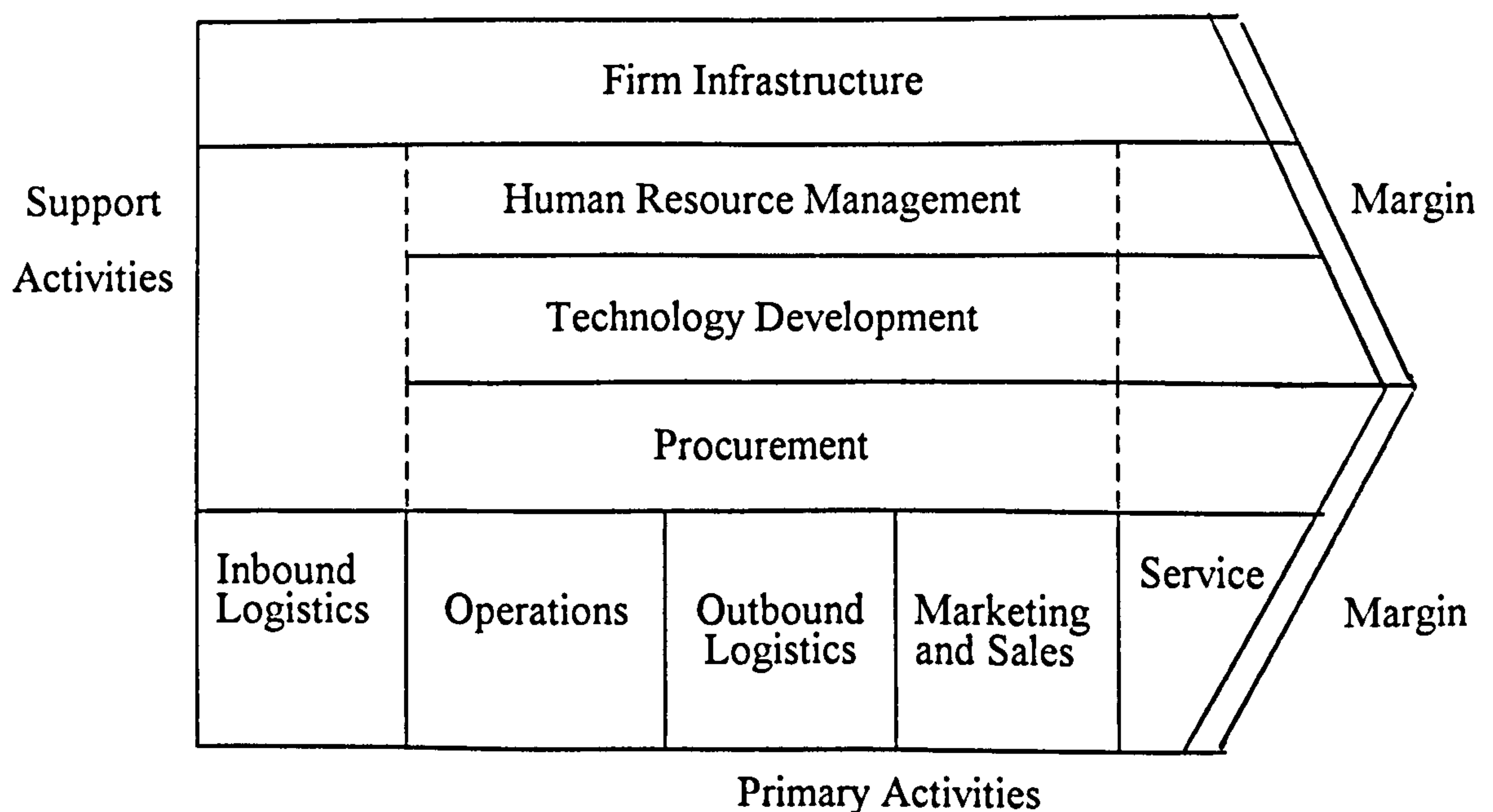


Figure 2.5. The Value Chain [152].

- 5. Positioning the firm:** It is the process of assessing the position of a firm within its industry. A favourable position for a firm would be one where the firm has loyal customers that other firms within the industry find it difficult to poach good relations with its suppliers and has lower costs within its industry.
- 6. Marketing mix:** . It refers to everything a firm can do to influence the market, classified under the four Ps: Product, Price, Place, Promotion.

A considerable number of techniques and tools were developed to help various firms to formulate their business strategies. One of the basic techniques used in strategic analysis is SWOT analysis which helps organization to build a list of a firm's internal Strengths and Weaknesses, and its environmental Opportunities and Threats. The logic of this approach indicates that, as each firm will be facing a different set of opportunities and threats (Os & Ts) and each will have differing strengths and weaknesses (Ss & Ws), the strategies that result will be unique to the firm.

Another strategic analysis technique is external - factors analysis which is a methodology to perform the environmental scan at the business level based on the identification of those critical external factors considered to be the central determinants of industry attractiveness in the opinion of key managers of the business. For internal analysis, culture audit is a systematic process used to uncover the basic underlying principles at the core of an organizational culture.

Political - Legal, Economic, Social and Technological (PEST) analysis is the first stage of any formal environmental analysis for the firm. It aims to examine the global macro-

environment which embraces the industry and the market place. considering each of the aspects mentioned above (PEST) in order to understand the past and present, and to develop a strategy to match the future environment.

Gap analysis is another method used in Strategic analysis to determine any difference between a firm's objectives and what it will achieve in the future if it makes no changes to its strategy.

Finally, When comparing alternative strategies, Cost/benefit analysis is a technique used to compare the total costs of each strategy with an assessment of the benefits expressed in financial terms.

2.3.2 Organisation and Methods

Organisation and Methods, known as O & M, is a specialist function which was common within most large companies in the 1960s and 1970s. It attempts to improve the efficiency and effectiveness of clerical procedures and the organisation and control of operations within a business. This is achieved by the study and improvement of both the organisation structure and clerical methods and procedures in use. Anderson [2] concluded that usually there was more emphasis on the methods than on the organisation [2]. A review of O & M is important to the understanding of the development of BPR. A famous definition of O & M by Oliver [175] stated that Organisation and Methods is:

a management service, the object of which is to increase the administrative efficiency of an organisation by improving procedures, methods and systems, communications and controls, and organisation structure.

According to Anderson [2], the need for Organisation and Methods emerged in the early 1960's due to the increasing complexities of business operations through expansion, mergers, competition, technological developments, governmental controls, taxation, rising costs and a shortage of skilled clerical personnel and an increasing degree of office automation.

In the early days of O & M, its object was to produce substantial, directly measurable cost savings, providing a known-ratio return on the O & M overhead expenditure. Later in 1970's, Oliver [175] stated that the aims of O & M were aimed at the achievement of one or more of the following objectives:

- i. Direct cost saving
- ii. Increased efficiency and effectiveness
- iii. Improved working conditions.

In 1974, Breadmore in his book 'Organisation and Methods' [16] emphasized that effective O & M reviews must go back to first principles, to reassess the fundamental objectives of the organisation, and then go on to evaluate the organisation and methods used in relation to those objectives.

O & M Specialists typically act as advisers to functional managers and their staff who are usually much too busy with day-to-day matters to have time to spare to conduct major organisation or procedure investigations in their own area of responsibility, whereas O & M specialists can give undivided attention to the assignment. They are impartial and free from departmental considerations, and are therefore free to view any situation objectively.

A very important point for effective O & M was top management support otherwise functional managers will not be as interested as they should be in obtaining O & M services to assist them in improving their operational effectiveness.

The objectives of O & M, in general are to improve the effectiveness of clerical work by simplifying and eliminating operations and thereby reducing the amount of effort required to do them. The main applications of O & M are summarized below.

A painstaking and thorough definition of the objectives to be attained is always the first activity in any O & M project. Breadmore [16] emphasised that when the stated objectives of a part of an organisation are not in accord with the objectives of the whole organisation, they are invalid. Oliver [175] also stated that the formal study of the organisation is peculiar to O & M work and is one of the major factors setting it apart from work study. This usually includes review of organisation charts, working rules, job descriptions, span of control etc.

O & M aims to simplify and standardize office procedures, form sizes and machines to increase the efficiency of the work. Also O & M uses the applied work study principles to develop the standard time for the various clerical jobs within the work area. Milward and Wore [129] identified forms design and control as another O & M technique used to review and simplify organization forms, their contents, standard and type of paper, use of colour, layout, automation and control of forms usage and storage.

This is achieved through various methods of checking including random sampling, statistical quality control, spot checks, etc. The concepts of quality control in the office and the integration either of systems, methods or data processing is a “whole

system” approach used by the O & M investigator to achieve effective results for a range of activities within the organization. Anderson [2] presented the stages of conducting an O & M project as shown in Figure 2.6.

2.3.3 Systems Analysis and Design

According to Kendall [102], Systems analysis and design is a systematic approach to identifying problems, opportunities and objectives; for analyzing the information flows and data storage requirements in organizations; and to the design of computerized information systems to solve a problem. As information proliferates, a systematic, planned approach to the introduction, modification and maintenance of information systems is essential. Systems analysis and design provides this. It is also important that information systems develop as the business changes.

If a system is installed without proper planning it leads to great dissatisfaction with the system and the system frequently falls into disuse. Systems analysis and design lends structure to the costly endeavor of analyzing and designing information systems, which would otherwise be done in a haphazard way. It is a series of processes systematically undertaken to improve a business through the use of computerized information systems. A large part of systems analysis and design involves working with current and eventual users of information systems.

The systems development life cycle is a phased approach to analysis and design that holds that systems are best developed through use of a specific cycle of analyst and user activities. The steps in the system life cycle include problem definition, the feasibility study, analysis, system design, detailed design (developing and documenting software), implementation, and maintenance.

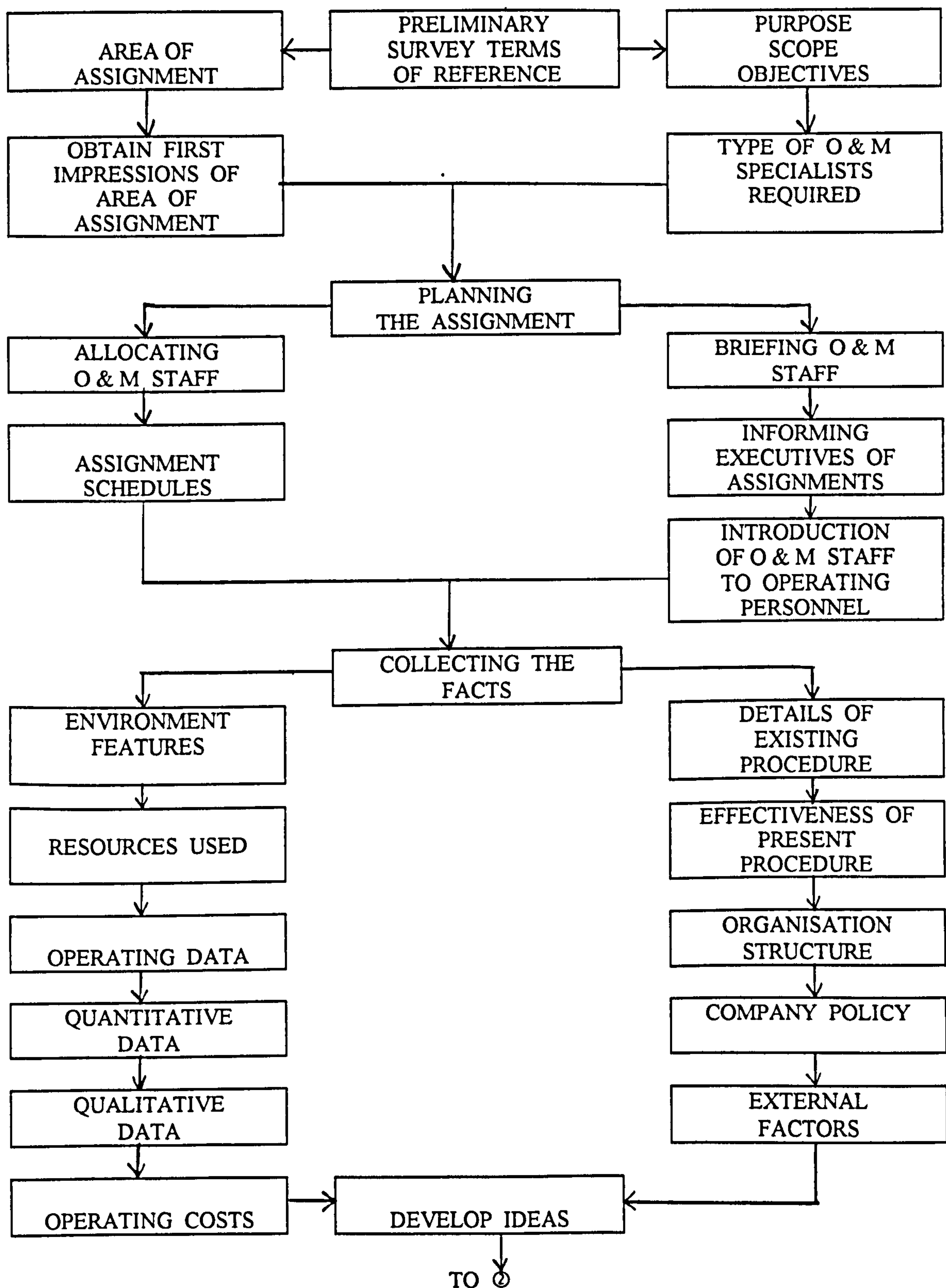


Figure 2.6 - The stages of conducting an O & M project.[2].

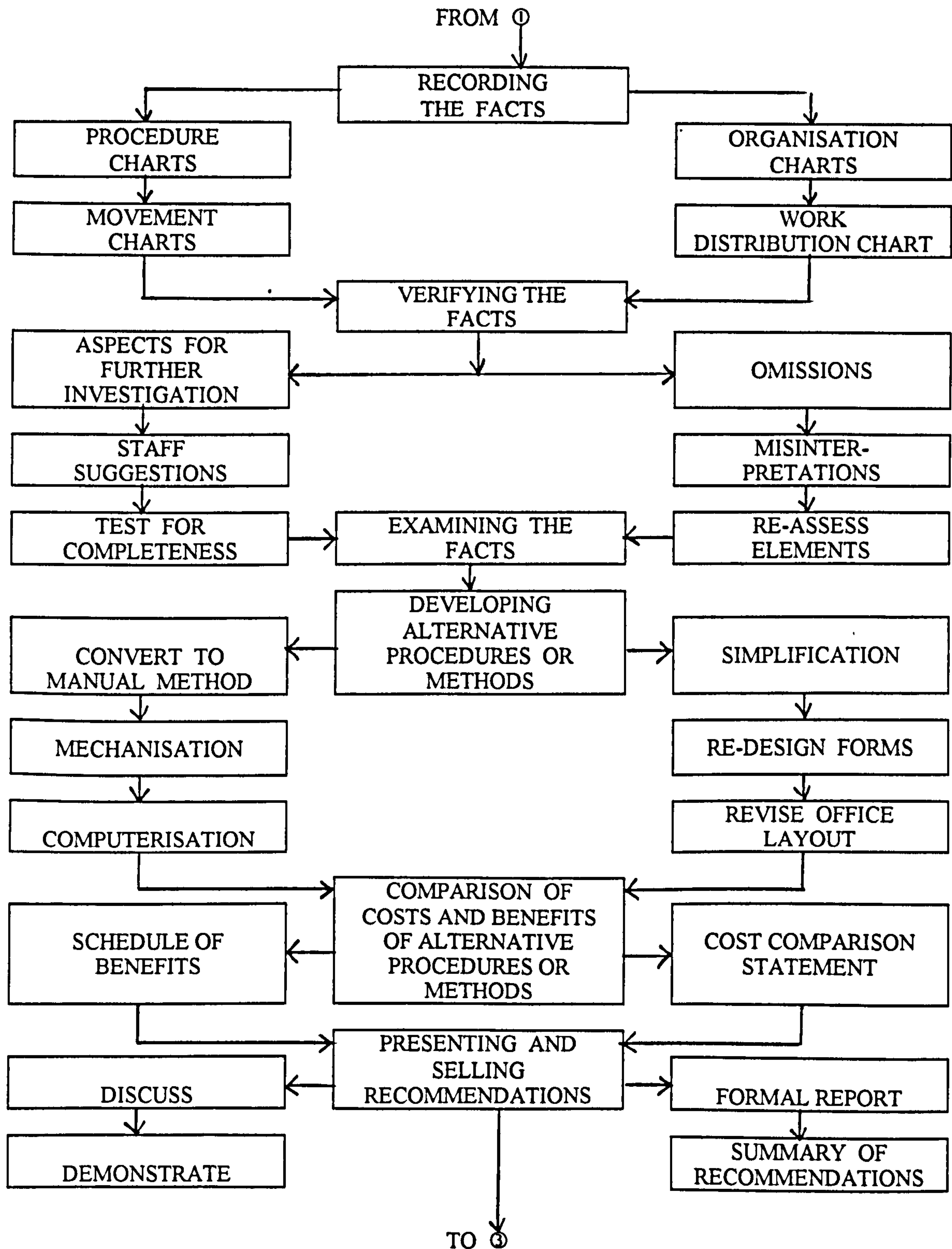


Figure 2.6 - The stages of conducting an O & M project [2].

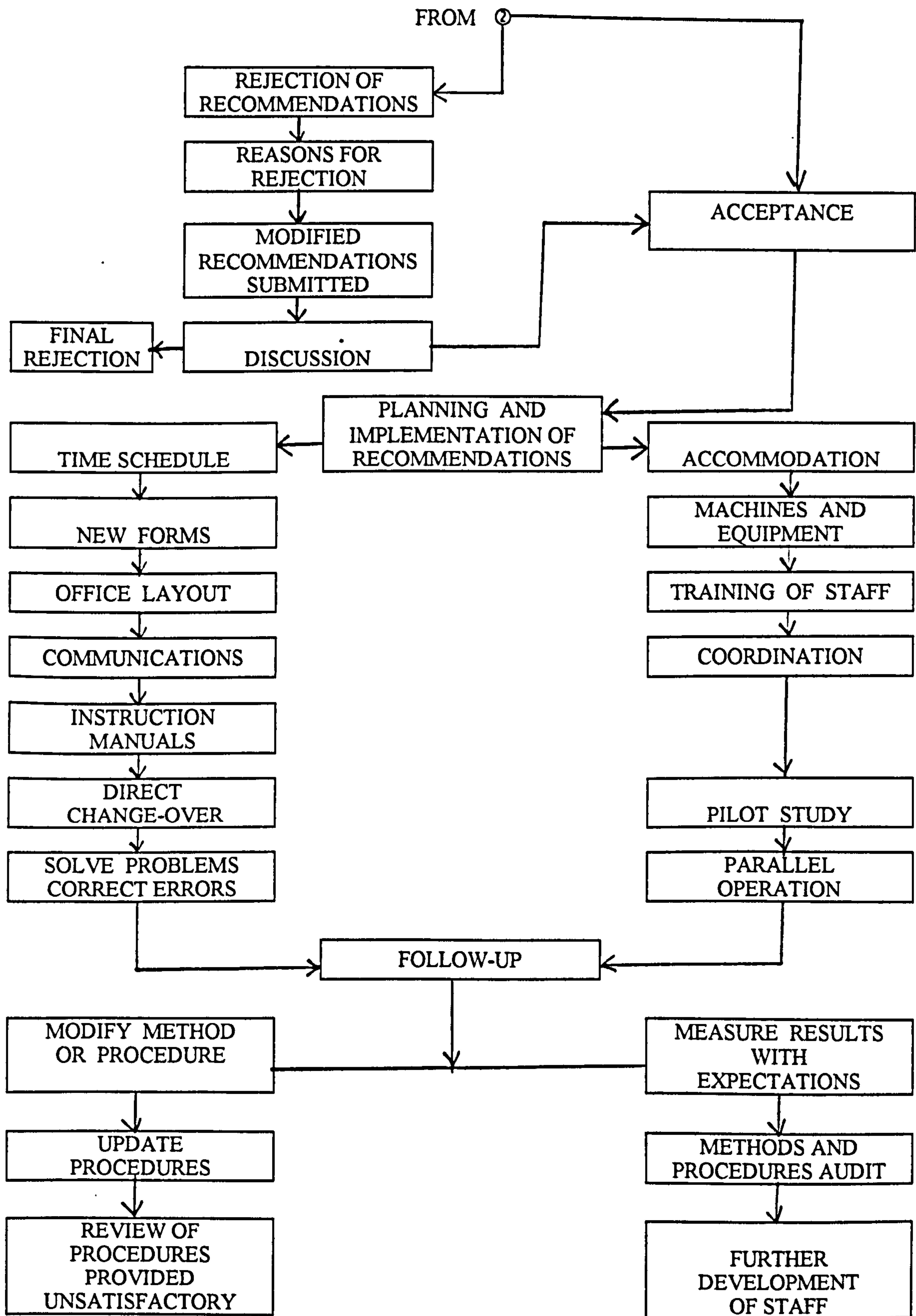


Figure 2.6 - The stages of conducting an O. & M. project [2].

When a structured approach is used, the systems analyst must progress from step to step in a careful and methodical fashion, completing a number of well defined exit criteria for each step. Davis [42] summarized the structured systems analysis and design process as shown in Figure 2.7.

Structured Systems Analysis and Design Methodology (SSADM), is a UK Government standard and, according to Cutts [38], is primarily based around the data flow diagram mapping technique and is a data driven methodology. It also presents systems in two different forms; the first being the physical model and the second the logical model. The logical model is concerned with how the process operates and the physical model shows who has control over the individual activities. SSADM defines that a current system is mapped and analysed and from this analysis a required system is developed and mapped.

The paperwork drudgery connected with structured system analysis and design methodologies is now replaced by Computer-Aided Software Engineering (CASE) methods and tools. According to Edwards [61] and Barker [138], CASE tools are any kind of software that provides automated assistance with any of the activities connected with systems analysis, design and development. CASE tools now provide analysts with the ability to electronically draw and store specification diagrams, create and store data and processing specifications, and quickly layout and store screen, report, and database design. CASE tools benefits are summarized as follows:

- Increasing analyst productivity
- Improving analyst - User communication
- Integrating life-cycle activities
- Validation of view of current system
- Identifying opportunities for improvement.

A major problem with systems analysis and CASE is the emphasis given to current systems in operation rather than future systems required by the business.

STEP	KEY QUESTION	EXIT CRITERIA
Problem definition	What is the problem ?	Statement of scope and objectives
Feasibility study	Is there a feasible solution?	Rough cost/benefit analysis System scope and objectives
Analysis	What must be done to solve the problem ?	Current and Logical model of system Data flow diagram Data dictionary Algorithms
System design	How, in general, should the problem be solved ?	Alternative solutions System flow diagrams Cost/benefit analysis
Detailed design	How, specifically, should the system be implemented /	Implementation specifications HIPO Pseudo code Warnier/Orr diagrams Hardware specifications Cost estimates Preliminary test plan Implementation schedule.
Implementation	Do it !	Programs Code Documentation Hardware Operating procedures Security procedures auditing procedures Test plan Formal system test
Maintenance	Modify the system as necessary.	Continuing support

Figure 2.7 : A summary of the structured systems analysis and design process [42].

The lack of effective mechanisms for linking IS development with business strategy created the need for IS strategy formulation methodologies. Downs, Clare and Coe [49] stated that conventional Structured System analysis and design methodologies and techniques do not contain strategy formulation approaches and are mainly used for IS development in particular functional areas.

This may lead to the isolated and fragmented development of systems which cannot easily be integrated to provide the comprehensive company-wide information system required by the modern firm.

Lederer and Putnam [104] and Lorange and Vancil [114] stated that information system strategy formulation methodology converts, amongst other things, business plans and technology trends as inputs into the strategic information plan of proposed applications output. The plan ultimately effects the success of the organization, which in turn becomes an input to future planning activities.

The following sections summarise some of the major IS strategy formulation methodologies.

Business Systems Planning is an IBM approach which was developed in 1970 as a comprehensive strategy formulation methodology. IBM defines BSP as a structured approach to assist an organization in establishing an IS plan to satisfy its short and long-term information requirements [91,92,107].

BSP is based on 3 fundamental principles:

- Establishment of a business - wide perspective
- Top-down analysis, bottom-up implementation
- Systems and data independence.

BSP helps an organization to plan long-lived information systems on enduring business processes and to manage systems resources to support business goals.

A later approach to the integration of strategy and IS development was Information Engineering (IE). IE is a comprehensive life-cycle methodology incorporating not only planning and analysis but also design and construction of the information system itself.

Martin [121] defines IE as: "the application of an interlocking set of formal techniques

for the planning, analysis, design and construction of information systems on an enterprise-wide basis or across a major sector of the enterprise”.

According to Avison and Smithson [6], information Engineering is a top-down approach with an automated methodology and consists of four phases within which there are seven stages, as shown in Figure 2.8. The steps used in IE are flexible and may vary from one enterprise to another. A list of typical steps in the ‘information strategy planning’ phase of the methodology classified according to business and technical orientation is depicted in Figure 2.9.

The business-oriented steps, in general, relate to top management activities and business ambition whereas, the technology-oriented steps relate to IS modeling, and technical infrastructure.

Strategic Value Analysis according to Curtice [36], was developed to offer a fresh approach to systems planning. Its key objective is the provision of a modern systems planning methodology to link IS to business strategies directly and quantifiably.

The methodology consists of ten steps, as outlined in Figure 2.10. However, all the above approaches tend to adopt a “continuous improvement” approach to systems development. This is fine for a leading edge company which is ahead of its competitors but may be viewed as a weakness for a company which has fallen behind the competition and needs to catch up quickly. Business Process re-engineering (BPR) is a recent approach which has been developed to address this problem.

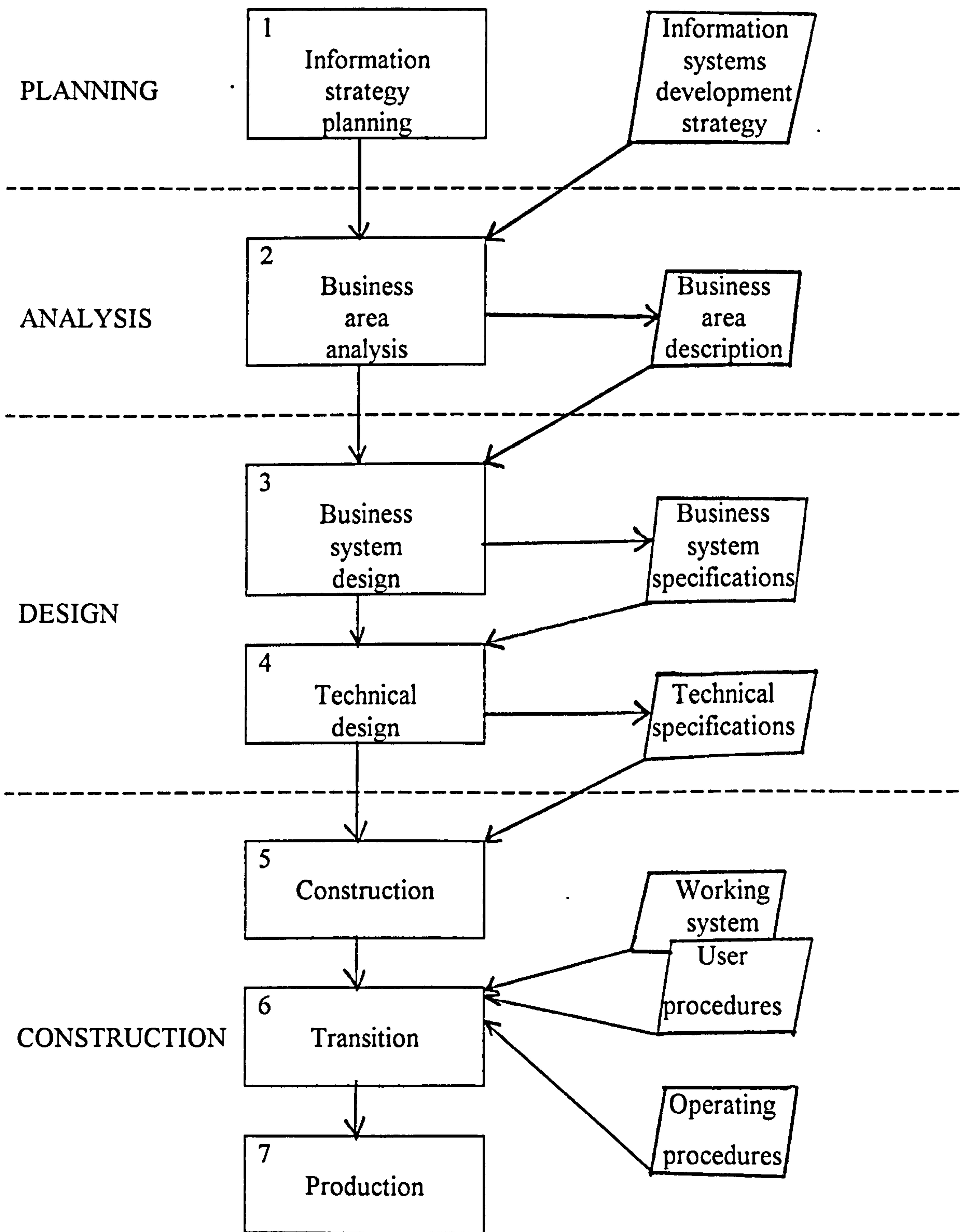


Figure 2.8- Stage framework of the IE methodology [6].

Business - Oriented

- Computerise the Organisation chart of the enterprise.
- Identify the organisation's goals, targets, and strategies.
- Examine technological trends and how they might be used by the enterprise to create new opportunities or competitive advantages.
- Determine Critical Success Factors (CSFs) for the enterprise and break these down into CSFs throughout the Organisation chart.
- Interview key executives to determine problems, opportunities, and information needs,
- Record all of the above in a computerised planning and analysis tool.

Technology - Oriented

- Develop an enterprise model showing the basic functions of the enterprise on a function decomposition diagram.
- Develop an overview entity model.
- Analyse the functions and entities with a matrix tool and determine business areas.
- Analyse current systems.
- Set priorities for IS development

Figure 2.9 - Steps in IE information strategy planning [121].

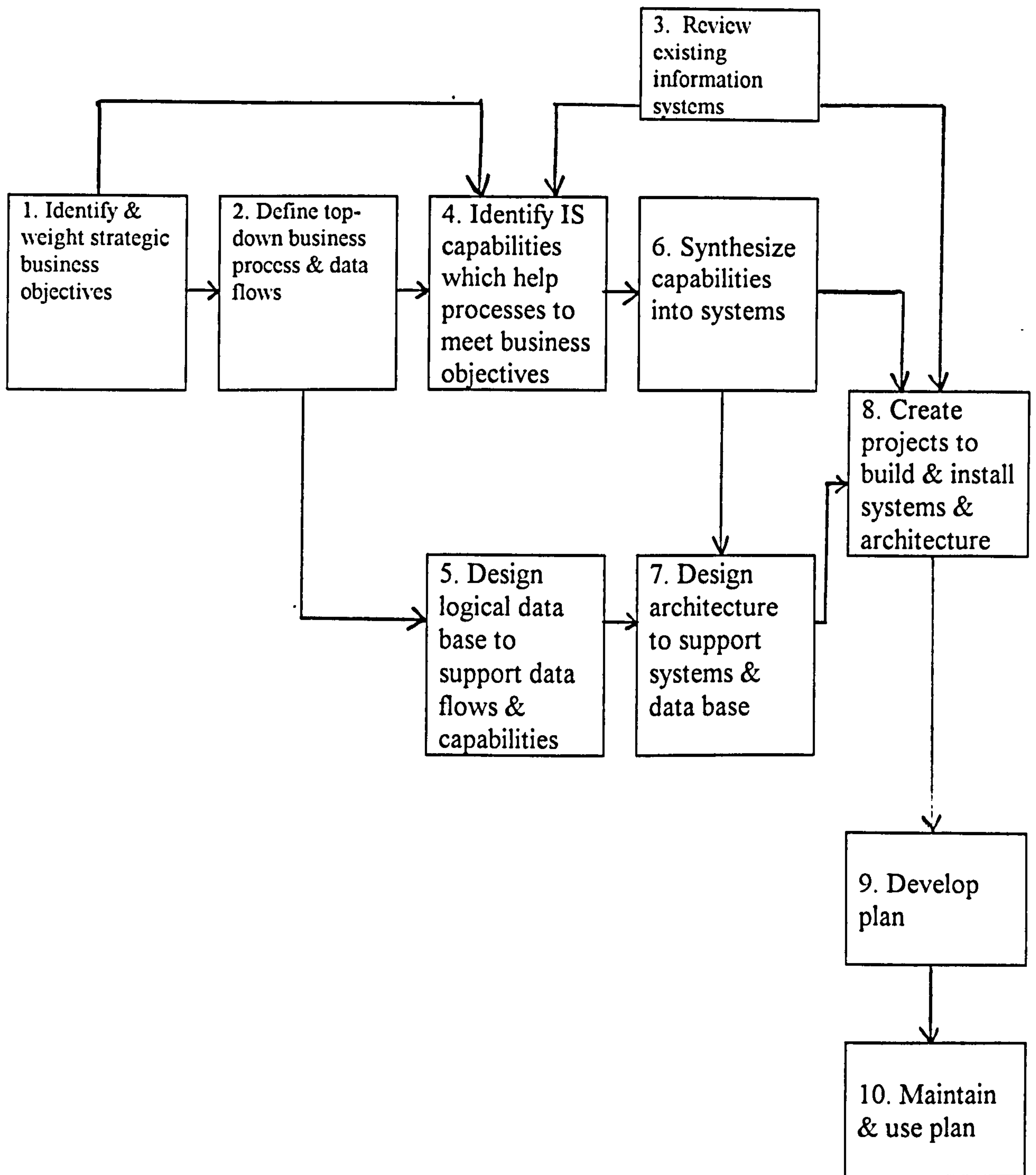


Figure 2.10 - Overview of SVA methodology [36].

2.4 Business Process Reengineering

Although BPR has captured the imagination and interest of large number of companies and executives, a lot of confusion and debate has taken place regarding the definition and scope of BPR and whether it is just a buzzword or a new genuine management tool.

Carr and Johansson [20] concluded that due to this confusion, much of what is termed BPR today is really little more than a reworked mix of Total Quality Management (TQM), continuous improvement, systems analysis and design and old-fashioned shortsighted cost cutting. Gateway Strategic Initiative Survey in 1992 showed that fewer than half of the executives surveyed could successfully define BPR as process redesign as shown in Figure 2-11.

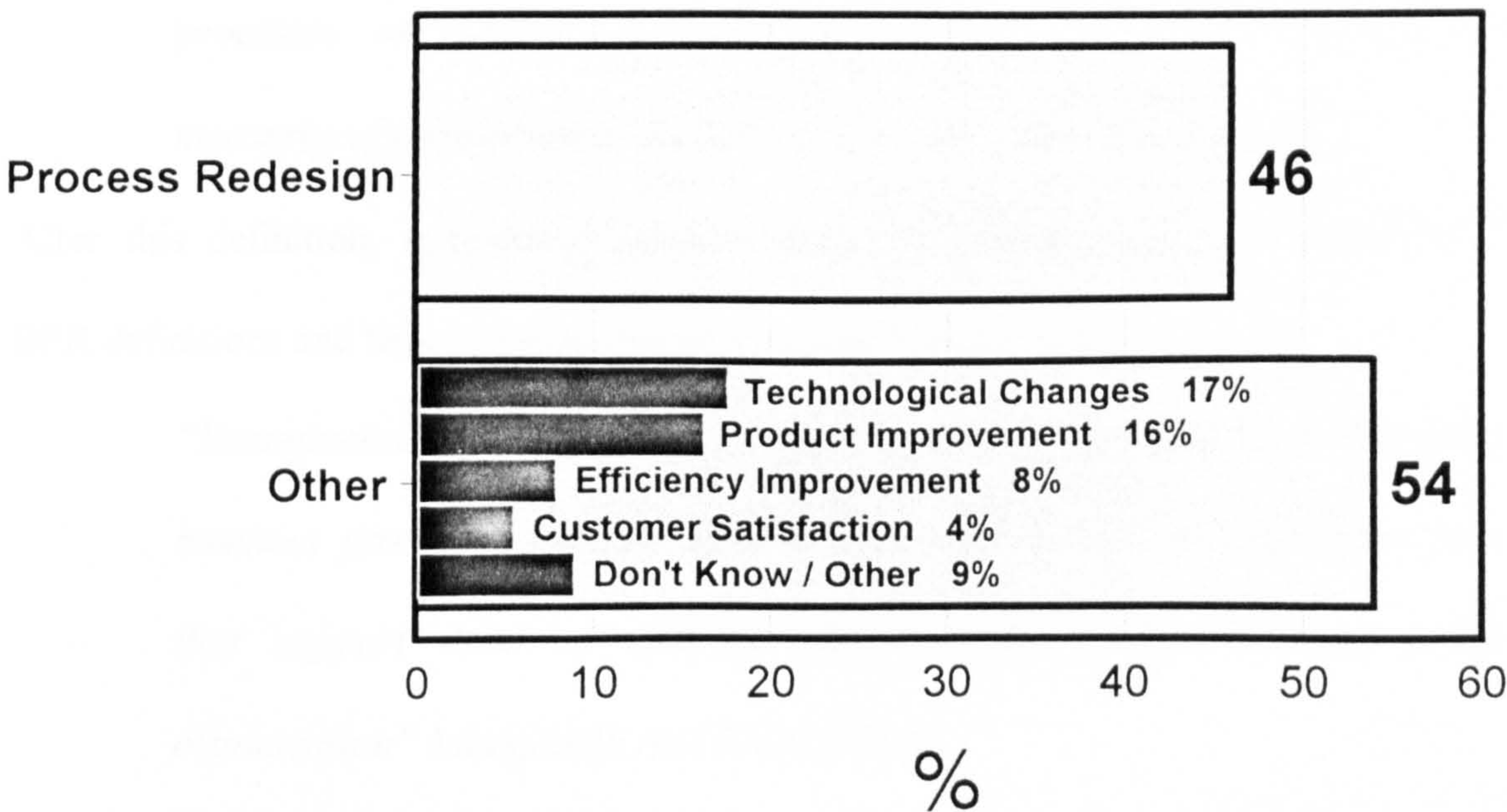


Figure 2-11 Executives’ definitions of reengineering [120].

Manganelli and Klein [120] stated that it is very important to understand fully what Business Process Reengineering means before a company launch. It is such a big project for most organisations and especially when it is found that one of the major reasons for the failure of some BPR projects is unclear definition and incomplete understanding of the concept.

In order to achieve the objectives of this section, the following sub-sections will present the most popular definitions of BPR and discussion of the major keywords and issues related to this concept.

2.4.1 BPR Definitions

In the mid-summer of 1990 BPR began to take on greater prominence and focus with the appearance of an article by consultant Mike Hammer in the Harvard Business Review entitled 'Reengineering Work: Don't Automate, Obliterate'.

The first and most commonly quoted definition of BPR is that given by Hammer and Champy in their famous book 'Reengineering the Corporation' [78]:

"BPR 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".

After this definition, a review of relevant literature showed a considerable number of BPR definitions and here is a selection of the most popular ones:

"Reengineering is the rapid and radical redesign of strategic, value-added business processes and the systems, policies, and organization structures that support them to optimize the work flow and productivity in an organization" Manganelli and Klein [120].

"BPR is an improvement philosophy. It aims to achieve step improvements in performance by redesigning the processes through which an organization operates, maximizing their value-added content and minimizing everything else. This approach can be applied at an individual process level or to the whole organization" Peppard and Rowland [147].

“BPR is the fundamental rethinking and redesign of operating processes and organizational structure, focused on the organization’s core competences, to achieve dramatic improvements in organizational performance” Loewenthal [113].

“BPR is a revolutionary new approach that uses information technology and human resource management to dramatically improve business performance” Davenport [41].

“BPR is an approach to organizational improvement which seeks opportunities for fundamental transformations by focusing on the processes by which the organization delivers products or services to its stockholders” Burke and Peppard [19].

“BPR is the examination of the flow of activities and information that make up the key business processes in an organization with a view to simplification, cost reduction or improvement in quality or flexibility” Morrow and Hazell [132].

“BPR is the means by which an organization can achieve radical change in performance as measured by cost, cycle time, service, and quality, by the application of a variety of tools and techniques that focus on the business as a set of related customer-oriented core business processes rather than a set of organizational functions” Johonsson and McHugh [95].

Based on the above, the working definition used for this thesis is:

“BPR is the fundamental rethinking and systematic redesign of core business processes supported by advanced information technology to achieve sustainable step improvements in measures of performance.”

2.4.2 BPR Terminology

As part of the understanding of the BPR concept, it is useful to review the most common terminology of the BPR language. The following terms are relatively new and form the basic elements of most of BPR definitions mentioned in previous sections.

1. **Business processes** - are a set of linked activities that take an input and transform it to create an output. It should add value to the input and create an output that is more useful and effective to the recipient as shown in Figure 2-12 [36,120,140].

There are three levels of core business processes:

- I- **Strategic processes** are processes by which the organization plans for and develops its future.

Examples: Strategy Planning and New Product/Service Development

- II- **Operational Processes** are those by which the organization carries out its regular day-to-day functions.

Examples: Product Assembly, Obtaining Orders and Invoicing.

- III- **Support Processes** are those which enable strategic and operational processes to be carried out.

Example: Human Resource Management and Information Systems Management.

Business processes have two important characteristics. First, they have customers and second, they cross the functional boundaries of an organisation and are generally independent of formal organizational structure as shown in Figure 2-13.

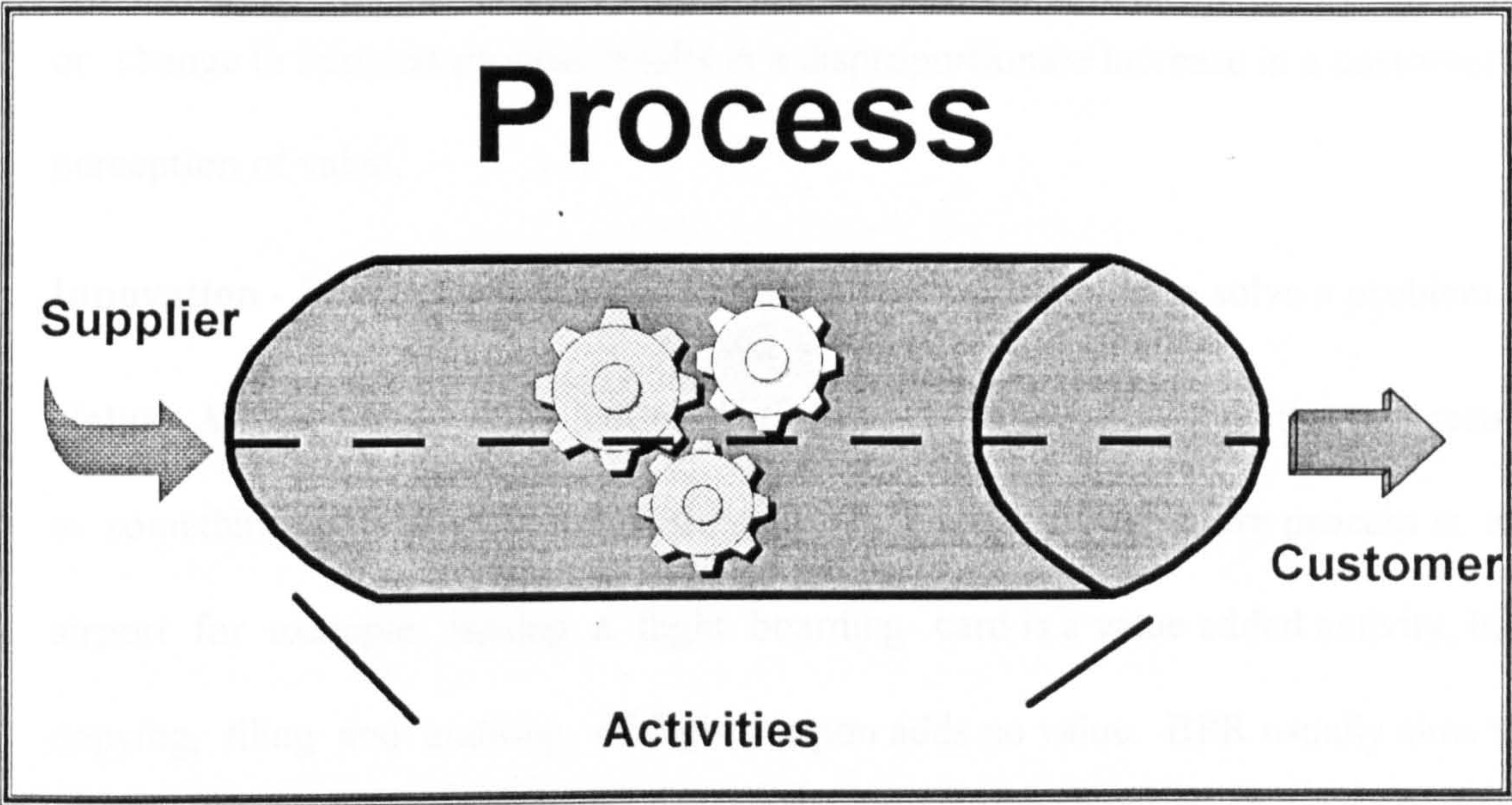


Figure 2-12 Business Processes

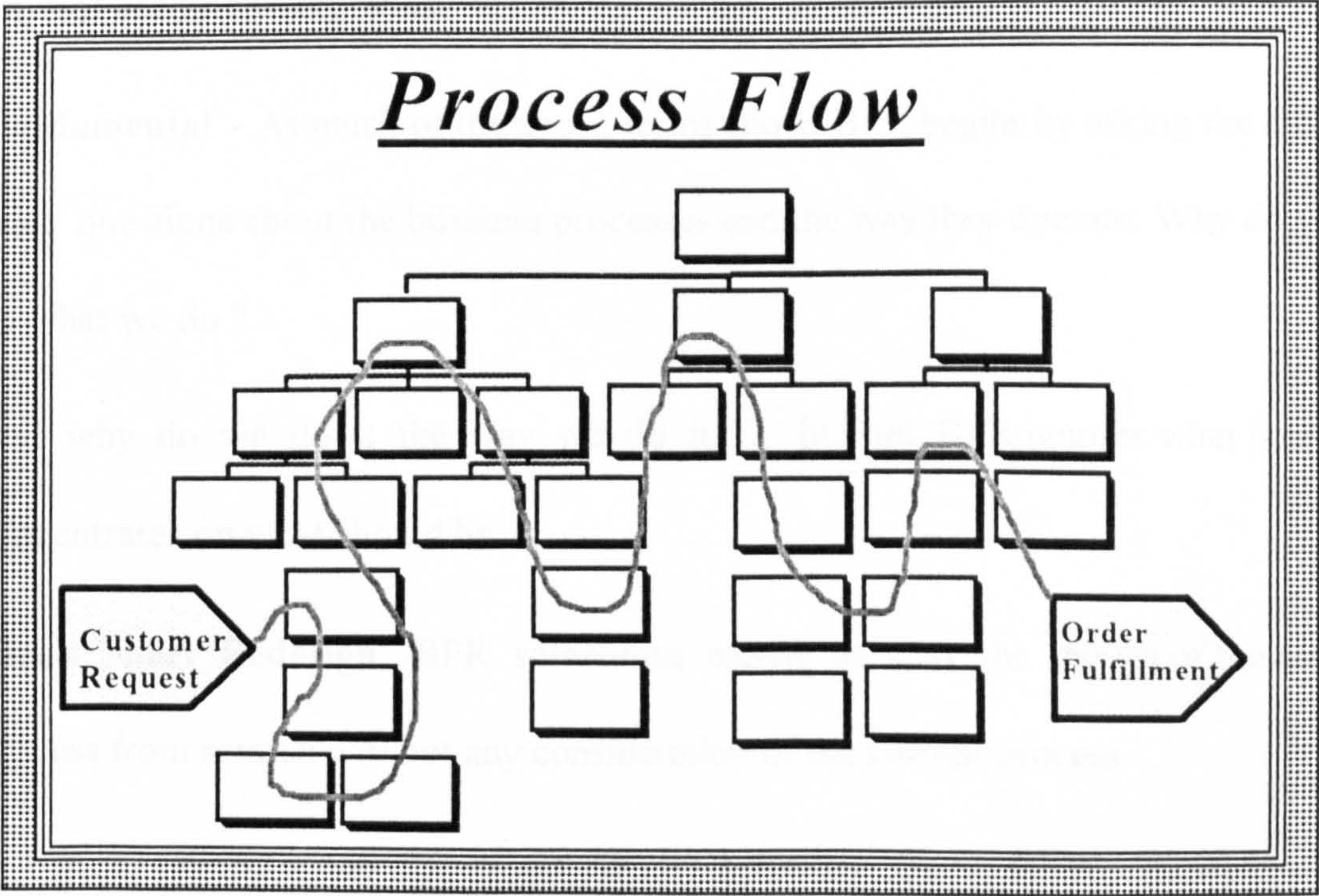


Figure 2-13 Process Flow

2. **Breakthroughs** - A breakthrough is defined as the point at which an improvement or change in business process results in a disproportionate increase in a customer's perception of value.
3. **Innovation** - Innovation is the application of creative thinking to solve a problem.
4. **Value Added / Non Value Added Activities** - BPR focus on activities that result in something of value to the customer. In passenger departure process at an airport for example, issuing a flight boarding card is a value added activity, but copying, filing and auditing of flight coupon adds no value. BPR usually aims to eliminate the non value added activities and improve the value added activities.
5. **Radical Redesign** :- in BPR this means getting to the root of things and disregarding all existing structures and procedures and inventing completely new ways of accomplishing work.
6. **Fundamental** - As much of the above terms show, BPR begins by asking the most basic questions about the business processes and the way they operate: Why do we do what we do ?

And why do we do it the way we do it ? In brief, BPR ignores what is and concentrates on what should be.
7. **Clean Sheet Redesign** -BPR sometimes means to start the design of the new process from scratch without any consideration of the current process.

2.5 Approaches to Reengineering

Review of current literature shows that there are two main approaches to reengineering:

- I) Business Reengineering (Re-thinking)
- II) Business Process Reengineering (Re-design)

Business Reengineering means developing radical change in the nature of the business by redefining the mission and vision, products/services, distribution channels, markets and organizational structures. As such it may be close to the approach adopted in a major strategic review, particularly for a business under extreme competitive pressure.

Business Process Reengineering seeks a higher level of performance improvement in pursuit of the mission through radical redesign of the supporting business processes. According to Mundt [134], effective BPR should include fundamental redesign on the five fronts shown in figure 2.14.

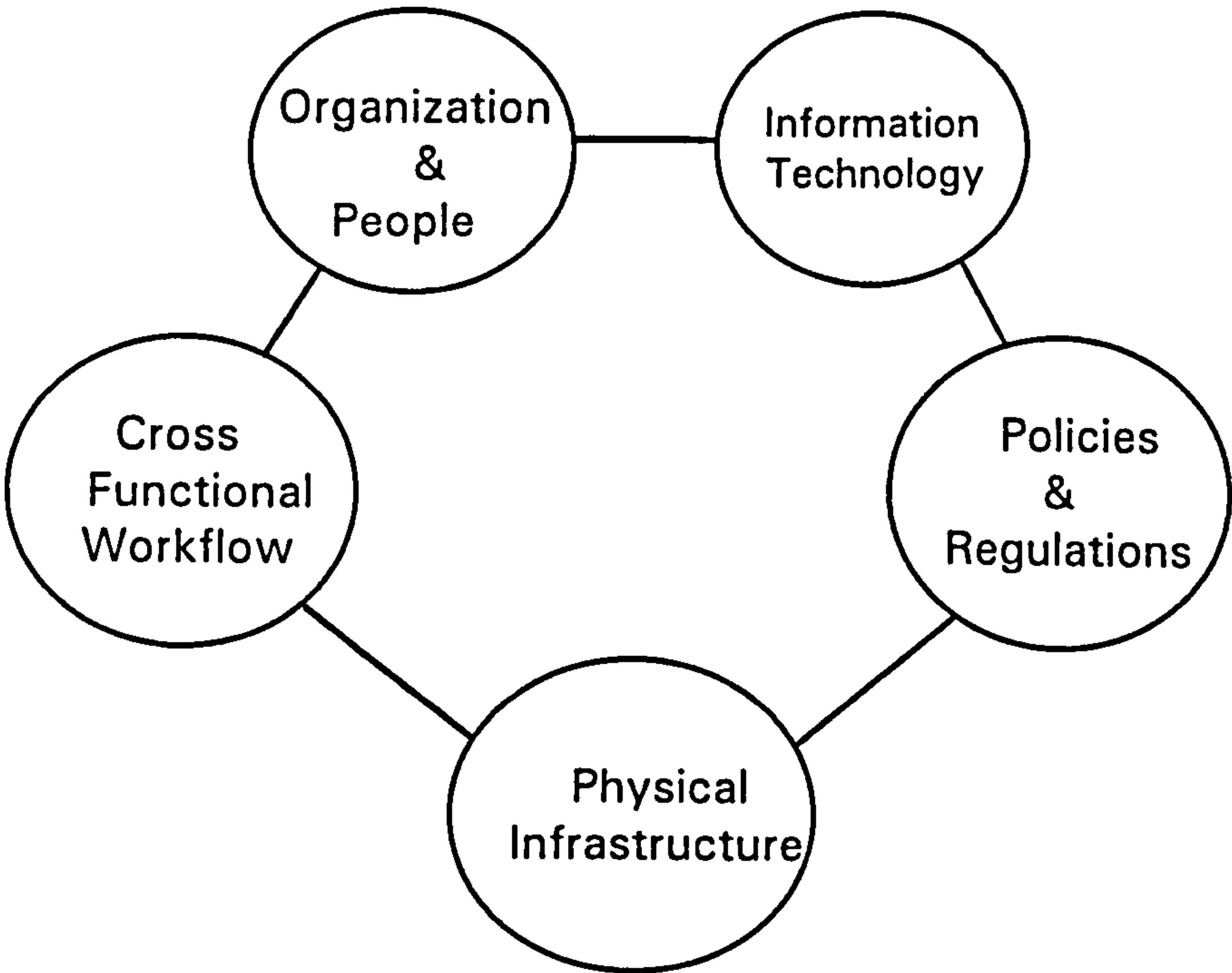


Figure 2-14 BPR Fronts [134].

The two main change factors - technology and people - are the keys to transforming business processes. Neither, alone, is the driver of BPR. Applying technology without social reengineering is merely automation. Applying social change without technical reengineering is merely a re-organization or a total quality management technique.

Only the holistic approach, the joint design of the technical and social aspects of business processes, is true BPR, and it is BPR that is most likely to produce a breakthrough in performance. This holistic approach is shown in Figure 2-15.

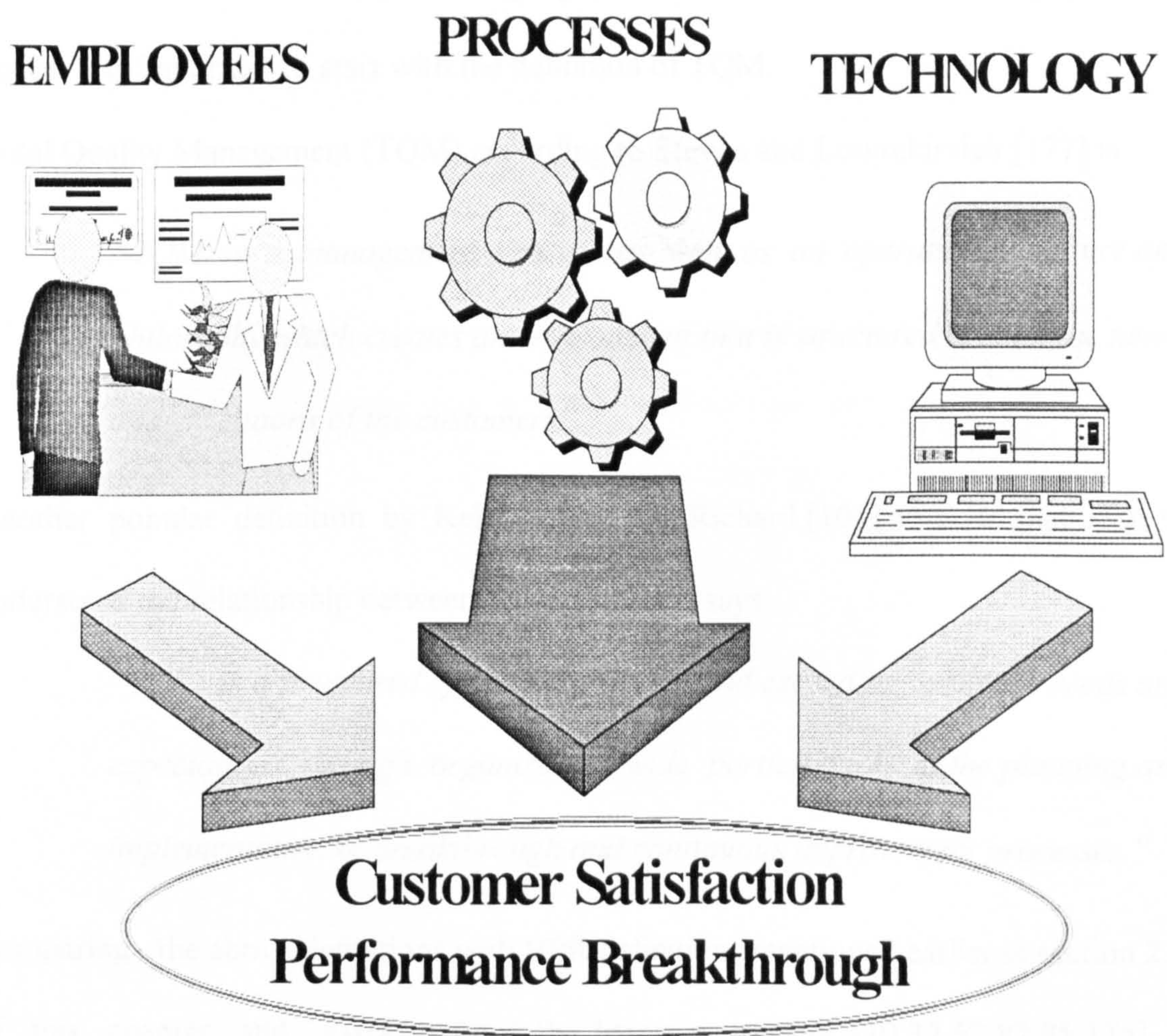


Figure 2-15 BPR is Holistic Approach

2.6 The relationship between BPR and TQM

Business Process Reengineering (BPR) has frequently been compared to the process of implementing Total Quality Management (TQM) and this comparison has raised important questions:

- Does BPR mean the end of TQM ?
- Is BPR compatible with TQM ? Are they complementing each other ?

These questions are the subject of a debate that currently is taking place between TQM and BPR advocates. In order to highlight this issue and to answer the key questions posed, it is important to start with the definition of TQM.

Total Quality Management (TQM) according to Steven and Lowrekirvich [177] is:

“TQM is a management process as well as an operational culture and philosophy which creates an environment that is structured around the needs and expectations of the customers”.

Another popular definition by Kelvin, John and Richard [100] of TQM that helps to understand the relationship between TQM and BPR says.

“TQM is a structured system for meeting and exceeding customer needs and expectations through organization wide participation in the planning and implementation of breakthrough and continuous improvement processes.”

Comparing the above definitions with BPR definitions mentioned earlier in section 2.2 of this chapter and extracts from the literature review [30,32,52,82,85,135] is summarized in the table shown in Figure 2.16.

FACTORS	BPR	TQM
Type of change	Radical	Incremental
Focus	Core Processes	Whole Organization
Methods	Fundamental Questionnaire of Process	Add value to existing processes
Time Required	Short	Long
Participants	Top-down	Bottom-up
Risk	High	Low
Primary Enabler	Information Technology	Statistical Process Control
Role of Technology	Enabler	Traditional Support

Figure 2-16 BPR Versus TQM.

According to Kelvin, John and Richard [100], breakthrough improvement and continuous incremental improvements are two different, but essential and complementary activities. TQM’s continuous incremental improvement techniques provide the performance measurement and problem solving data to alert management when it is time to reengineer and achieve breakthrough improvement as shown in Figure 2.17.

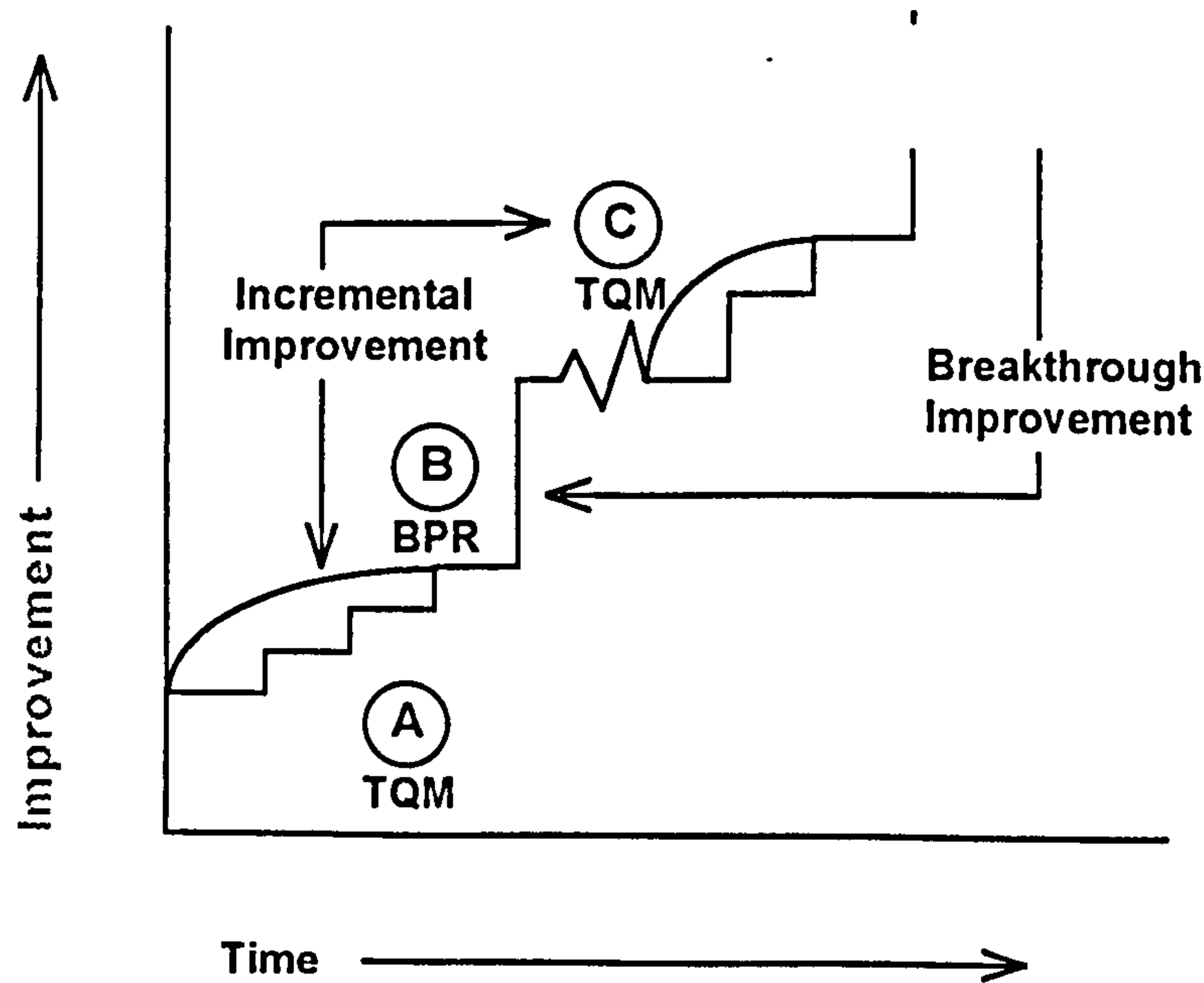


Figure 2-17 Breakthrough Versus Incremental Improvemen [100].

According to the point view of many experts in this field [82, 100, 156], it is a mistake to think that it is necessary to choose between TQM and BPR to improve overall organization performance. To have the best chance of success, it is best to use both in a complementary manner.

Reengineering is the way to big gains, but it is not enough by itself. It is also essential to build in the TQM philosophy and associated culture change, reinforcement and a continuous improvement method to sustain the intent of the reengineered processes.

Indeed, companies embracing TQM have created the proper culture for change. Reengineering will come naturally to those companies that have for some time, applied continuous improvement to their processes.

Finally, it is important to highlight that BPR differs from other continuous incremental improvement programs in several important ways where BPR is a balanced approach that may contain elements of these more traditional improvement programs.

Figure 2.18 shows a comparison between BPR and other improvement programs.

FACTORS	BPR	RIGHT SIZING	JUST IN TIME	STRUC- TURING	AUTO- MATION
Assumptions Questioned	Funda- mental	Staffing	Inventory Work Flow	Reporting Relation- ship	Technology Application
Scope of Change	Radical	Staffing Job Responsi- bility	Reduce Inventory	Organiza- tion	Systems
Orientation	Processes	Functional	Functional	Functional	Procedures
Improvement Goals	Dramatic	Incremental	Incremental	Incremental	Incremental

Figure 2.18 BPR Versus Other Programs.

2.7 Relevance of BPR to Services Sector

The rise of Business Process Reengineering and the interest in core business processes has by no means been restricted to a specific sector of business today. The services sector is an area with great potential for implementing the BPR concept and benefiting from its breakthrough and step improvements in contemporary measures of performance, such as cost, quality, service and speed.

The literature today [20,67,78,137,197] includes many successful stories of BPR projects in companies within the services sector. AT&T, American Express, Southwest Airlines, Wal-Mart, Rank Xerox UK, Federal Express, IBM Credit, Ford's Accounts Payable Department are among many other companies as examples of excellent BPR applications in the services sector and are used as case studies in many researchs, conference and journal articles.

The services sector has grown significantly from being primarily composed of regional and national enterprises to those extending across the globe. Banking, financial services, transport, telecommunications and entertainment, all have become the focus of fierce international competition. Deregulation and the political move to free markets has spurred huge growth in cross border service trade. Many companies with household names have failed to survive, such as PanAm and Eastern in the airline industry.

The need for BPR as a change and improvement program for companies in the services sector to survive and compete in the marketplace are similar to what was detailed in section 2.2 of this chapter.

BPR has two distinguished and attractive characteristics that emphasise the importance and relevance of BPR to the services sector. These characteristics are focused on processes and listening to the voice of the customer.

Most business people today are not “process-oriented”; they are focused on task, on jobs, on people and on structure, but not on processes. BPR focuses on core business processes and eliminates non-value added activities across organizational boundaries in order to decrease response time to customers and the delivery of ‘value-driven’ prices to them without reducing profitability.

Too many service organizations design processes based on the assumption that they know what is best for their customers. BPR is a customer driven approach which aims to redesign core business processes based on a meaningful input from customers about their needs and expectations.

2.8 Need for a BPR methodology for airline companies

Today, the global airline industry represents a large investment within the services sector with a total of 1.37 billion passengers and revenues of \$ 274 billion in 1995.

As part of the service sector, airline companies are facing the challenges of increased competition, deregulation, recession, globalization, code sharing, prices war, and other challenges that all have led airlines to search for ways to achieve step improvements in effectiveness, efficiency and customer satisfaction. BPR has shown itself to be one of the best ways to achieve these targets.

That the development of a BPR methodology for airline companies, which is the aim of this thesis, is an unfulfilled requirement can be established from the following facts:

1. The increasing complexity and variety of operations and processes within the airline industry emphasises the need for a specific BPR methodology tailored to fit the particular nature of airline companies.

2. The increased interest in BPR as a change and improvement effort within the international airline industry to meet current and future challenges is well established within the industry..
3. Review of the available literature on BPR shows that no single paper or research study was devoted to BPR applications within the airline industry among more than 1300 abstracts that were screened at the beginning of this study.
4. Personal benchmarking for many airline companies since the rise of BPR in 1992, reveals that most of the BPR methodologies used by those who have already launched BPR programs are generic methods which were not originally developed for use in the airline industry.
5. Current BPR projects in Saudi Airlines and the learning experience from the case study emphasises the need for a BPR methodology specific to airline companies.

Achieving the aim of this thesis will help to satisfy the need to develop a business process reengineering methodology that takes into consideration the nature and needs of airline companies today.

CHAPTER THREE

Current BPR Practices

3.1 Introduction

In the short time which has elapsed since the publication of Hammer's book, many companies and organizations around the world are implementing business process reengineering as one of the most effective approaches to survive and compete in the market place. According to Harari [83], reengineering went from a management fad in 1993 to a \$ 51 billion industry in 1995.

The need for the reengineering of a business is often very obvious and may be accompanied by falling profits and market share. However the question of how to implement BPR, especially on a company-wide level may pose greater difficulties.

The diversity of the tasks undertaken by the business processes overlapping and interfering with one-another, unclear business priorities, misunderstanding of the concepts of BPR, conflict with previous change efforts, and many other reasons are all contributors to the complexity of implementing BPR without a clear and well defined methodology.

Chapter two established from the literature the two main approaches of reengineering, namely, Business Reengineering (Rethinking) and Business Process Reengineering (Redesign).

This Chapter furthers the screening of current BPR practices and the basic elements of any BPR methodology. In addition, this chapter presents a detailed review of techniques and tools used within most of BPR methodologies.

Information technology and its role as an enabler to make the radical changes that BPR aims to achieve is the subject of section 3.5 of this Chapter. Finally, Chapter three

discusses success and failure factors that were obtained in the literature from current BPR practices and applications. Figure 3-1 shows the structure of Chapter 3.

Finally, reviewing and studying current BPR practices will form the basic input and guidelines for the development of a novel BPR methodology for a commercial airline; which is the aim of this thesis.

3.2 The Need for a BPR Methodology

Simply stated, a methodology is a systematic or clearly defined way of accomplishing a series of tasks directed at a specific end. According to Manganelli [120], a BPR methodology provides the discipline and specific methods needed to break out of the old narrow way of thinking about the business, envision a better way, and realize that vision.

Lack of an effective methodology is considered as one of the fatal mistakes that cause the failure in some BPR projects. A good methodology provides a road map for reengineering.

There are many ways to use a BPR methodology, and each organization will have to select the approach that best fits its needs. Some will resequence the tasks or omit some entirely. Others will adapt tasks to their own style and culture. But without a good and clear methodology, organizations are left with the “what” but not the “how to”. Manganelli [120] emphasized that without a BPR methodology, reengineering projects run the risk of deteriorating into, on the one hand, brainstorming sessions and quality circles, or on the other hand, more of the same old automation of existing

Current BPR Practices

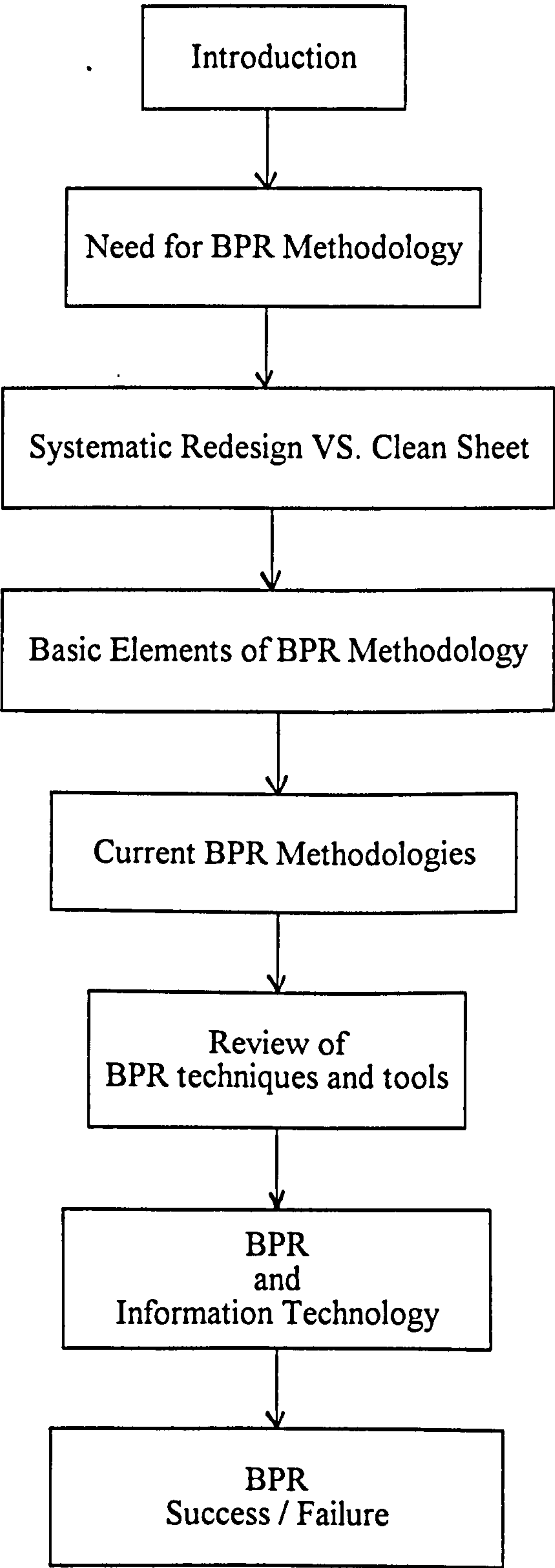


Figure 3.1 - Structure of Chapter 3

tasks or operations improvement projects. Two-thirds of the companies surveyed by Carr & Johansson [20] used a structured framework or methodology in the BPR effort. Types of BPR methodologies used in these companies are shown in Figure 3-2.

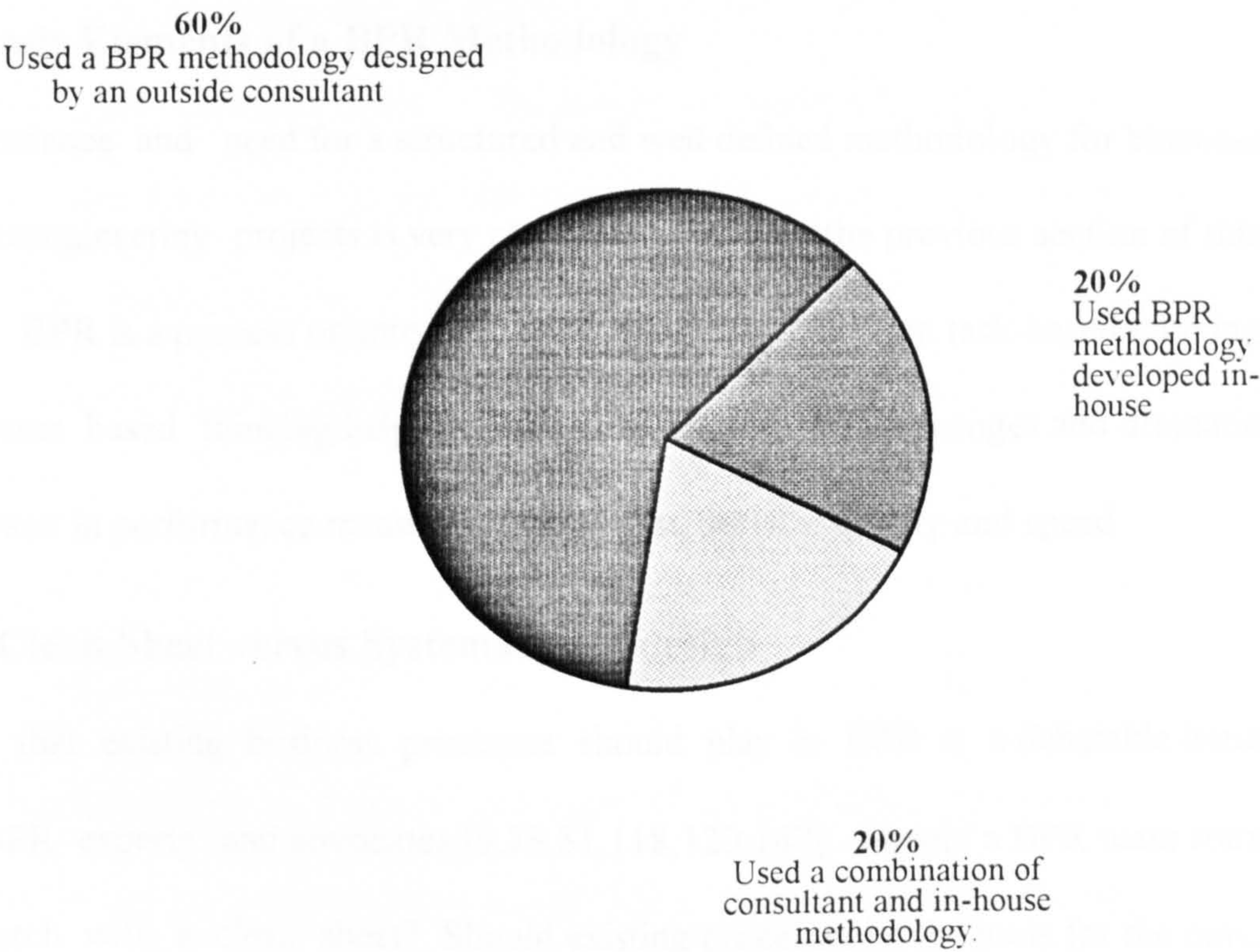


Figure 3-2 Types of used BPR methodologies [20].

The advantages of an in-house methodology are that it comes from a familiar cultural base and often presents ideas in a familiar way to employees. At the same time, too much familiarity could prevent the BPR team from trying to shorten the paradigms within which they currently operate. Whereas using an outside methodology has the advantage that it is more likely to be based on a breadth of experience within many different companies.

Carr & Johansson [20] concluded in their study of best practices in reengineering that the best results occur when a company brings in an outside consultant, learns and understands the consultant's approach, while the consultant is learning and under-

standing the company's specific circumstances, language, and culture and then incorporates some of its own language and culture into the broad parameters of the consultant's approach.

3.3. Basic Elements of a BPR Methodology

The importance and need for a structured and well defined methodology for business process reengineering projects is very clear as discussed in the previous section of this chapter. BPR is a process oriented approach, where shifting from task-based thinking to a process based thinking helps companies to achieve radical changes and dramatic improvement in performance measures such as cost, service, quality and speed.

3.3.1. Clean Sheet versus Systematic Re-design

The role that existing business processes should play in BPR is a debatable issue among BPR experts and advocates [9,78,81,118,120,147]. Should a BPR team start from scratch with a clean sheet? Should existing processes be the basis for the new, redesigned processes? To what extent should the existing processes be understood first ? Current BPR practices in this regard are classified into two categories:

- Clean Sheet approach
- Systematic redesign

The clean sheet approach aims to fundamentally re-think the way that the product or service is delivered and to design new processes from scratch as if the company did not exist but was going to be created in its ideal form. Peppard and Rowland [147] considered ignoring existing processes is a high risk, not least because it fails to build on the knowledge and experience which has been built up over time and risks

repeating the mistakes of the past. Indeed, the literature indicated that few companies actually succeed in implementing totally new processes in existing operations.

Manganelli & Klein [118] claimed that the possibility of starting with a blank sheet is an illusion because the clean sheet approach ignores the existence of the context within which the business process exists. The reality of business is that any reengineered business process exists in a larger environment with which it must interact and by which it must be constrained. After reengineering, the position or role of the process in the company may have changed, but the rest of the company is still there relatively unchanged.

On the other hand, in this debate, proponents of the clean sheet believe that unrestricted use of imagination is the path to breakthroughs in business processes.

The second category is **systematic redesign** where BPR effort starts by identifying and understanding an existing process, and then works through this systematically to create a new process to deliver the desired outcomes.

A strong support for the need to consider and study existing processes is the fact that the current process shows how to add value for the customer. The existing process practices are the necessary source of the knowledge needed for the reengineering and are accepted by users. The choice between these two approaches will depend on what the organisation is most comfortable with, and also on the time scale involved. Many companies use a combination of the two. Whichever alternative is selected, it is important to ensure that the analysis of existing processes is not overdone, though the danger of this is higher in the systematic redesign approach.

3.3.2. Criteria of a BPR Methodology .

Whether the company develops its own BPR methodology or uses one supplied by an outside consultant, a general BPR methodology should possess several necessary attributes. These attributes could be used as a criteria for selecting the right and appropriate methodology to use.

The criteria of a successful BPR methodology (based upon [20, 51, 63, 88, 118, 120, 137]) could be summarised as follows:

- It should develop a clear statement of company goals and strategies.
- It should consider satisfying the customer as the driving force of the change.
- It should be process orientated instead of function-orientated.
- It should facilitate the identification of value - adding and non-value-adding activities
- It should make appropriate use of proven management techniques and tools to ensure the quality of both information used and results achieved.
- It should integrate information technology to enable radical change.
- It should consider solutions to maximise employee empowerment.
- It should develop an actionable implementation plan specifying tasks, resources, and timing of events.
- It should be a flexible enough to be tailored to the company's needs.

In addition to these basic criteria, the BPR methodology should be learnable and has either a built-in tool set for reengineering team productivity or is adaptable to other commercially available tools and software.

Finally, the successful BPR methodology is the one that helps to base all reengineering efforts on a clear understanding of the core customer. In other words, to re-engineer from the outside in, rather than the inside out.

3.3.3. Phases of a BPR Methodology

Johansson, McHugh, Pendlebury and Wheeler [95] defined a BPR methodology as a systematic and clearly defined way that provides the discipline and specific methods needed to breakout of the old narrow way of thinking about the business, envision a better way, and realise that vision. Most of the current available BPR methodologies share together some basic and common steps or phases that could be described as a generic BPR methodology as shown in Figure 3-3.

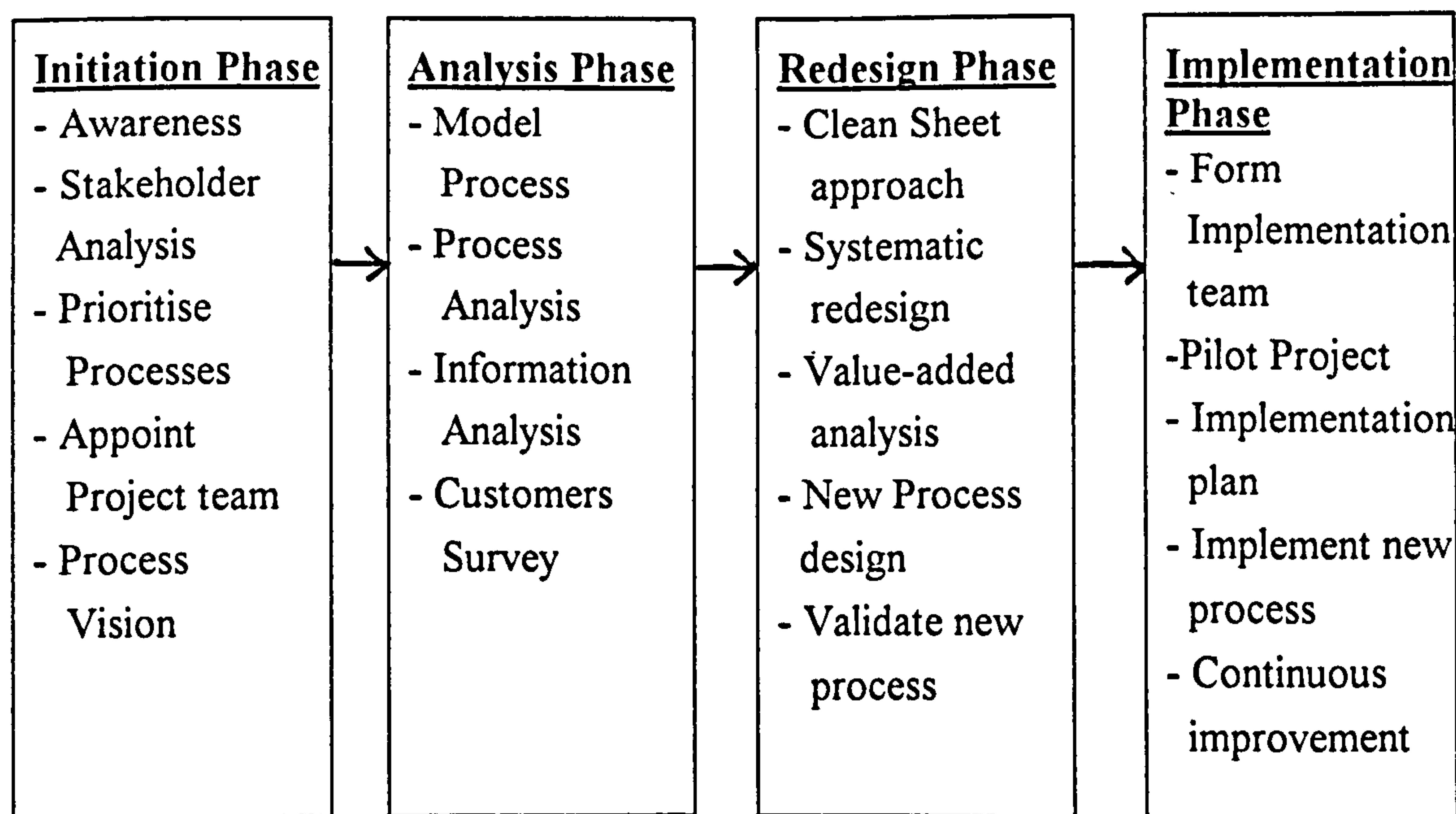


Figure 3-3 A generic BPR Methodology

These 4 basic phases of any BPR methodology could be summarised according to available literature [20,63,78,84,134,137,142,176,180] as follows:

Phase I - Initiation of BPR Project

For such a major change programme, the initiation stage is critically important. The aim is to ensure that the need and aims of the entire BPR project are widely known and understood. The most common steps in this phase are summarised as follows:

- 1- Raising awareness of the need for BPR.
- 2- Identify key stakeholders and their needs.
- 3- Prioritise processes to be reengineered.
- 4- Appoint project team/champion.
- 5- Setting process vision, targets, and plans.

Step 1 - Raising Awareness of the need for BPR

A general programme to raise the awareness of the need for BPR and its importance to the company is recommended before starting any BPR effort because it will affect all levels of staff within the Company. In some organisations this can be a lengthy process, especially if the environment is not one that is receptive to substantial transformation. It may take a considerable time before an organisation is in a position where it will accept the changes that a BPR project may require. Trying to implement a project before the culture of a company is suitably attuned can result in failure. Another important objective of this step is to gain top management support and commitment. This may be considered a basic requirement to start any BPR effort. The awareness can take several forms such as executive and staff seminars, making video and presentations, and use of staff newsletter.

Finally, the awareness programme must continue through the life of any BPR project.

Step 2 - Identify Key Stakeholders and their needs

There are four key stakeholders of any typical business organisation as shown in Figure 3-4. The dynamics between the needs of the stakeholders is what holds the business system together where customers pay an organisation which employs people and suppliers for goods and/or services and the resultant cash flow which forms the basis of share holder value. The successful BPR effort is the one that starts by understanding the needs of the key stakeholders, and how those needs are currently being met.

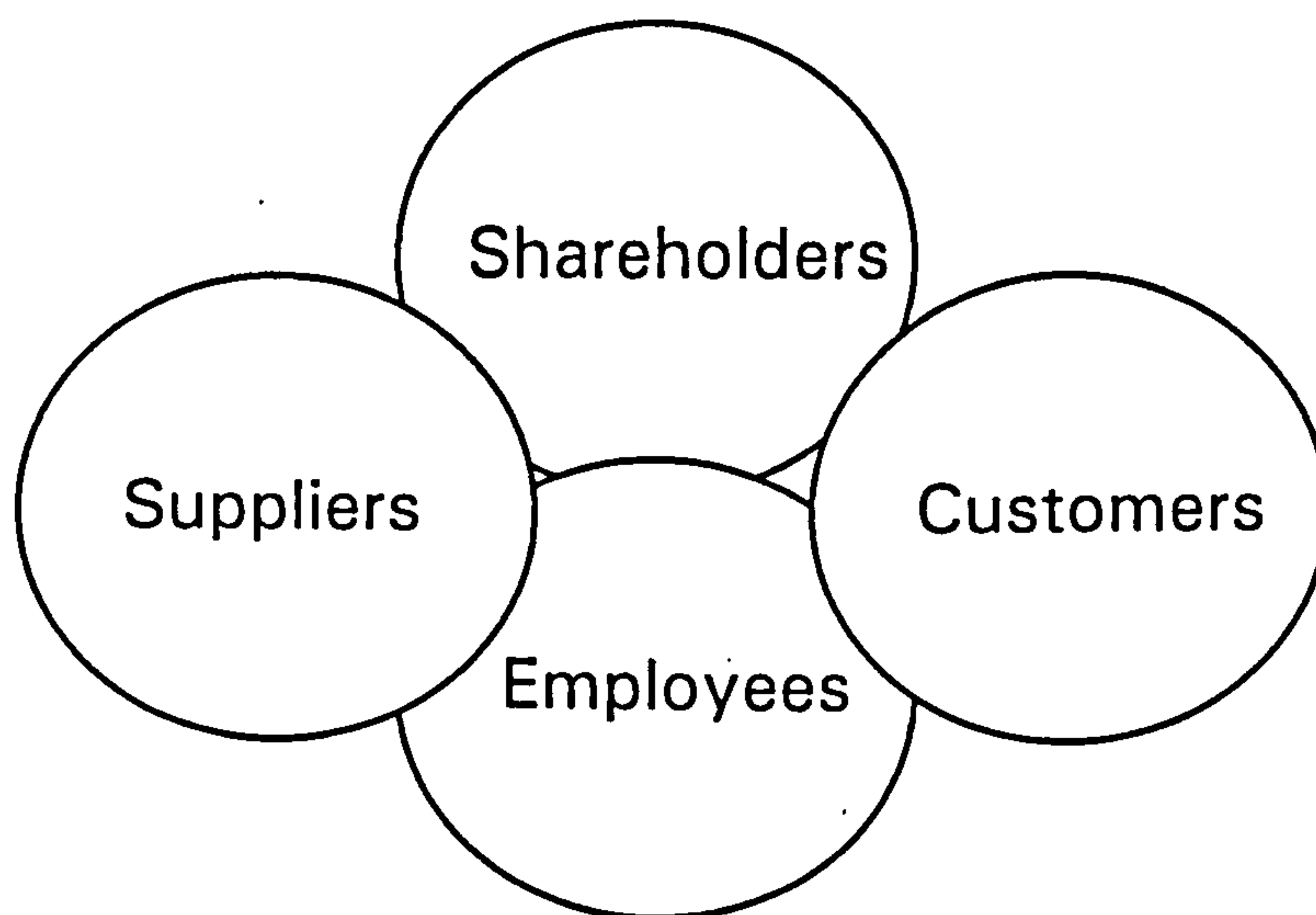


Figure 3-4 Key Stakeholders of a typical business organisation

Step 3 - Prioritise Processes to be reengineered

BPR is a process-orientated approach. Therefore, the initiation phase must include the step of identifying the key business processes that have the potential to impact the business strategy.

Selecting the right process and process scope is essential to successful reengineering. This step is usually achieved by conducting special workshops for the appropriate level of management where selection of key processes is made based on some criteria such as contribution to competitive advantage, potential impact on key stakeholders, emphasis on external customers, cost reduction, greater profitability, or improved cash flow.

Step 4 - Appoint Project team / champion

BPR projects usually require an extensive team work effort. The hierarchical structure of people involved in any BPR efforts is shown in Figure 3-5. The role of each grouping is discussed below:

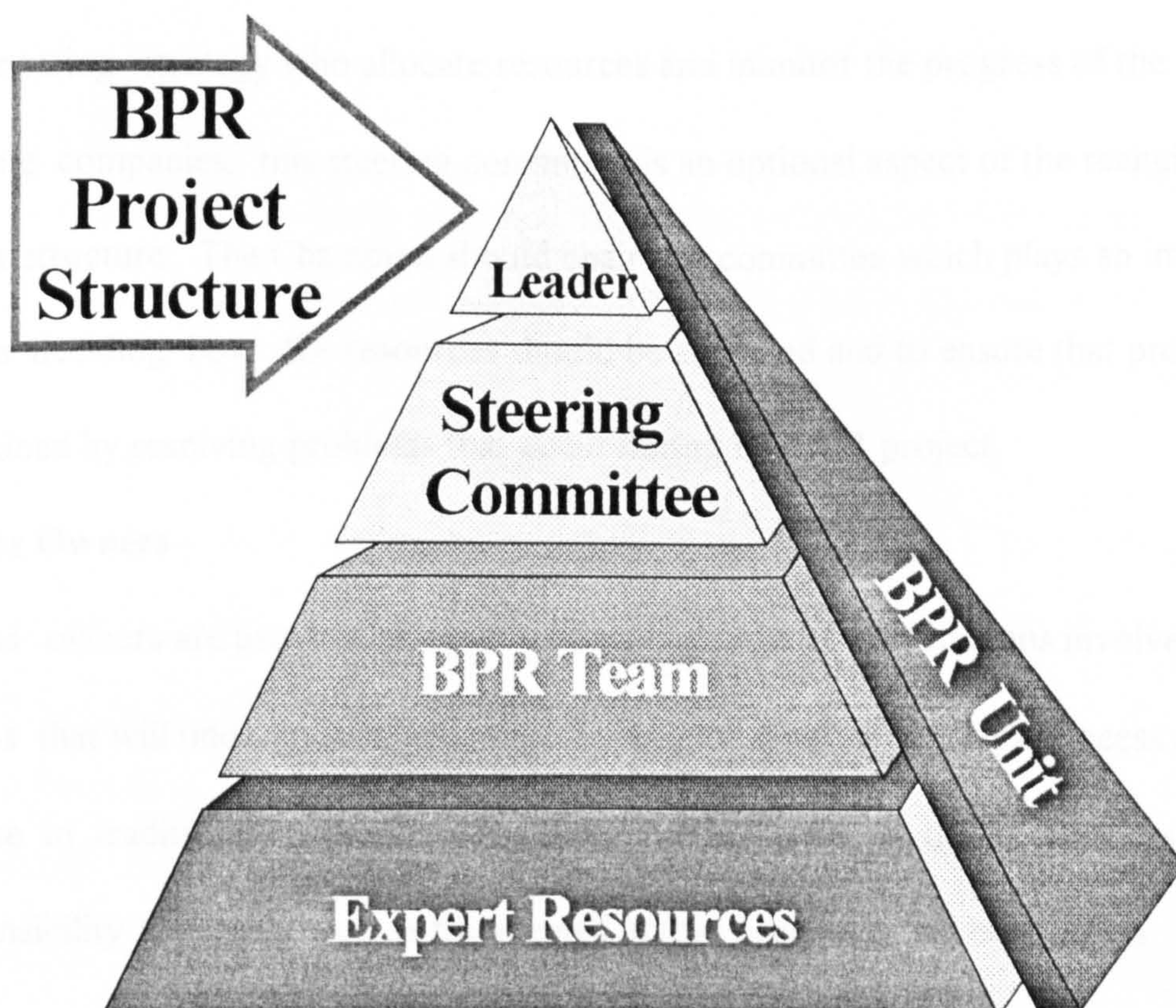


Figure 3-5 BPR Project Structure

Project Leader

At the beginning of the BPR effort, the company must appoint one of the senior executives as the sponsor and overall champion of the BPR effort. The complexity of the re-design process and the potential cross functional nature of the resultant changes requires a very senior visionary with considerable influence to be appointed. Such a person, ideally the Chief Executive (CEO) for a corporate-wide initiative, has a view across all departments and can influence decision making. Indeed, the reengineering champion makes sure that reengineering happens.

Steering Committee

The reengineering Steering Committee is the policy making body of the overall reengineering strategy who allocate resources and monitor the progress of the project. In some companies, this steering committee is an optional aspect of the reengineering project structure. The Champion should chair this committee which plays an important role in deciding how the resources should be allocated and to ensure that progress is maintained by resolving problems that occur during the BPR project.

Process Owners

Process owners are usually managers who manage one of the functions involved in the process that will undergo reengineering. Today, most companies lack process owners, because in traditional organisations people do not tend to think in process terms. Responsibility for processes is fragmented across organisational boundaries. Process owners are usually part of the steering committee. They have the responsibility of forming the reengineering teams and do whatever is required to enable the teams to do their job.

Reengineering Teams

Reengineering teams are cross-functional teams formed to carry out the actual work of reengineering. They are the people who must produce the ideas and the plans and who actually reinvent the business. They will be involved in studying and evaluating the current processes, developing the detailed process vision, and reengineering the process in line with the vision.

The reengineering team is a multi-disciplinary team of people with business knowledge, technology awareness and process design capability. The need for these skills may vary through the life of the BPR project. It is recommended to limit the size of this team to between 5 and 10 members in order to facilitate team discussion and communication during the project period. Team members will come from both inside and outside the targeted process. The insiders should be the best and brightest staff, within the current process. After reengineering, they will act as key agents of change in their organisation.

To understand what is being changed, the team needs insiders; but to change it, the team also needs the help of the outsiders. Outsiders need to be imaginative thinkers, capable of envisioning a concept and making it happen, good listeners, and good communicators.

The reengineering team must concentrate on one process at a time and normally members are assigned full-time to a team though there may be some specialists who are called in on an as required basis.

Expert Resources

Consultants, whether internal or external, can help to deliver the required results from BPR effort. They assist in defining, the best approach to follow and in coaching BPR teams in areas such as team working skills, and problem-solving techniques. They can also provide experience of specific BPR tools and techniques and technical assistance in some business and functional areas.

BPR Facilitators

Usually, any BPR programme has a series of projects where all teams and process owners are busy with their reengineering assignments. BPR facilitators have the roles of coordinating, supporting and controlling all ongoing reengineering projects.

If the BPR effort is on a corporate level, then it is recommended to establish a project coordination centre or a BPR unit which will act as a focal point of the programme and help in the communication of what is going on to the various levels within the organisation.

BPR facilitators or a facilitation unit can help in selecting and training BPR team members. They also keep an eye on each BPR project to ensure that team is on track as they proceed through reengineering.

In addition, the BPR unit has the responsibility of developing the required infrastructure for reengineering projects such as selecting or developing the BPR methodology, selecting appropriate tools and techniques, preparing and involving information technology division specialists from an early stage in the project and helping the organisation to anticipate the skills and competencies needed to support the BPR effort and the reengineered processes.

Finally, creating such a unit will also show the more skeptical staff that the organisation is serious about seeing the change through.

Step 5 - Setting Process Vision, Targets and Plans

Usually, the initiation phase of any BPR effort starts by building a vision for the future of the entire organisation or at least the targeted business process. This role must be a part of the senior management responsibilities. The vision should include a notion of

what products and services the organisation will be offering, how these will be developed in future, how the products or services will be experienced by the customer and how the delivery of these will be experienced by staff and suppliers. During this phase also, the organisation must establish clear and challenging targets for the BPR teams. These targets should not be kept secret and should be published as widely as possible within the organisation. The level at which the targets are set must be high and not one that could be achievable through process improvement or automation. For example, 30% reduction in operating costs or 40% improvement in staff productivity are typical BPR targets. The earlier work on benchmarking and stakeholders analysis should form the basis for setting these targets. This is important because if an organisation does not know where it is now and where it wants to go, it will have very little chance of getting there. So measuring and setting targets for BPR projects based on where the business wants to go is critical. These targets must be regularly monitored during the BPR team meetings and should also be a regular input to the Steering Committee meetings.

By the time the initiation phase is over, it's imperative to formulate a structured and integrated work plan for the BPR project. Such plan should build a strong business case for a reengineering project, show the main milestones in the project, the communications methods, and the methodology to be used by the reengineering team. A summary of the main steps conducted during the initiation phase of any BPR project is shown in Figure 3-6.

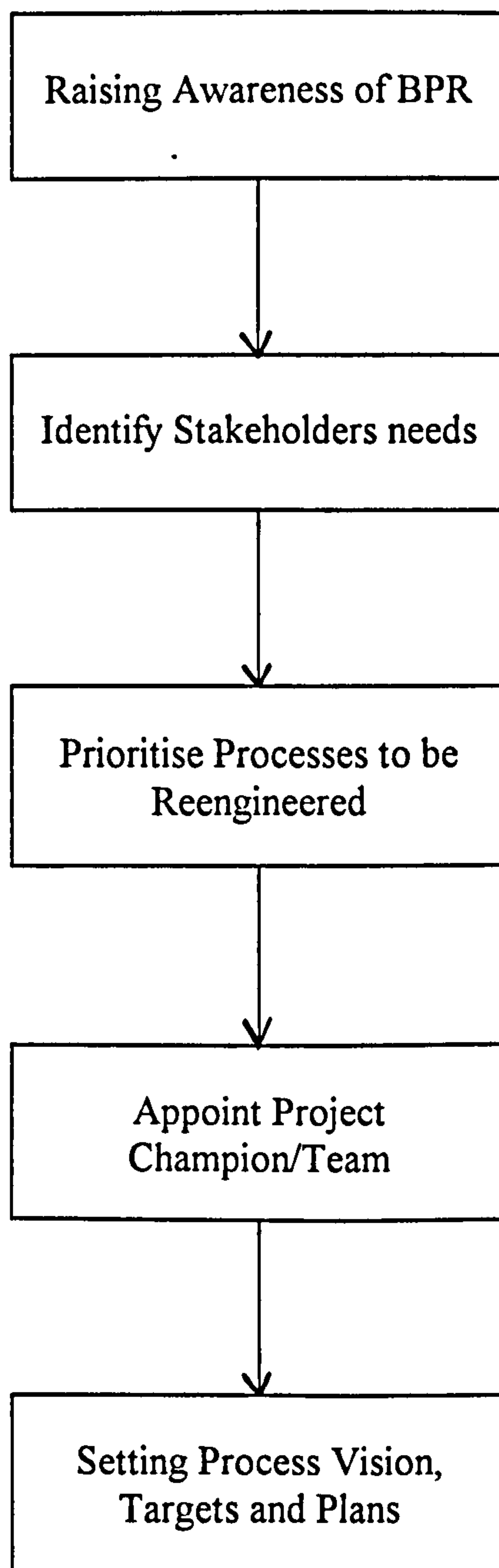


Figure 3-6 The main steps in the initiation Phase of BPR project

PHASE II - Analysis of Current Business Process

Once an organization selects the process to be reengineered and forms the BPR team, it can proceed to the second phase of the generic BPR methodology, analysis of this business process.

The objectives of this phase, according to Talwar [180], is to understand and build a high level model of the business as currently structured by:

- Analysing Customer requirements,
- Modelling target processes,
- Assessing organizational issues,
- Reviewing information technology infrastructure,
- Identifying candidate activities for improvement, elimination, outsourcing, and redesign.
- Consolidating the re-engineering options.

The underlying objective of BPR is to free the firm from the shackles of past behaviour and practice. Hence the analysis phase questions why a business entity such as a process or structure exists and how much of a process the customer sees and what value is added by each process step. Typically, by examining a process, much duplication will be found along with many inefficient procedures. This is especially common when information is being passed back and forth between departments. Harmon [84] and Talwar [180] strongly asserted that it is important to keep in mind when the BPR team is justifying every activity in the process that the aim is to avoid doing things just because “we always have done it this way ?”

Peppard and Rowland [147] identified that one of the major benefits of process analysis is being able to identify the products that the process generates for customers as well as the formal and informal rules which control the process. It is also important to assess the required outcomes of the process and its linkages to other processes.

Harmon [84] stated that during this phase, or sometimes before, customers are often surveyed to determine how the products and services could be improved and other company processes are examined to gain some insight into how efficient others have been able to make the process.

According to Carr and Johansson [20], listening to the voice of the customer is very important to obtain meaningful customer input before deciding which processes to reengineer. Carr and Johansson [20] also showed in their valuable survey of best practices in reengineering the different techniques used by survey respondents to obtain customer input about their core business processes. Figure 3-7 shows the results of the survey:

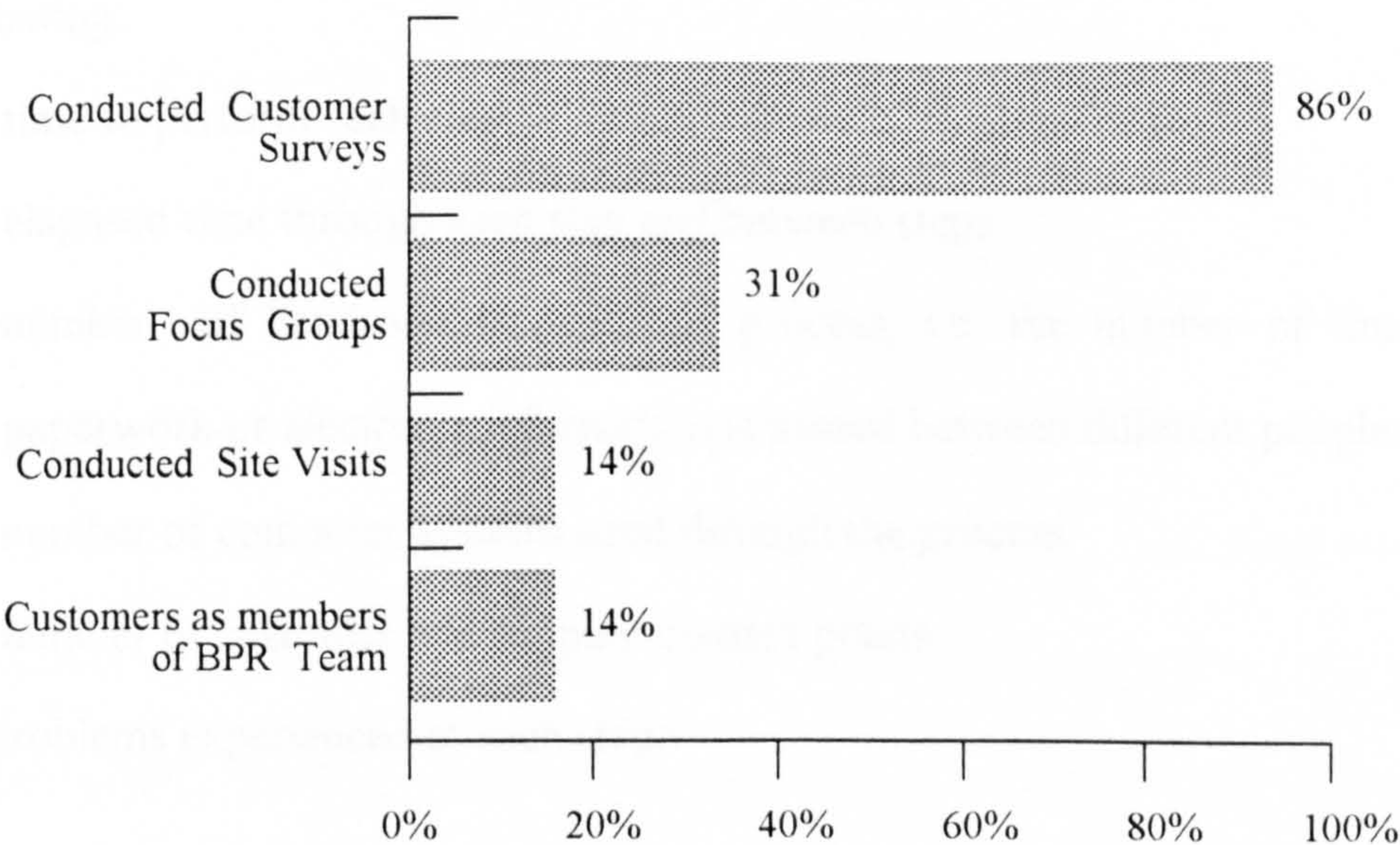


Figure: 3-7 Techniques used to listen to the voice of the Customer in BPR projects.[20]

Talwar [180] discussed the question that advocates of clean sheet redesign approach usually asked: why to model current processes at all - why not go straight to redesign and re-invent everything from scratch ? The answer according to Talwar is that there are a number of genuine benefits to be gained from understanding the current processes including:

- defining a base line model of existing processes which can be used to plan and test future changes.
- identifying candidates for improvement.
- spotting current and potential problems
- identifying improvement that can be made immediately by the process owner.
- building consensus on the steps in and problems of the current process.
- confirming interfaces to other functions, processes and organizations.
- creating the stimulus for change.

Peppard and Rowland [147] suggested the basic information to be collected by a BPR team for each step in the current process. The suggested information includes the following:

- time to perform each step.
- elapsed time through each step and between steps.
- number of hand-offs through the process, i.e. the number of times material, paperwork or electronic information is passed between different people.
- number of computer systems used through the process.
- number of customer and supplier contact points.
- problems experienced at each step.

The level of detail in the analysis phase is subject to the reengineering approach used by the organization. According to Harmon [84], companies that seek incremental improvement put a lot of emphasis on analyzing the current process while companies

that seek radical improvements often only do a cursory analysis of the existing process, since they intend to start from scratch when they begin the redesign effort and do not wish to be influenced by current assumptions or practices. Most companies, however, take a balanced approach. They spend a reasonable amount of time on the analysis of the current process to assure they are aware of all the objectives and the constraints. They then turn to the redesign phase and seek to make as many improvements as they can within those constraints.

The traditional approach to analysis is to use hierarchical decomposition techniques which show the main elements of the process broken down into different but related sub-processes, activities and tasks. Finally, when taking the analytical approach it is important that other issues are also investigated in order to obtain the total picture. These include relationships, accountability etc., which the analysis does not always reveal [59, 84, 120, 147, 173].

PHASE III - Re-designing Business Processes

The third phase of the BPR generic methodology is redesigning the business processes themselves. This is considered the most difficult part of the BPR initiative. The objective is to create and model the new design for the reengineered business process.

As outlined earlier, two main approaches can be used for the redesign of a business process. According to Peppard and Rowland [147], for some elements of the process a complete re-think (clean sheet) may be most appropriate. For others it will be systematic redesign where these two approaches should not be viewed as hard choices.

Harmon [84] determined four major areas for redesign to be considered by a BPR team:

- 1) Redesign the overall process.
- 2) Redesign the product or service to better satisfy the customer, or to make the product easier to manufacture or service.
- 3) Redesign the information systems that support the process.
- 4) Redesign the human performance systems.

The clean-sheet approach requires basic questions to be answered:

- What underlying needs are we trying to satisfy and for whom ?
- Why are we trying to satisfy those needs and do they fit in with the organization strategy ?
- Where do those needs need to be serviced ?
- When are we required to meet those needs ?
- How will we deliver the above ?

Figure 3-8 shows a clean-sheet approach proposed by Peppard and Rowland [147] based on the above questions.

On the other hand, Peppard and Rowland [147] also identified that systematic redesign of an existing process is usually about making it better, cheaper, and faster. Better, in that it delivers higher levels of satisfaction to its stakeholders, particularly customers. Faster, in that it does so as quickly as possible to increase responsiveness. Cheaper, in that it does the above to the highest levels of efficiency.

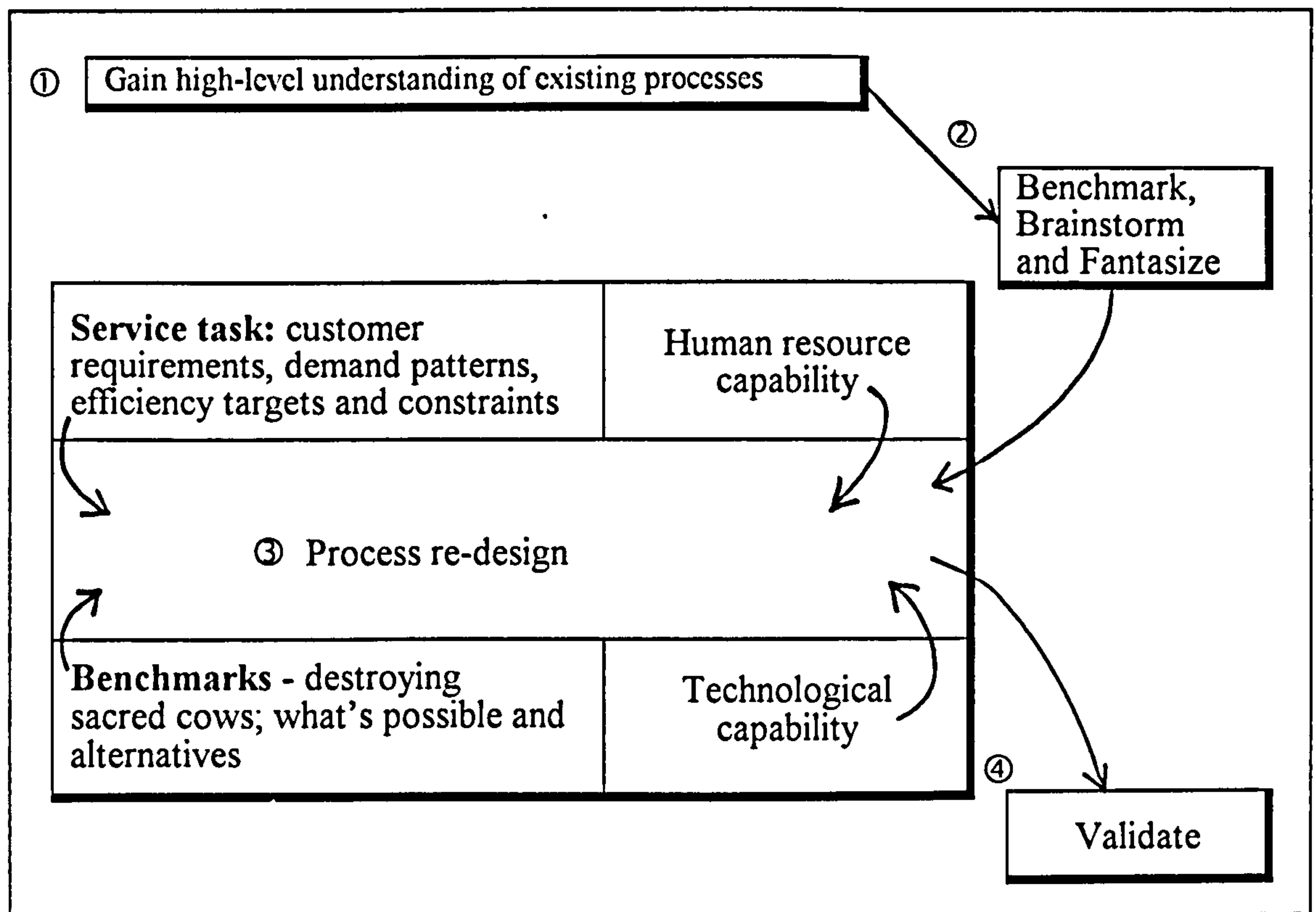


Figure 3-8 The clean-sheet approach [147].

The characteristics of redesigned process which should be taken into account by the BPR team in this phase are summarized by Hammer and Champy [78] as follows:

- several jobs are combined into one.
- workers are empowered to make decisions as part of the job.
- the steps in the process are performed in a natural order.
- there may be different processes to suit different situations.
- work is performed where it makes the most sense.
- internal checks and control are reduced or removed.
- reconciliation is minimized.
- single points of contact for customer.
- technology plays an important enabling role.

- focus on performance measures and remuneration changes from activities to results.
- values change from protective to productive.
- organizational structure becomes much flatter.
- managers change their role from one of supervising to one of coaching and support.

Talwar [180] emphasised that two rules of thumb are useful when defining new processes:

- 1) Completeness, where a well drawn process is not necessarily well defined or complete.
- 2) Conformance, where specifying a process completely does not guarantee that it will be executed that way.

Therefore, it is important to have a range of different skills within the BPR team to ensure complete and practical design.

Peppard and Rowland [147] stated that having generated a new process design it is vital that the people requirements are analysed in some detail. For the process to be effective, efficient and adaptable, the people must also demonstrate these characteristics. The culture, organization, staffing, rewards, empowerment, recruitment, training and development should all be aligned to the needs of the organization's strategy.

Finally, most of the BPR authors [59,84,120,147,180] stated that it is important as a part of the redesign phase to validate the new process design before proceeding to the implementation phase. Simulation is one of the most popular techniques used to validate new process design. The lessons learned from the simulations should be incorporated back into the new design and the new process simulated again, in an iterative fashion until the team is confident that the process will perform as required.

PHASE V - Implementation

Once the new process design is completed and validated, it is time to begin the implementation phase. It is recommended to start the implementation phase with a pilot project [147,180,190]. The selection of the pilot is crucial for the success of the BPR programme overall. The pilot selected should have the following characteristics:

- The impact of the BPR programme should be visible and significant.
- The chances of success should be high, the improvement should not involve overly complex changes and the people involved should be of the highest caliber, having the necessary level of experience and motivation to make it work.
- The pilot should contain enough of the ingredients to be implemented across other processes so that the pilot is a good test of the “roll-out” to other parts of the organization.

The implementation phase usually starts by forming an implementation team made up of people who will be working in the new process.

Carr and Johansson [20] emphasized that the team must be highly capable, experienced and motivated. The team should include the best people from the line functions as well as the supporting areas. The more people you can include at this point the better, since this will encourage acceptance. Also, it is important that some of the team members should be carry-overs from the redesign team to ensure team continuity. Peppard and Rowland [147] emphasised the importance to engage selected customers and

suppliers of the process in the new process pilot. Their valuable feedback and appreciation of the expected improvements will help to facilitate the implementation of the new process.

Talwar [180] identified that the implementation plan typically needs to address three key areas:

- 1) Changes affecting parts of the current structure that will remain largely unchanged.
- 2) Putting in place those elements of the structure that have undergone substantial change.
- 3) Identifying changes to be made in future rounds of reengineering.

The implementation plan should be phased on an agreed priority basis to ensure a successful roll-out of the newly designed processes where priorities must balance risk and reward.

This plan should be clearly communicated across the organization to raise motivational levels. Finally, a successful implementation plan should initiate a continuous improvement program for the new process where BPR should be seen as an on-going process and not an end in itself [63,134,147].

3.3.4 Current BPR Methodologies

Currently, there are a considerable number of BPR methodologies developed by different business authors, BPR practitioners and consulting firms.

According to Manganelli and Klein [117,120], most of current BPR methodologies are based on the common thoughts that business must change radically to be competitive, changes must occur in core business processes and customer expectations to enhance the value added character of these processes.

As mentioned earlier in section 3.3.2 of this chapter, a successful BPR methodology has some essential criteria starting from developing clear goals and a vision of the future organisation and ending with an actionable implementation plan. Indeed, a BPR methodology will provide the missing “how to” that must follow the “why”. Examples of three typical BPR methodologies in current use follow :

“**Rapid Re**” is a five stage BPR methodology developed by Manganelli and Klein [120] to enable organizations to achieve rapid dramatic results by making radical changes in strategic value-added business processes. The methodology has been designed to be used by reengineering teams in business organisations, without heavy dependence on outside experts. Each of the five stages addresses a logical part of the reengineering process and produces results that are used by subsequent stages. In brief, these stages are:

1. **Preparation:** The purpose of this first stage is to mobilize, organize, and energize the people who will perform reengineering. This includes the development of an executive consensus on the need for BPR, definition of project parameters, training the BPR team, and producing the initial project plan.
2. **Identification:** Develops a customer - orientated model of the business and identifies strategic value-added processes and their priority for reengineering.
3. **Vision:** Looks for breakthrough opportunities in the processes, analyzes and structures them as vision of radical change.

4. **Solution:** This includes development of the technical design needed to implement the visions and the social design which organizes and structures the human resources that will staff the reengineered processes.
5. **Transformation:** This stage aims to realize the process visions, launch pilot, and full production versions of the new process. The five stages of Rapid Re-Methodology are shown in Figure 3.9.

Another BPR methodology was developed by Darine and Susan [48] which consists of eight steps as shown in Figure 3-10.

The methodology was developed using a TQM approach where the first two steps ensure that the desired outcome is achieved the first time. The approach forces people to think before they act and to examine the bases and assumptions that shape their behavior. In step 1, a conscious, rational decision is made to start or stop the project. During steps 2 through 5, the reengineering design and the plan for implementation are created. In step 6, the resources and the commitment to implementation are obtained. During step 7 and 8 the environment is reengineered.

Another BPR methodology was presented by Colin Thomas [33] is called **COBRA** methodology. COBRA (Constraints and Opportunities in Business Restructuring - an Analysis), an initiative of the European Commission, is designed to cut through the hype and examine what is actually happening in the BPR field. The COBRA project has developed this six stage BPR methodology which is designed to complement other approaches, such as TQM, to ensure that BPR initiative will be undertaken as part of an overall transformation strategy. The six stages of COBRA methodology are shown in Figure 3.11.

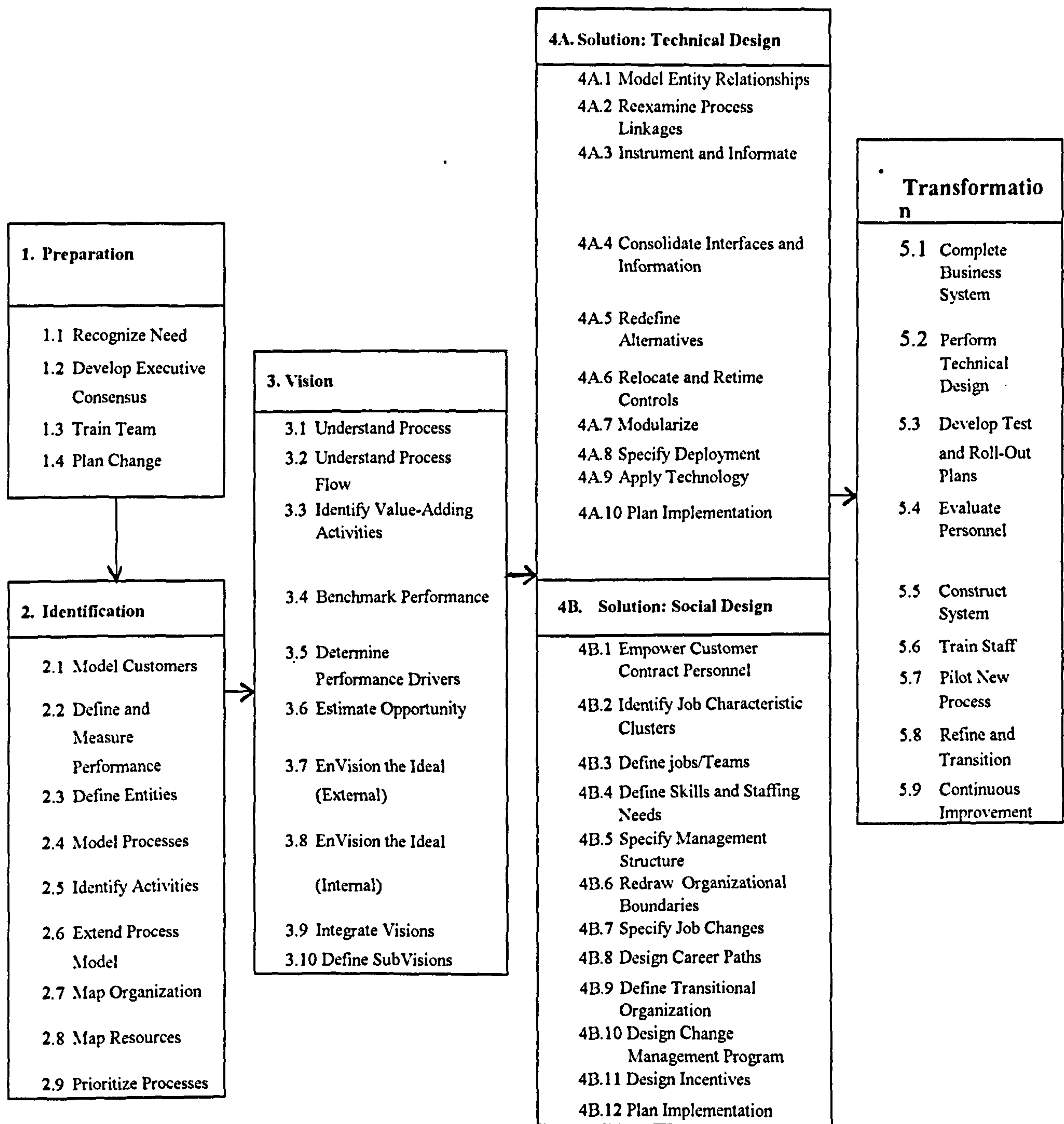
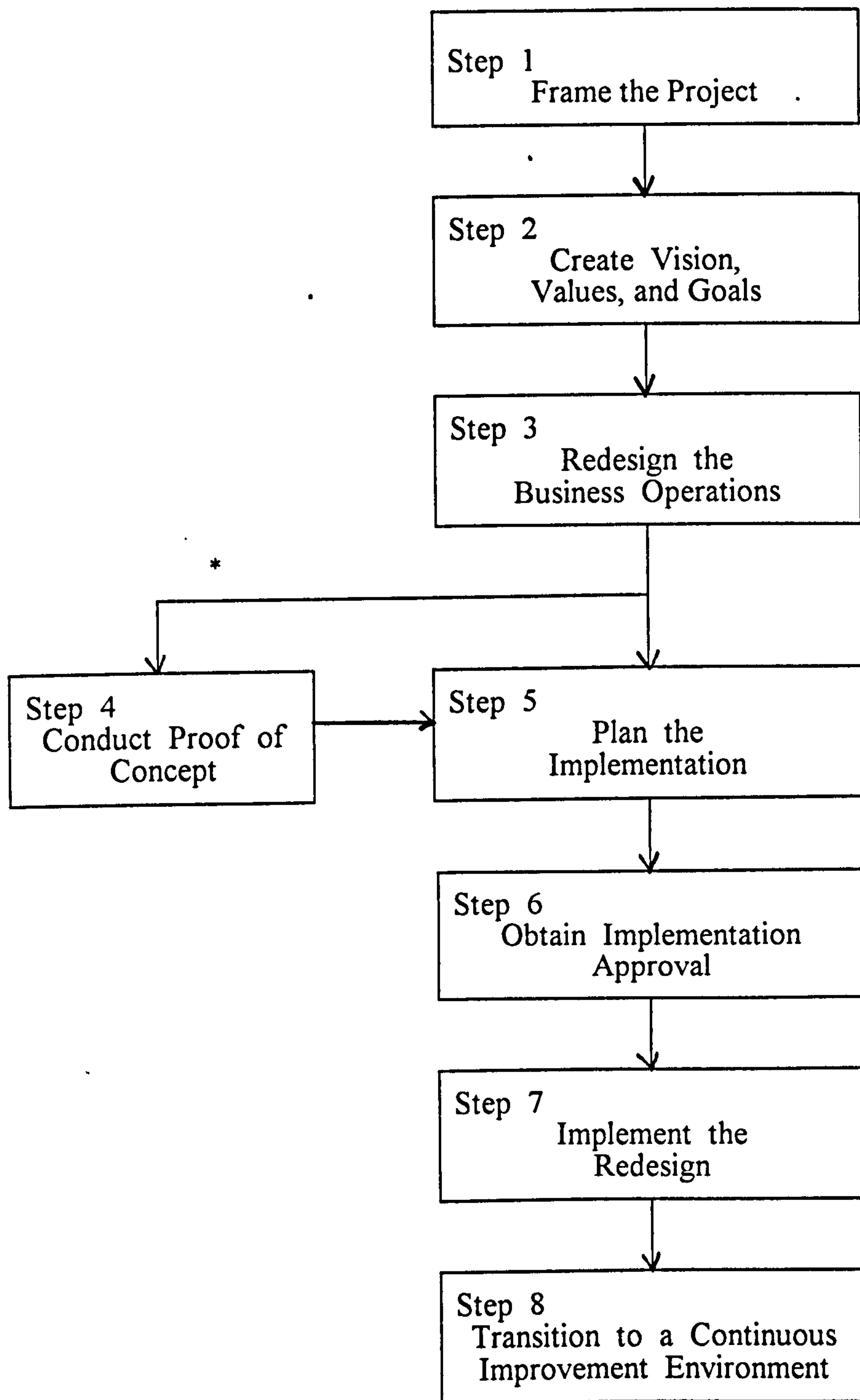


Figure 3-9 Rapid Re. Methodology [120].



* = Optional Flow

Figure 3-10 BPR Methodology [48].

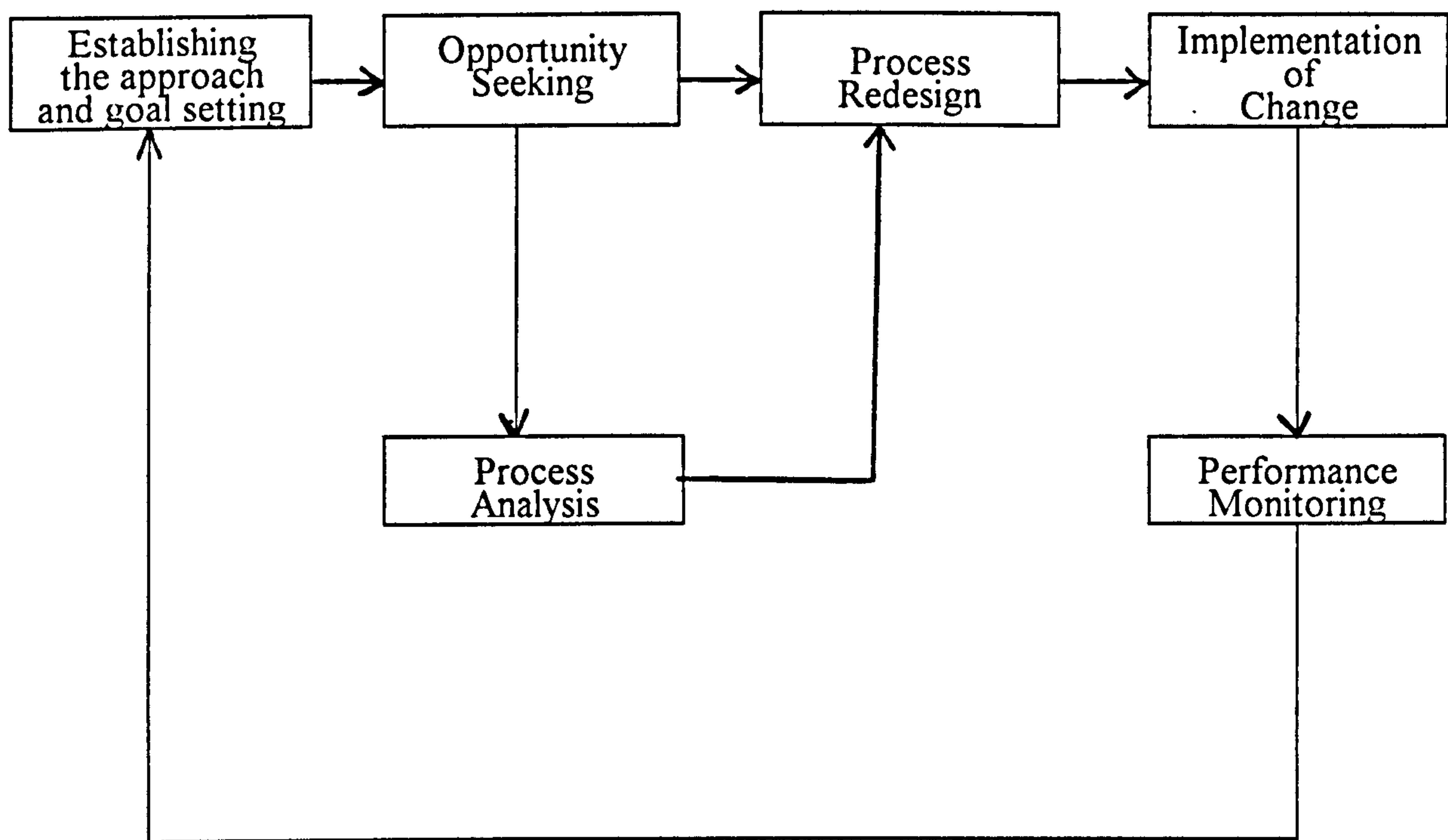


Figure 3-11 COBRA BPR Methodology [33].

Finally, Manganelli and Klein [120] presented a comparison between 11 major BPR methodologies based on the following characteristics:

- Reengineering definition.
- Appropriate application.
- Process(es) addressed.
- Methodology.
- Role of automation.

Figure 3-12 shows a summary of the results of this comparison.

Characteristic	Rapid Re TM	Adair & Murray	Currid & Company	Davenport	Hammer & Champy	Hunt	Johansson, McHugh Pendlebury, & Wheeler	Morris & Brandon	Mayak & Ketteringham	Tidry & Sherman	Tomasko
Reengineering Definition											
• Starting Point: Business Goals	Y	Y	Y	Y	Y	5	Y	Y	Y	Y	Y
• Focused on Process(es)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	9
• Business/Process Goals Link	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
• Value Added Priority	Y	Y	1	Y	Y	Y	Y	N	Y	Y	Y
• Customer Orientation	Y	Y	1	Y	Y	Y	Y	Y	Y	Y	Y
• Radical Change Proposed	Y	1	Y	Y	Y	N	Y	N	Y	Y	Y
• Extend BPR to Suppliers/Partners	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y
• Appropriate Application	Y	Y	N	Y	Y	5	Y	2	7	4	Y
Process(es) Addressed											
• Single	N	Y	8	N	N	Y	N	Y	N	Y	N
• Multiple	Y	Y	8	Y	Y	N	Y	Y	Y	Y	Y
• Value-Added	Y	Y	8	Y	Y	N	Y	3	Y	Y	Y
• Support	Y	Y	8	Y	Y	N	Y	Y	Y	Y	Y
Methodology			None	None	None	None			None		None
• Described	Y	Y	None	None	None	None	Y	Y	None	Y	None
• Adequate Detail	Y	Y	None	None	None	None	N	N	None	N	None
• Management Techniques Used	Y	Y	None	None	None	None	6	Y	None	11	None
• New Process Vision	Y	N	None	None	None	None	N	N	None	Y	None
• Technical Design	Y	N	None	None	None	None	N	Y	None	11	None
• HR Design	Y	N	None	None	None	None	N	Y	None	11	None
• Address Barriers to Change	Y	Y	None	None	None	None	Y	Y	None	Y	None
• Implementation Plan	Y	N	None	None	None	None	N	N	None	11	None
Role of Automation											
• Starting Point	N	N	N	N	N	N	N	N	N	N	10
• Enabler	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	10

Note: (1) Not specifically stated; (2) Quality improvement is "given" objective; (3) Not always a determinant of priority; (4) Applicable to all aspects of the business; (5) Limited to quality improvement; (6) Limited to workflow and cycle time analysis; (7) Not a true BPR; (8) Not discussed; (9) Partially; (10) Technology not addressed; (11) Not specified.

Figure 3-12 Comparison of Reengineering Methodologies

3.4 BPR Techniques and Tools

In order to achieve any BPR project, the BPR team will use a number of different techniques and tools throughout the different stages of the BPR methodology. According to Zairi & Sinclair [200], few BPR authors refer to any single technique or tool when discussing BPR. Most incorporate a mixture of tools and techniques depending upon the focus of the author concerned, whether it be technological or involving the management of people. In Figure 3.13, Harmon [84] presented the various techniques and tools that could be used throughout the different phases of BPR methodology. The right tool and technique selection is an important issue discussed by Manganelli and Klein [119] who emphasized that BPR is an exercise in the management of detail and the right way to pick a reengineering tool is to keep three factors in mind:

- 1) BPR projects are rapid, usually completed in less than one year.
- 2) The people to be supported by the tools are business people.
- 3) Common office tools such as spread sheets and project management tools are often enough to meet BPR team needs.

There are a several categories of BPR tools that used to support different techniques within various BPR methodologies [57,84,98,119,200]. These categories include:

- Coordination/Project Management Tools.
- Business/Organization Modeling Tools.
- Process mapping/analysis tools.
- Prototyping or Simulation tools.
- System development tools.
- Resource management tools.

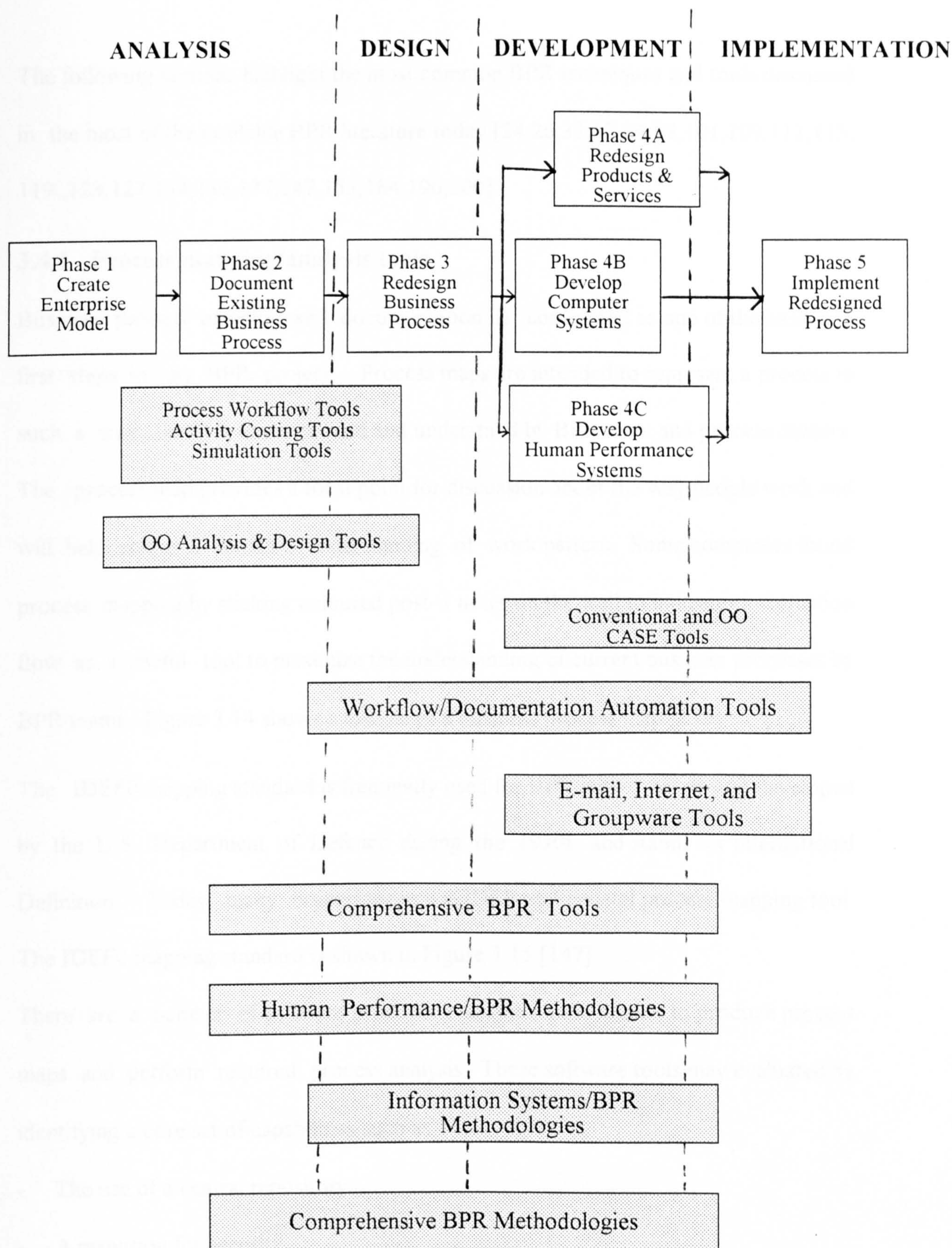


Figure 3.13 Various techniques / tools that support the BPR methodology [84].

The following sections highlight the most common BPR techniques and tools discussed in the most of the available BPR literature today [24,26,33,57,84,98,101,109,111,115,119,123,127,134,136,137,147,153,184,196,200].

3.4.1 Process mapping/analysis tools

Business process mapping and documentation is considered as one of the basic and first steps in any BPR project. Process maps are intended to represent a process in such a way that it is easier to read and understand by BPR team and process owners.

The process map provides a focal point for discussion about the way people work and will help create a common understanding of work pattern. Some companies found process mapping by sticking coloured post-it notes on the wall to indicate information flow as a useful tool to maximize the understanding of current business processes by BPR teams. Figure 3.14 shows a sample of a business process map [136].

The IDEF0 mapping standard is frequently used for BPR initiatives. It was developed by the U.S. Department of Defence during the 1970s and stands for International Definition. Today, many organizations use IDEF as a general process mapping tool. The IDEF0 mapping standard is shown in Figure 3.15 [147].

There are a number of software products available on the market to produce process maps and perform required process analysis. These software tools may be evaluated by identifying a core set of capabilities such as:

- The use of a central repository.
- A provision for security.
- Consistency checking of diagrams and related entities.
- Report generation facility.

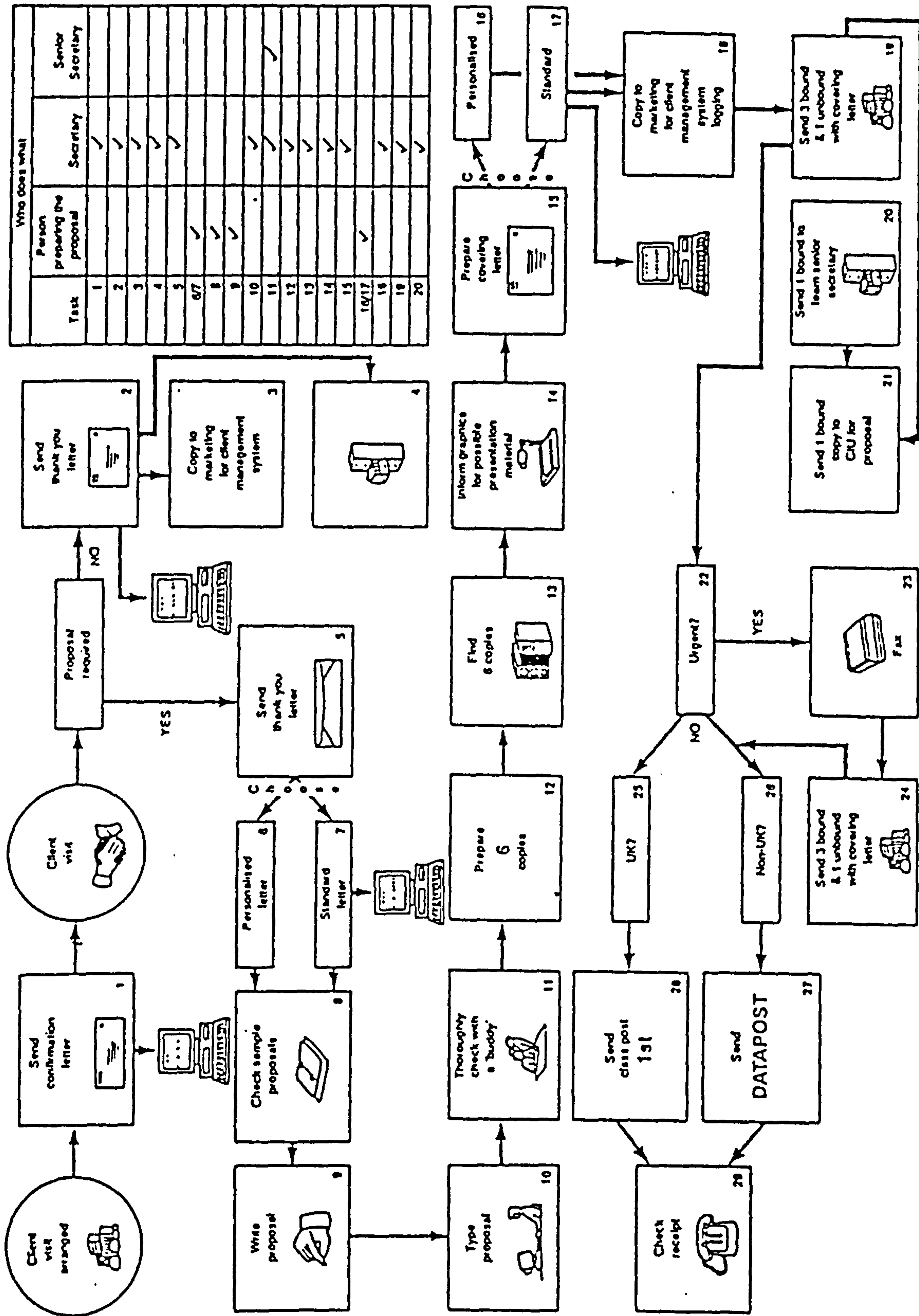


Figure 3-14 A sample of a business process map

- Integration with other applications and implementation models.
- Performance measures capabilities.
- Simulation.
- The ability to conduct a multi level process analysis.
- Basic metrics capabilities to determine possible changes in the process.

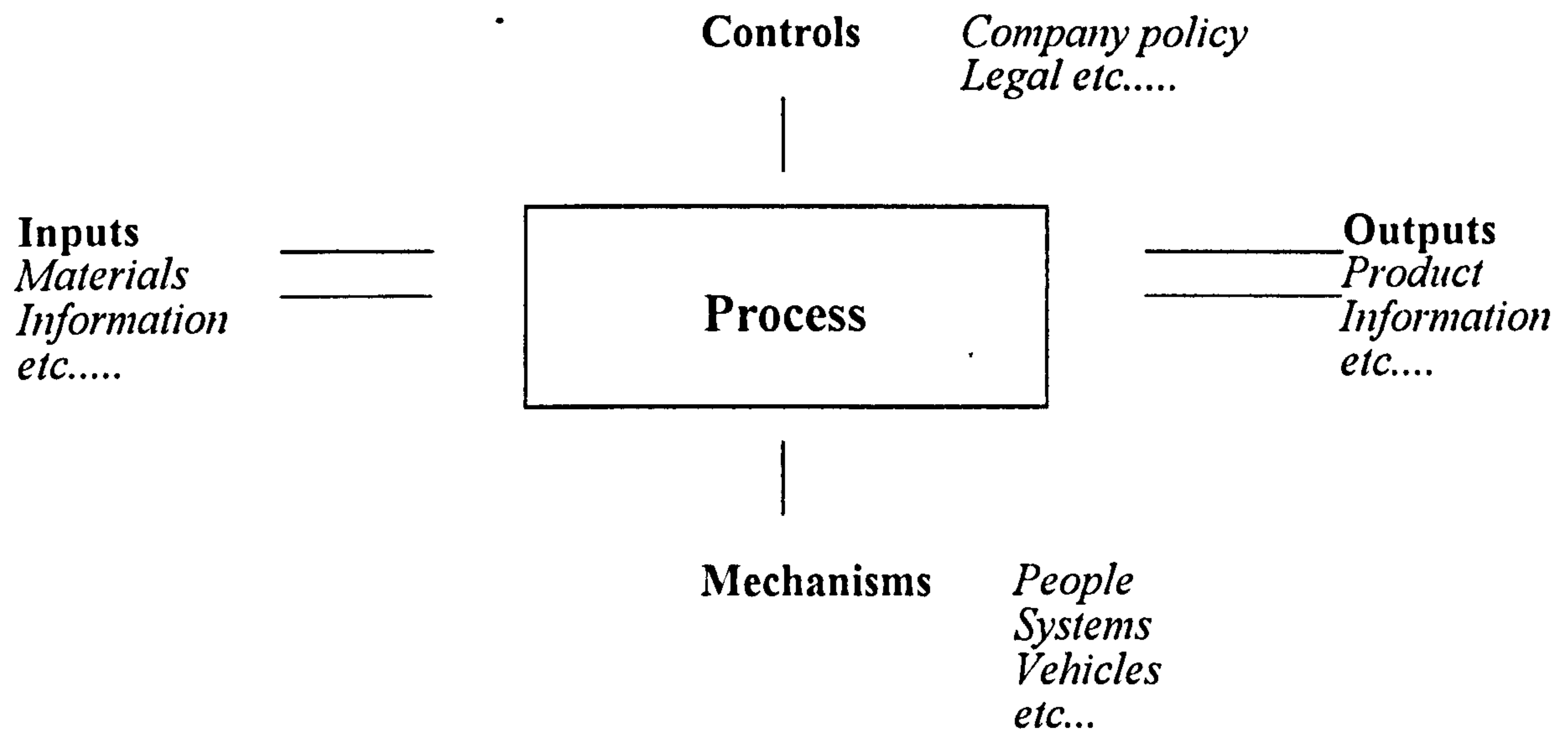


Figure 3.15 IDEF Process map [147].

3.4.2 BPR and Simulation

Simulation software can be used at the beginning of the BPR effort to capture and model existing business processes and prepare them for the reengineering effort. However, it is worth mentioning that whilst simulation tools are much improved now, they still have a reputation for lengthy model development time. Simulation also could be a useful tool when redesigning business processes, where it can help to evaluate alternatives and catalyze creative thinking, enabling visualization via graphics to simulate the imaginations of the team. Simulation tools are helpful in exercising the redesigned process to examine the impact on costs, cycle time, and customer satisfaction. Traditionally simulation has been very useful for examining physical flows i.e. baggage or passengers at airports.

As the BPR initiative nears the implementation stage, process prototypes or simulation of the new business process provides tangible benefits in process improvement. First, this approach helps to bring to the surface unforeseen transition issues, thus serving as a risk management technique. Second, the practice serves as a valuable confirmation step from which all IT representatives may develop prototype application systems.

In summary, simulation in BPR can be used in:

- 1) “As is” modeling, as a tool for understanding and improving the process.
- 2) “To be” generating alternatives for comparison.
- 3) As a tool for marketing and communicating the redesigned processes to top management and staff.
- 4) As an educational and training tool for company staff on how to operate the new processes.

3.4.3 BPR and Benchmarking

Benchmarking is one of the techniques which forms an integral part of reengineering, since it allows the visualization and development of processes which are known to be in operation in other organizations. It can highlight areas for improvement simply by pointing out what is possible. Many businesses seek knowledge and inspiration by benchmarking themselves with others. Benchmarking can be undertaken at various levels and against a number of bodies. Comparison can be done between:

- different departments within a division.
- different divisions within an organization.
- different organizations within the same industry.
- different organizations in different industries.

In a BPR implementation, benchmarking can be used to compare those processes which it intends to re-engineer first. Benchmarking best practice is a useful way of breaking people's paradigms and helps to foster thoughts on alternative ways of doing things[65].

Figure 3.16 shows a suggested iterative process of change of business processes using benchmarking and reengineering [127].

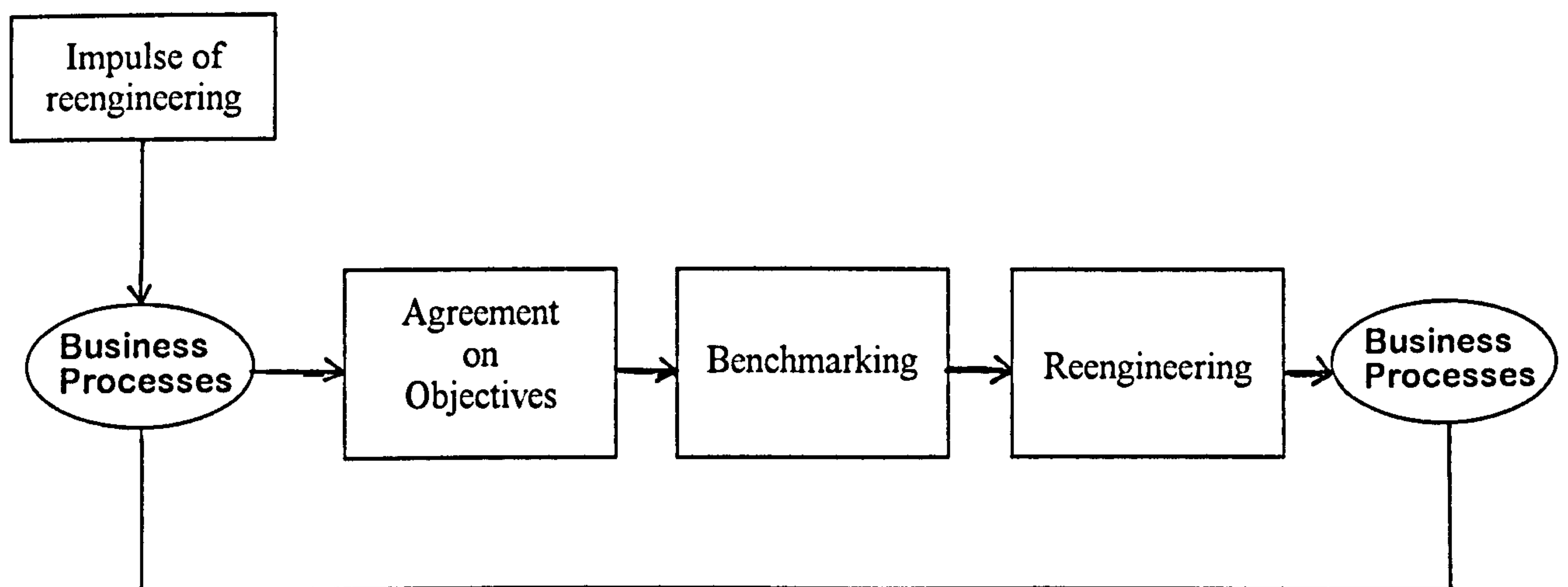


Figure 3.16 Iterative process of change of business processes.[127].

3.4.4 BPR and Change Management

During any BPR effort, there will be a need to take account of the human side of the project, in particular the management of organizational change. Some BPR authors suggest that the management of change is the largest task in a BPR effort because people often perceive reengineering as a threat to both their methods of work and their jobs. Different change management techniques will be used throughout the BPR effort to address the following areas:

- 1) Sponsorship and commitment of process owner and top management.
- 2) Resistance to change.
- 3) Change Agent Skills to facilitate implementation.
- 4) Cultural change.

3.4.5 BPR and Industrial Engineering

According to Davenport and Short [40] many basic industrial engineering techniques are used by BPR teams throughout the different stages of the BPR methodology. These techniques include work and time study, organization and methods, operations management, process and system analysis, simulation, etc. Wilkinson [196] stated that today industrial engineers are in a unique position to participate effectively in BPR, due to their technical knowledge of the processes and techniques mentioned above, their training and ability to both see a process as a whole, and to optimize the individual functions within the process. These characteristics are the essence of reengineering.

3.4.6 The need for a BPR Software Package

The nature and complexity of most BPR projects, emphasizes the need for a comprehensive BPR software package to record and document the existing system and the proposed changes. A comprehensive BPR tool would need to be a CASE tool, enhanced to have enterprise modeling and workflow modeling capabilities with an intelligent help system that would suggest ways in which a workflow process could be modified. It should provide simulation and project management tools and intelligent help to support the management of implementation and the ongoing maintenance of the redesigned process. Figure 3.17 shows an overview of the capabilities of some popular BPR tools [84].

	Documents business process workflow	Allows simulation and what-if analysis	Supports activity costing	Provides design for software develop- ment	Provides software develop- ment environ- ment	Generates code for a software application
BPR Analysis & Redesign Tools						
Action workflow Analyst for Windows (Action Technologies)	●					
BPWin (Logic Works)	●					
Net Profit II (Sapling)			●			
Rapid Re (Antares Alliance Group)	●	○	●			
BDF (Texas Instruments)	●	●				
Pro Vision (Proforma)	●			●		
Process Engineer (LBMS)	●	●	●	●		
COSMO (Coe-Truman Tech.)	●	●	●	●		
ReThink (Gensym)	○	●	●	●	○	○
Sparks (Coopers & Lybrand)	○	●	●	●	○	○
BPR Development & Implementation Tools						
Workflow (IBM)				●	●	●
IEF/Composer (Texas Instruments)				●	●	●
Objectory (Objectory, Inc.)	○			●	●	●
Construct (Gemini)	○			●	●	●
Object Mang. Workbench (Intelli Corp/James Martin)				●	●	●

● Primary strengths

○ Secondary feature

Figure 3.17 An Overview of the Capabilities of Some Popular BPR Tools [84].

3.5 BPR and Information Technology

Every change program needs an enabler that makes the transformation to the new world possible. The Enablers are the means and ways for the change to take place.

Peter Homa [148] identified two main aspects of enablers as follows:

- a) **Hard aspects** are those such as information technology and automation.
- b) **Soft aspects** are all people related and include teams and the way they are setup, including the development of a problem-solving culture, etc.

In Business Process Reengineering Projects, Information Technology (IT) acts as a powerful enabler in the redesign of Business Processes. Indeed IT and its position in BPR has matured.

Morrow and Hazell [132] stated that information technology has become the generally accepted umbrella term for a rapidly expanding range of equipment, applications, services, and basic technologies. They fall into three primary categories : computers, telecommunication, and multimedia data; with literally hundreds of subcategories. Reengineering programmes often require new information systems to deliver the full potential of redesigned processes.

Information technology is a crucial enabling factor, allowing compression of time and distance, providing broader access to information and knowledge assets, and eliminating barriers between customers and suppliers.

One important characteristic of modern business is its reliance on information technology. Therefore, integration of IT Specialists into reengineering teams is important. In the 1980s a number of studies indicated that companies were spending vast sums of money acquiring computer hardware and software without any significant gain in productivity.

Several studies suggested that this was because it were simply being tacked onto existing business functions. Harmon [84] stated that Companies were not reorganizing to take advantage of the new IT capabilities and to justify large investments in IT, companies need to reengineer their processes to take advantage of the latest information technologies.

Technology should be the enabler of process, not the driving force. Information systems should not constrain what the company can do, or when it wants to do it.

There are several different stages at which IT tools are necessary in BPR:

- i) Tools to map, analyse and model the current business processes.
- ii) Tools such as client/server systems, support companies who want to reduce their layers of management and improve decision making process.
- iii) Tools and techniques to provide the right framework for transition to the new business processes.

The first type of these IT tools, called BPR tools, were discussed in details in section 3.4 of this chapter. The other two types are called BPR Enabling Technologies which can radically alter the way business works. Figure 3.18 presents some of these enabling technologies and their business applications.

Hammer and Champy in their famous book “Reengineering the Corporation” [78] presented how BPR can break the rules that limit how we conduct our work. This makes it a critical technique for companies looking for competitive advantage. Figure 3.19 shows some of those rules presented by Hammer and Champy[78].

A more important issue for the application of IT in BPR, identified by Lyons [115], is the enactment of redesigned processes in new software and hardware applications. In this respect, IT has been an impediment to early realization of BPR benefits, due to the difficulties associated with software development, inappropriate skills, business reliance on legacy systems and platform migration. These issues must be addressed

in BPR implementation planning, if the intentions and efforts of enterprise process redesign are not to be discredited before they have had a chance to deliver results.

TECHNOLOGY	BRIEF DESCRIPTION	EXAMPLE BUSINESS APPLICATIONS
Artificial Intelligence	Technologies attempts to go beyond just information provision to perform a degree of analysis previously done by humans.	Modelling of money markets and credit authorization.
Multimedia	The combination of text, image, video and sound	Training aids
Work flow automation	Automating the passing of work between people	Processing of incoming mail.
Communications	Personal communication systems and corporate's network	Sharing data base and staff empowerment
Virtual Reality	The creation of an environment (Simulation)	Entertainment and simulation applications.
Computer aided software engineering(CASE)	Set of work station - based software tools	New products development

Figure 3.18 Examples of BPR enabling Technologies.

OLD RULE	ENABLING INFORMATION TECHNOLOGY	NEW RULE
Information can appear in only one place at one time.	Shared data base.	Information can appear simultaneously in as many places as it is needed.
Only experts can perform complex work.	Expert system	A generalist can do the work of an expert.
Managers make all decisions	Decision support tools	Decision making is part of every one's job.
Field Personnel need offices to send and receive information.	Wireless data communication and portable computers	Field personnel can send and receive information wherever they are.
You have to find out where things are.	Automatic identification and backing technology	Things tell you where they are.

Figure 3.19 IT and work rules [78].

3.6 BPR Success and Failure Factors

As important as it is to understand how to reengineer, it is vital to understand how to avoid the obstacles and overcome the difficulties that usually face business process reengineering projects.

In two recent surveys of Fortune 1000 Companies, top business executives confirmed that so far, reengineering projects are facing considerable difficulties. Ira King [103] presented the results of Arthur D. Little's 1994 study of 350 executives in 14 industries where 68% of them said that their companies experience unanticipated problems from reengineering as shown in Figure 3-20

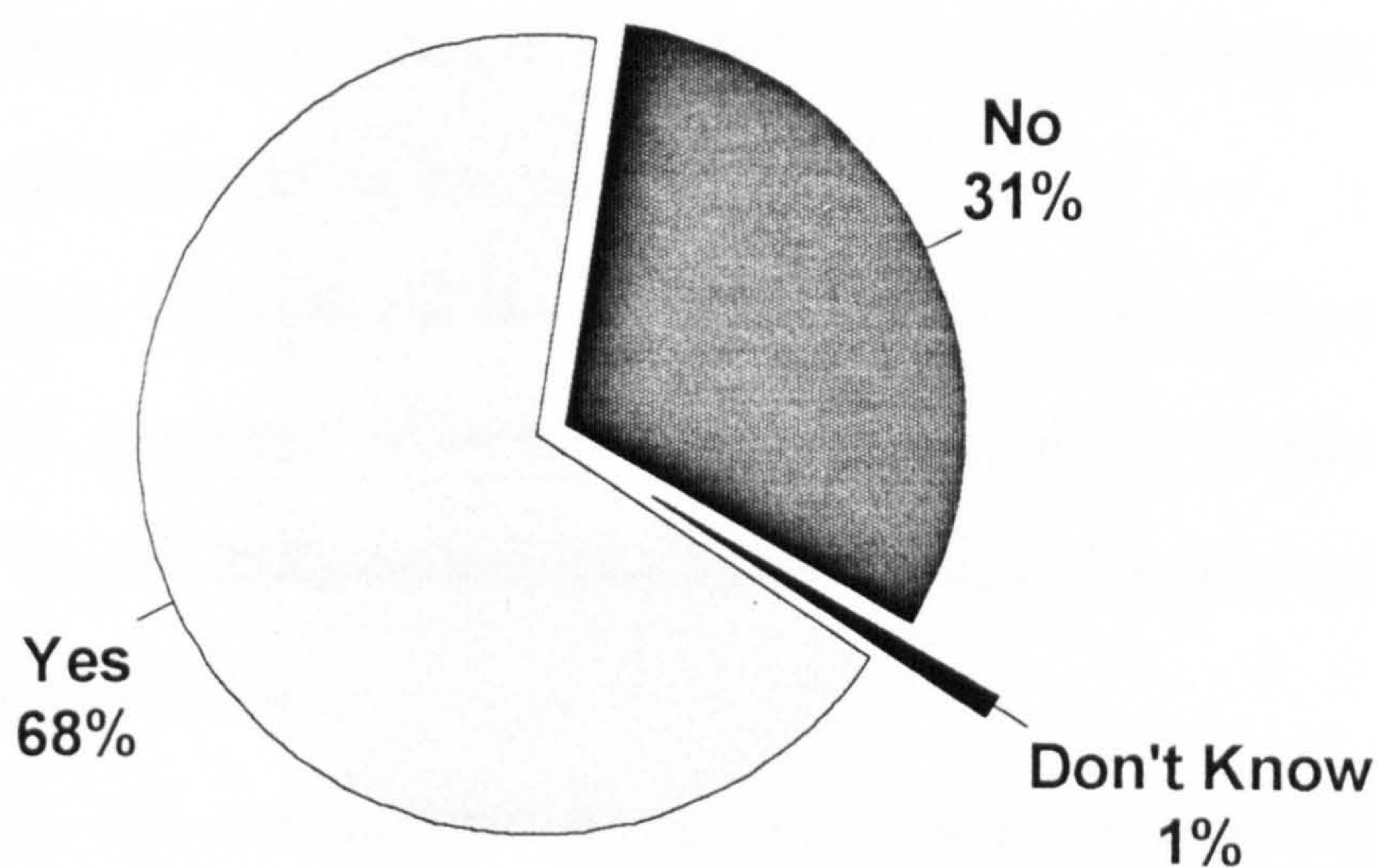


Figure 3.20 Companies Experience Unanticipated Problems From BPR [103].

Another survey conducted by Deloitte & Touche indicated that although the surveyed executives were generally satisfied with the results of business process reengineering, they cited a number of obstacles to success in BPR as shown in Figure 3.21 presented by Fitzenz and Alley [45].

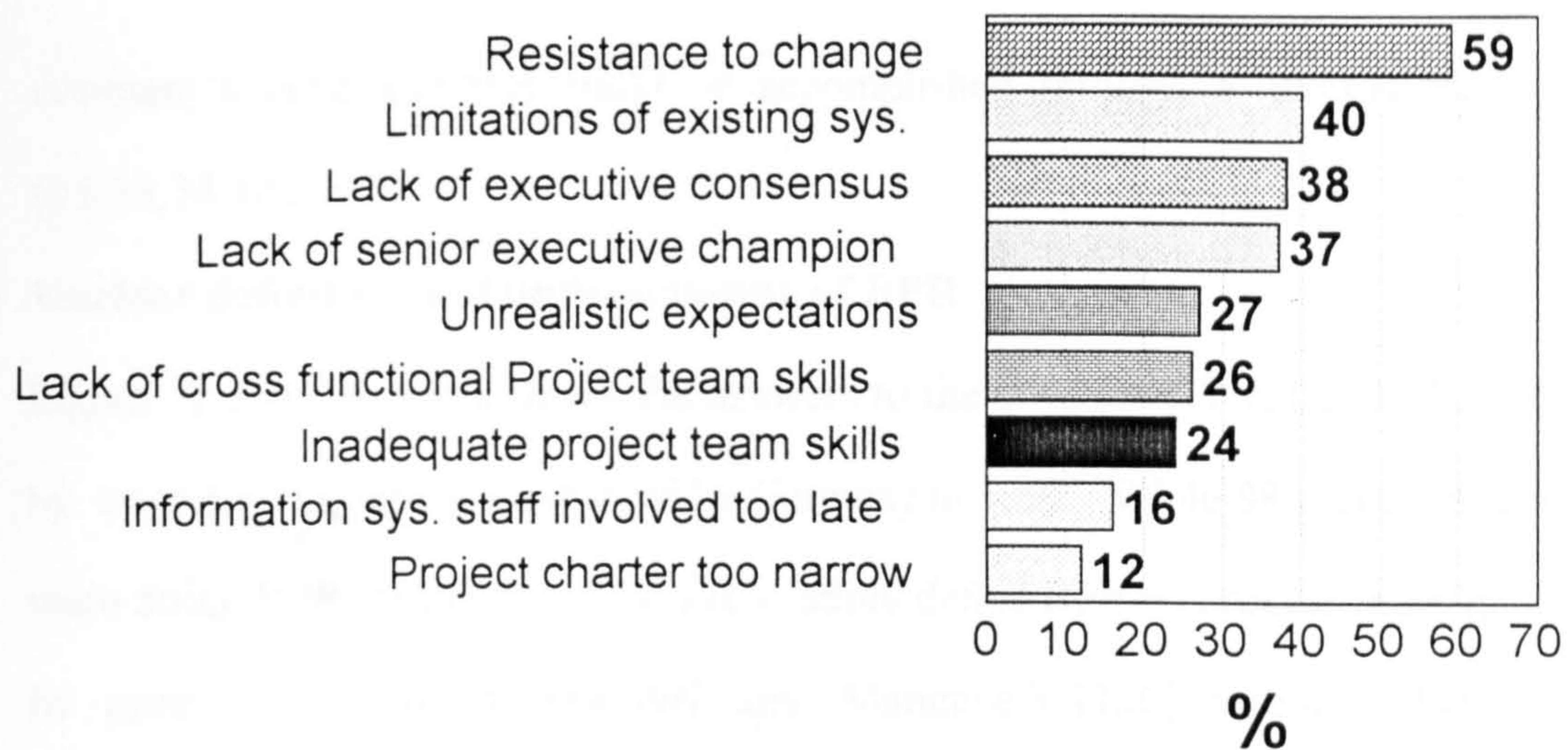


Figure 3.21 BPR Obstacles [45].

Based on the available literature and learning from the experiences of other improvement programs such as TQM and JIT and early BPR projects, the main obstacles and difficulties in BPR and how to avoid them can be summarized as follows:

a) Lack of top management commitment

In BPR projects, top management commitment is vital. This is due to two main reasons. First, the impact of BPR is so broad that only top management can sponsor it. Second, BPR usually needs a broad perspective and vision that people near the front lines lack.

How to obtain that commitment ? An executive generally must go through four stages awareness, curiosity, interest , and commitment. Most of executives are already at the awareness and curiosity stages, at least. To move to the interest stage, an executive must have credible evidence that BPR has worked for others and recognition of a need that BPR might satisfy. To convert that interest into commitment, the executive must be convinced that BPR will help meet the

company's need and this could be accomplished through a pilot BPR project. [25,38,78,120,147].

b) Unclear definition and understanding of BPR

Figure 2.1 in Chapter 2 shows the answers to the question “ What is BPR ?” given by an executive survey conducted by Gateway in 1992. While 88 percent said they were doing BPR, 46% only could successfully define BPR as process redesign.

In order to overcome this difficulty, Manganeli [120] recommended that a comprehensive awareness BPR campaign is a useful tool to clear the meaning of BPR.

c) Unrealistic Expectations

Because of the unclear definitions of what is BPR and of the over-enthusiastic promotion of BPR's benefits, many executives have unrealistic expectations of what reengineering projects can accomplish. Whilst BPR can produce performance breakthroughs (of whatever magnitude) whereas other traditional improvement programs produce only incremental gains , it is important that these are not overstated. Therefore, it is important to set goals and expectations conditioned on the basis of realistic analysis performed during the project. In addition to unrealistic expectations about the size of the gains from BPR, some executives are mistaken about the domain of its applicability. BPR will not identify the markets you should be in or the products you should develop. But it can give you effective processes for making those decisions.

d) Inadequate Resources

To succeed in BPR projects, companies should assign adequate resources. The first requirement for adequately resourcing a BPR project is to provide a balanced mix of insiders to outsiders on the reengineering team.

The second requirement is to give team members enough time to do their work. Figure 3.22 shows results of Carr & Johansson survey [20] on how much time BPR team members were expected to devote.

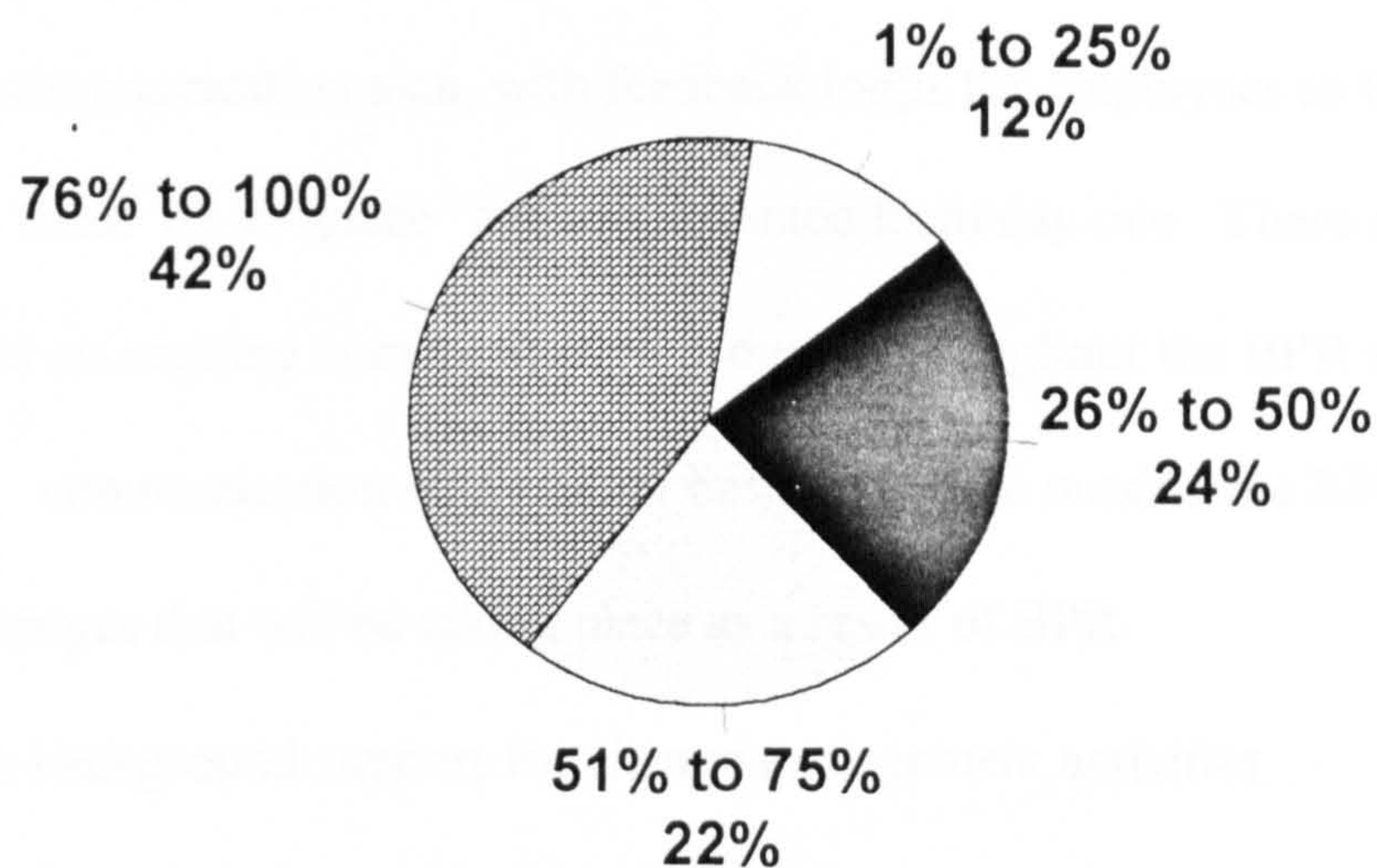


Figure 3.22 Time Spent On BPR [20].

The third resource requirement is an adequate budget for BPR projects. This should be self-evident, but nearly 65% of companies do not have budgets for BPR programs (Gateway Reengineering Survey, 1993). Finally, and most importantly, the BPR team must be trained and supported.

e) Resistance to Change

BPR means change and people do not like change. It is a fact that more BPR projects have failed because of inadequate attention to the social issues than because of technical issues [23, 120]. One of the major tasks of the reengineering team is to design and execute a change management program that aligns the interest of the company with the interests of the stakeholders. The most powerful tool that the BPR team have in managing change is communication.

f) Lack of effective Communications

People must understand why BPR is needed; this will help to reduce the resistance to change and reduce the negative impact of the informal path of communication “the rumor mill”. Along with senior management involvement, an effective and comprehensive communication plan, with feedback loops for employees to listen to their concerns, must be in place and implemented from day one. There are two main purposes to an ongoing communication program throughout the BPR effort:

- i) To provide communication on a regular basis to people outside the BPR team about the changes that will be taking place as a result of BPR.
- ii) To provide background support for change management activities.

Figure 3.23 shows Communication techniques used during BPR projects (Carr & Johansson Survey) [20].

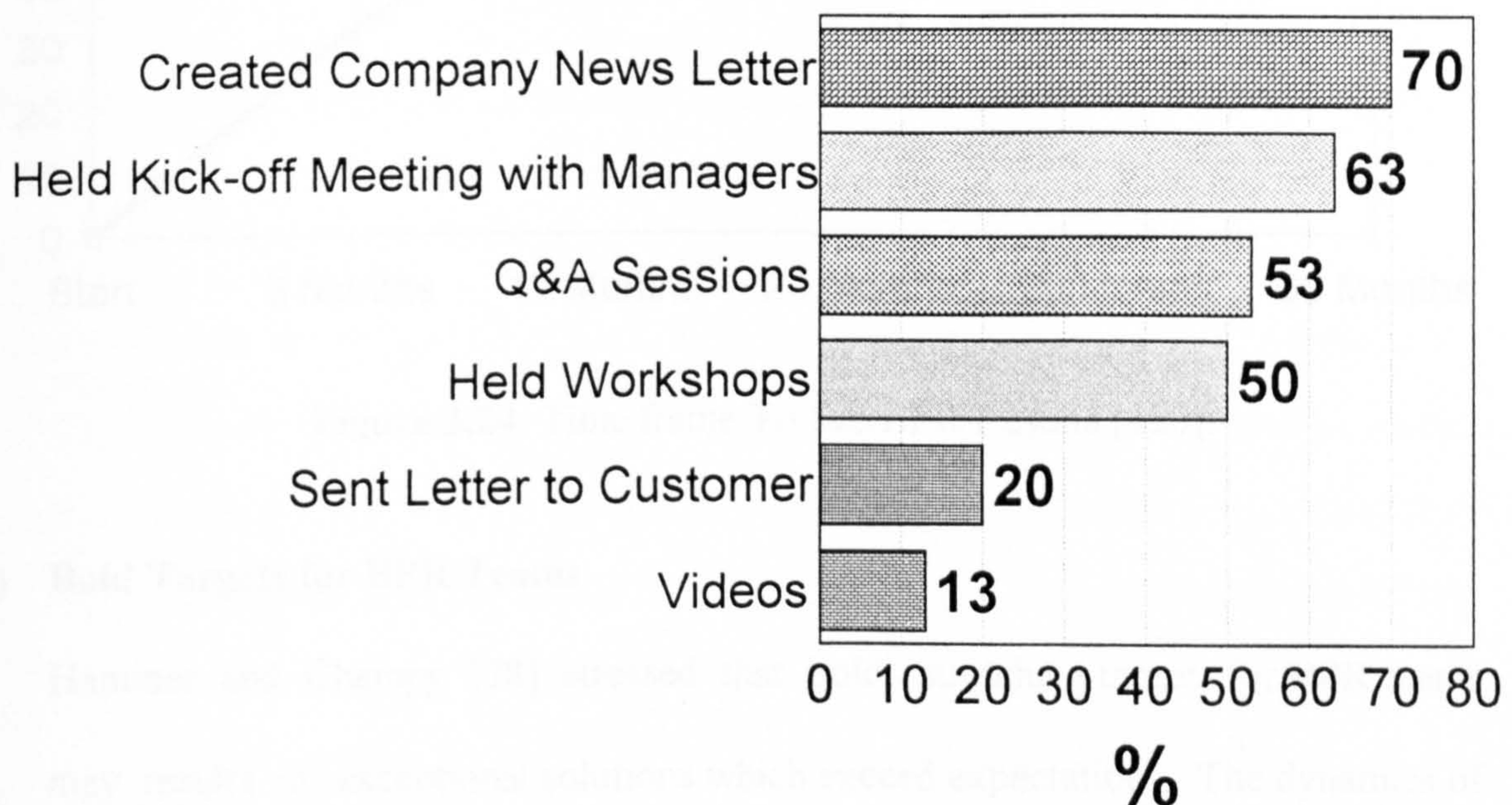


Figure 3.23 Communication Techniques In BPR [20].

g) Lack of an effective Methodology

A good methodology provides a road map for reengineering. According to Manganello [120], without a good and clear methodology, organizations are left with the “what” but not the “how to”.

h) Taking too long

BPR seeks radical changes and dramatic results in a short time. BPR projects must be rapid. This is important to maintain the commitment of the top management where it was found that the majority of the senior executives expect to see BPR results in one year or less as shown in Figure 3.24 (Gateway Survey 1994).

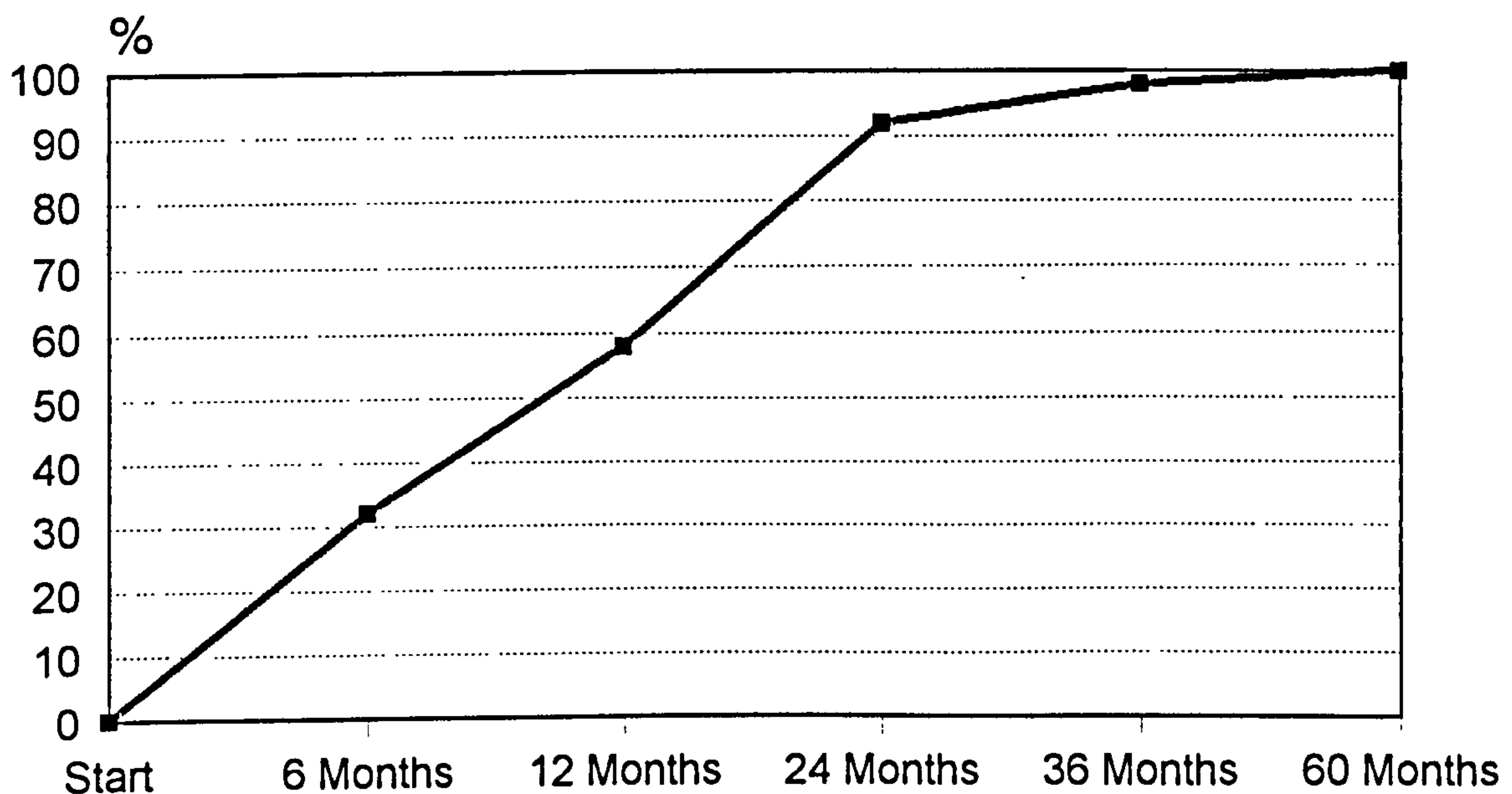


Figure 3.24 Time frame To See BPR Results [120].

i) Bold Targets for BPR Teams

Hammer and Champy [78] stressed that bold, stretching targets for BPR teams may result in exceptional solutions which exceed expectations. The dynamics of this rotate around the need to break away from conventional assumptions so that the reengineering team can be as creative as possible.

j) Focus on Value

It is important in BPR Programmes to focus on something of value to internal and external stakeholders. Time and quality are both excellent targets for improvement. Focus on cost reduction only is likely to discourage staff commitment and participation.

k) Excellent Reengineering Teams

BPR experts such as Dorine and Susan [48] reinforce the importance of organization selecting their “brightest and best” for reengineering teams. This creates operational difficulties by removing staff on whom the organization depends. However, the organisation is able to benefit from premier reengineering teams through increased probability of success and reengineering is a powerful development tool for staff.

Reengineering team members must be credible and influential people within the organisation. Their participation reinforces the organization’s seriousness by its preparedness to second such valuable staff. Hammer and Champy [78] comment: “These are the people who actually reinvent the business no team can re-engineer more than one process at a time, which means that a company reengineering more than one process will have more than one reengineering team at work”.

l) Focus

All the books on the subject of BPR tell their readers not to attack all of the processes at the same time, because changing just one process has a major impact and disrupts the entire organisation. Applying breakthrough methodologies to two or three processes per year is manageable. Beyond that, the organisation tends to go out of control. According to Harrington [85], IBM tried to apply business process management to 86 of its critical business processes at one time in its San Jose, California sites, and soon learned that it was having difficulties assimilating the changes because too many things were changing at the same time.

CHAPTER FOUR

American Airlines BPR Methodology

4.1 Introduction

American Airlines (AA) is one of the largest airline companies in the world.

In 1996, it was ranked as number one fortune company within the airline industry with a total revenue of \$ 16,910 Million and net profit of 167 Million US Dollars.

Figure 4-7 shows some facts and figures for American Airlines.

Fleet Size	617	Revenue	16,910,000,000
Headcount	110,000	Net Profit (\$)	167,000,000
Total Passengers	80,000,000	Passengers Complaints Ratio	0.9/100,000
On-Time Performance	78%	Rank worldwide	2
Load Factor %	69%	No. of Stations	185

Figure 4-1: American Airlines - Facts and Figures of 1996.

The need for Business Process Reengineering in American Airlines was created due to the rapid change in customer preferences and competitive offerings especially in the environment of an open skies policy. According to AA officials, taking the business back to a stable state does not work because yesterday's solutions do not fit today's dynamic markets and customers. Many rule changes occur outside the boundaries of the airline such as competitors trying something new, governments creating or relaxing regulations, introduction of new technologies or changes in the world economic situation. Other rule changes surface from organizational decisions like buyouts, expansion, consolidation and restructuring. Whatever the cause, the result is the

same; the airline viability for tomorrow is determined by its capability to adapt quickly and effectively to the new rules.. American Airlines believes that this capacity for an effective response requires new frames of reference; radically new ways of organizing and doing work. BPR has emerged as an effective technique to achieve this objective.

In the late 1980's, American Airlines started a comprehensive Total Quality Management (TQM) program company-wide. This program was called "Quality through Leadership" which helped AA considerably by introducing the concept of business process improvement and instituted continuous improvement practices within the airline. This previous effort facilitated and eased the initiation of the business process reengineering effort in American Airlines.

In 1992, American Airlines formed a department called Business Process Design (BPD) reporting to Vice President - Human Resources with the responsibilities of initiating and supporting Business Process Reengineering within the various divisions of the airline. This was the real start towards implementing BPR in AA which later on was supported by a structured methodology developed in-house by AA experts which will be discussed in detail in the following sections. Finally, it is important to highlight the leadership role played by AA top management in supporting and sponsoring the BPR effort within the airline. This is considered as one of the key critical success factors of any BPR initiative.

This Chapter presents a comprehensive description of American Airlines BPR methodology based on in-depth training on this methodology in Dallas (U.S.A.) for the researcher and other BPR unit staff in Saudi Airlines where Saudia had selected AA to start the BPR effort with a methodology developed and used within the airline industry.

4.2. BPR in American Airlines

The way American Airlines looks and defines business process reengineering does not differ from the basic and common definitions of BPR which were mentioned earlier in Chapter two of this thesis. The official definition of BPR in AA is:

“The fundamental rethinking of a business operation, focusing on key processes that create and deliver value to the customer, resulting in dramatic and sustainable improvements in business performance”.

According to American Airlines [166], this definition has four key characteristics:

1. Analysis and design is made from outside-in with clear strategic intent. Design must be directed by business objectives with more focus and consideration for the surrounding business environment.
2. End-to-end process management.
3. Overall co-production. This needs top-down sponsorship, bottom-up analysis/design, and middle-out facilitation.
4. Total work system perspective. This means BPR effort should cover all the aspects of the work system which include:
 - Technical and procedural aspects.
 - Structural and administrative aspects.
 - Social and cultural aspects.

In their BPR efforts AA employs the concept of “whole-process management”.

This consists of 3 major phases:

Phase-1: Process Awareness

This phase represents one of the basic requirement for any BPR effort which shifts the paradigms within the company from viewing functions to processes and the ability to see the big picture. This phase includes learning the language of process and quality and the development of in-process measures.

Phase-2: Process Alignment

This phase aims to align business processes to corporate objectives. It usually starts by determining core and support processes. It also includes the focus on value added activities (Horizontal focus) and recognizing radical improvement opportunities.

Phase-3: Process Ownership

The whole-process management approach leads to the identification of each process boundary and clear process owners. This is where the process management style shifts from vertical to horizontal. Figure 4-2 shows the whole - process management concept in American Airlines.

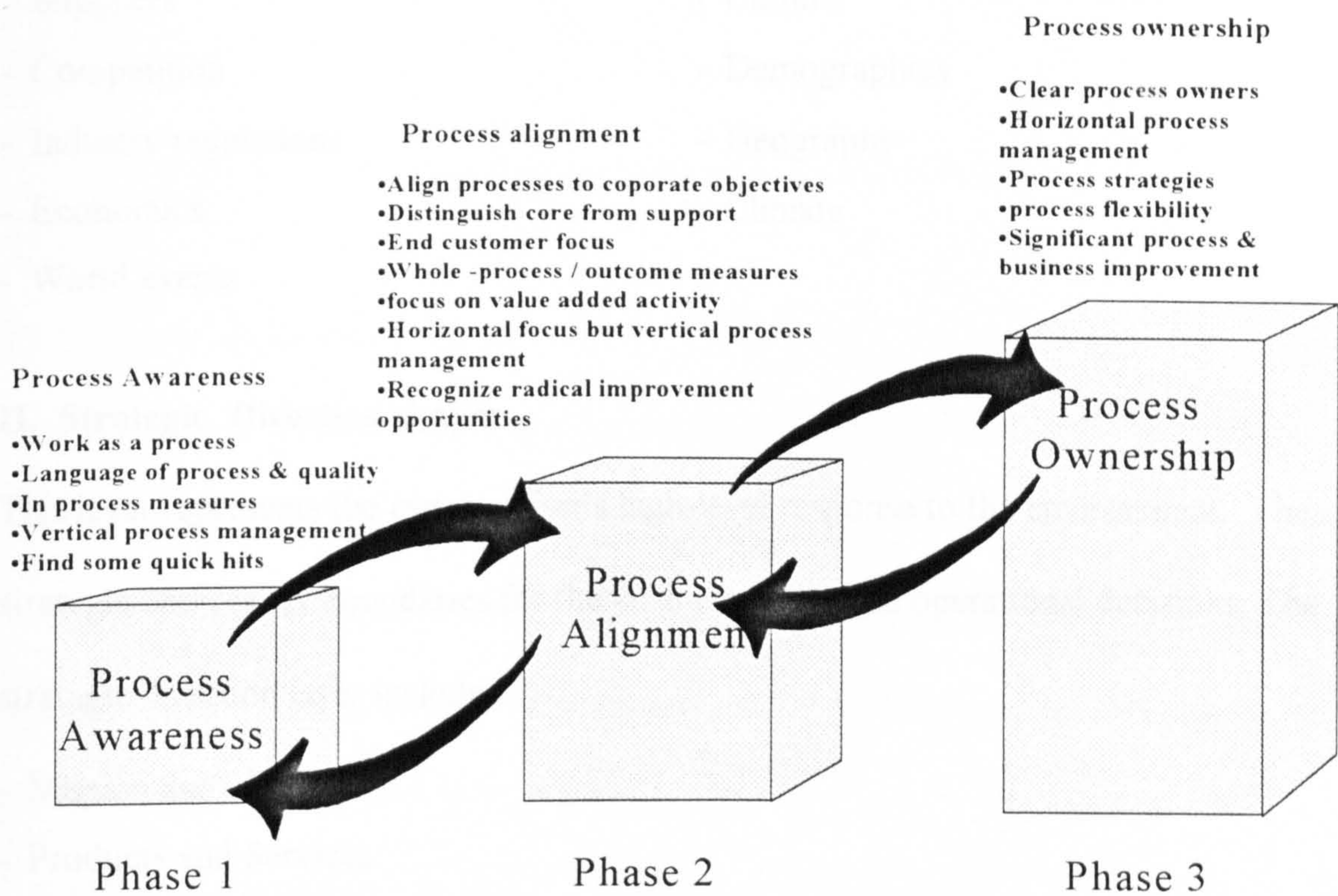


Figure 4-2 The Whole - Process Mangement Concept in American Airlines [166].

4.3 Business Process Design Organizational Model

In order to facilitate the understanding of the requirements and influences on any given business and how processes operate within the business, American Airlines developed a business process design organizational model as shown in Figure 4-3.

The model consists of three basic layers. These layers are summarized as follows:

I. Environment Layer

This includes all of the factors outside the organization that influence its behaviour.

The environment contains factors that the organization has little control over, including:

- Customers
- Suppliers
- Competition
- Industry regulations
- Economics
- World events
- Technology
- Culture
- Demographics
- Geography
- Climate

II. Strategic Direction Layer

This layer represents the organization's high-level response to the environment. These strategic choices set boundaries for the business and guide operational decisions. The strategic direction layer includes:

- Mission and vision
- Products and Services
- Principles and policies
- Business strategies
- Objectives and measures
- Core competencies

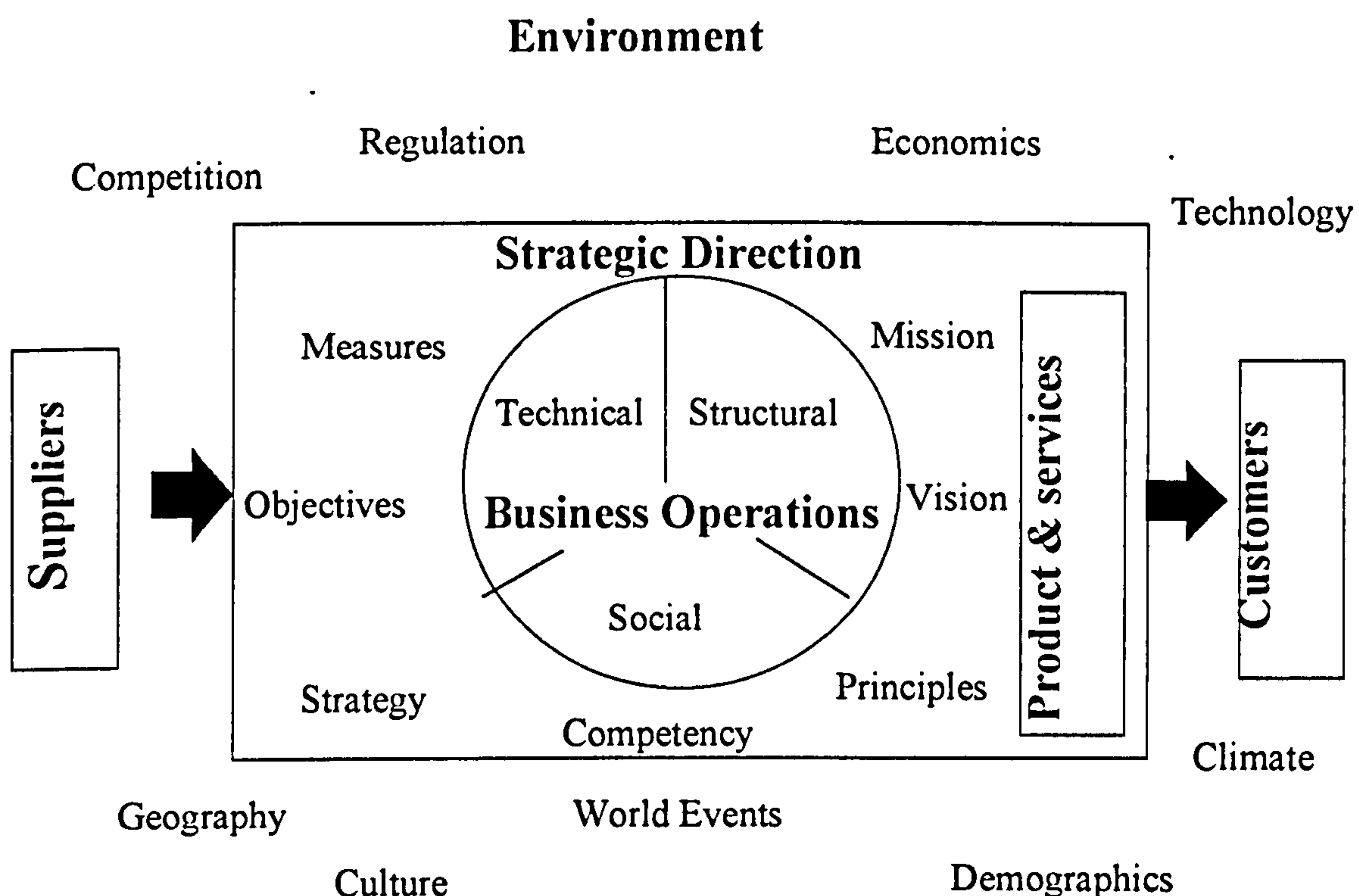


Figure 4-3 Business Process Design Organizational Model [166]

III. Business Operations Layer

This layer comprises the set of choices the organization makes as a direct response to the business directions. It represents the actual means used to produce the products and deliver the services in order to meet the business objectives. The business operations layer is described in terms of technical, structural, and social work systems which are detailed as shown in Figure 4-4.

4.4 BPR Methodology of AA

American Airlines defines its BPR methodology as a process and set of guidelines for using the business process design organizational model, described in the previous section, to achieve the following objectives:

Technical Systems	Structural Systems	Social Systems
<ul style="list-style-type: none"> • Work flow Formal & informal work • Inputs & outputs • Value-adding steps • Information flow • Technology • Equipment & tools • Facilities 	<ul style="list-style-type: none"> • Responsibility • Accountability • Decision making • Planning • Resources management • Boundary management • Reporting & monitoring 	<ul style="list-style-type: none"> • Culture • Norms • Membership & identity • Personnel practices • Orientation & training • Career Development • Reward & recognition • Communication • Learning & innovation

Figure 4-4 Technical, Structural and Social Work Systems [166].

1. Understand the requirements and influences that the business environment places on the organization.
2. Create an appropriate business direction and improvement framework.
3. Determine the effectiveness of the current business processes and organization for achieving the business objectives.
4. Design appropriate processes, policies, and organization structure.
5. Make the appropriate changes in the organization.
6. Continuously improve.

The American Airlines BPR methodology consists of nine stages as shown in Figure 4-5. This methodology assumes that a sponsor has initiated the BPR effort and is fully supportive, visible, and directly involved.

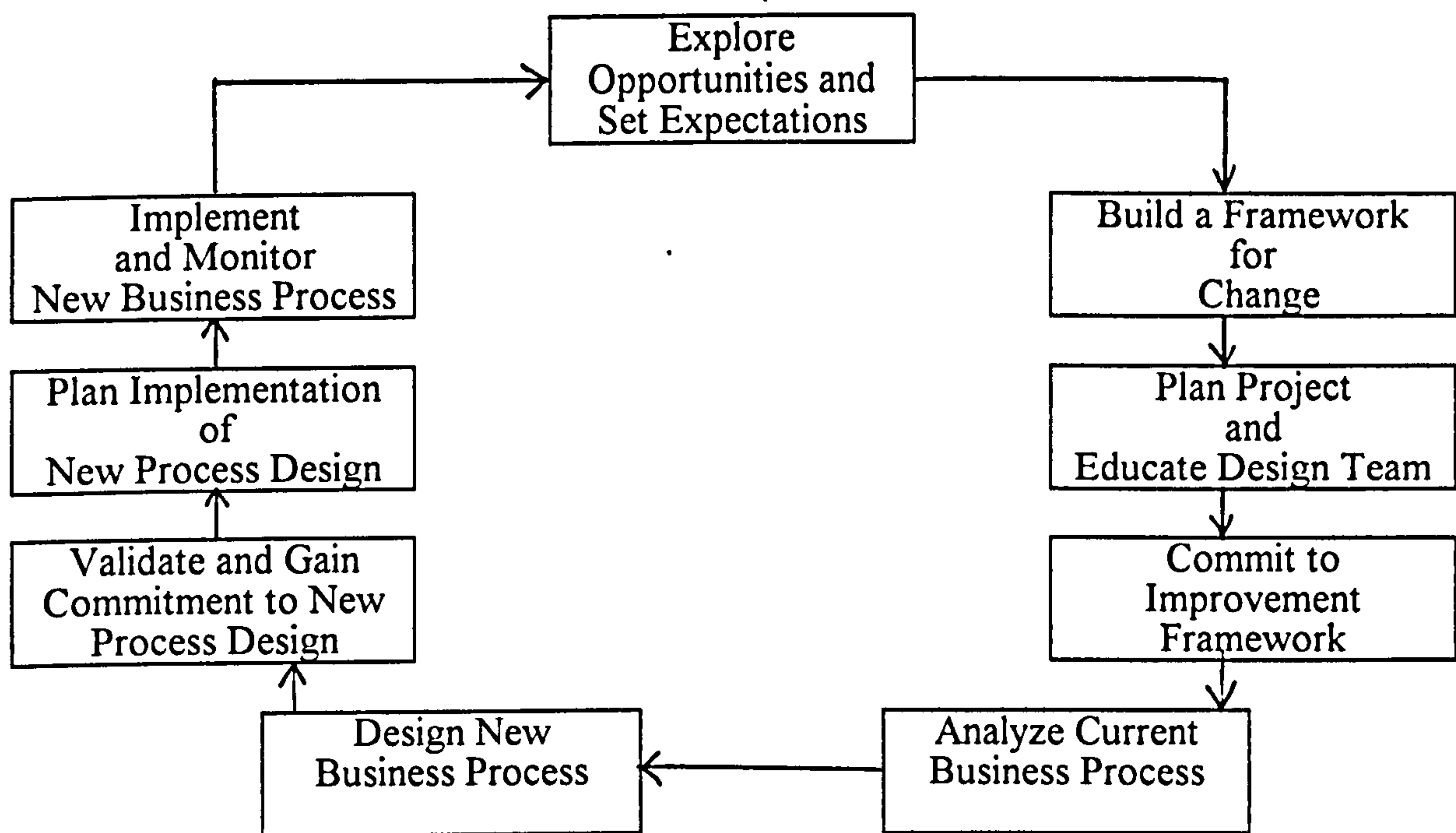


Figure 4-5 American Airlines BPR Methodology

The major steps and tools involved in each stage are summarized as follows:

Stage-1 Explore Opportunities and Set Expectations

After initiating the BPR effort and selecting the business process that is to be reengineered, the BPR methodology starts by forming a steering committee for the BPR project. This will be the responsibility of both the sponsor, who could be the process owner or the CEO, and the BPR facilitation team. This stage usually starts by conducting the change readiness assessment which will provide a useful information that can be used to create an effective communication plan for the project. In this stage, it is the time to build the vision of the entire project which will include the identification of the available opportunities to radically improve the targeted process and develop the expectations that the company are looking to achieve at the end of the project. The steering committee will make the first GO/NO GO decision. The steps and tools of this stage are shown in Figure 4-6.

Steps	Tools
<ul style="list-style-type: none"> • Form a Steering Committee • Develop an understanding of radical and incremental improvement • Identify and evaluate opportunities • Develop realistic expectations <ul style="list-style-type: none"> - size - complexity - time frame - potential benefits - management of organization change • Commit to an improvement initiative 	<ul style="list-style-type: none"> • BPR Presentations are a useful tool to achieve a better process awareness and create interest among staff and management of the process. • Site visits to observe the current process and interview the employees performing it to collect information for the initial situation assessment. • Selected BPR reading material • Change readiness assessment work sheets (See Appendix - 2)

Figure 4-6 Steps & Tools of Stage-1: “Explore Opportunities & Set Expectations”

Stage-2 Build a Framework for Change

This stage includes the development of a detailed framework for improvement by both the steering committee and the facilitation team. The improvement framework is an important stage in the methodology because it will provide the platform to build upon the expectations and opportunities identified at the previous stage and will have to take into account pragmatic and cultural considerations. Activities included in this stage will be:

- Vision of the new business process.
- Desired shifts in business paradigms.
- Problem statement.
- Expectation for process improvement including specific objectives, targets and measures.
- Scope of investigation
- Boundaries and constraints on the new design.
- Strategic fit within the broad change agenda.

This stage also includes communicating the change agenda of the proposed improvement framework throughout the company especially the targeted business areas. According to American Airlines, this is a very important step as part of the management of organizational change.

This stage is usually concluded by selecting the design team. The size and structure of the design team varies from project to project and usually consists of a mix of specialist and experienced staff from different areas within the business process.

The steps and tools of this stage are summarized in Figure 4-7.

Steps	Tools
<ul style="list-style-type: none">• Develop an improvement framework• Communicate the change agenda• Commission the BPR team.	<ul style="list-style-type: none">• Stakeholder analysis (See Appendix - 3)• Improvement framework work sheet (See Appendix - 4)

Figure 4-7 Steps and Tools of Stage-2 “Build a Framework for Change”

Stage-3 Plan Project and Educate Design Team

The first step after selecting the design team is educating the team members by conducting one or more BPR workshops. A typical BPR workshop would cover the following subjects:

- Challenges, problems and opportunities facing similar corporations today.
- Business Process Design Model (See Figure 4-3).
- BPR methodology including concepts, terminologies, tools and techniques that may be used by the design team during the project.
- Change management and organizational change processes.
- BPR tools applied in a workshop simulation.

In Stage three, AA defines the roles and responsibilities of the project sponsor, steering committee, design team, and facilitation team. These roles and responsibilities are not different from those mentioned in Chapter three. Figure 4-8 shows the structure of any BPR project undertaken at American Airlines.



Figure 4-8 BPR Project Structure at American Airlines

At this stage, American Airlines put a lot of emphasis on the importance of establishing the BPR project norms such as process view, teamwork, and co-production.

The first task for the design team is to build the initial project plan which will be used later as a discussion document with the steering committee before finalizing the proposed improvement framework of the entire project.

Finally, it is the responsibility of the project sponsor at this stage to secure the design team with the required facilities and equipment during this project.

Figure 4-9 shows the main steps and tools during this stage.

Steps	Tools
<ul style="list-style-type: none">• Educate Design team• Define roles and responsibilities• Establish project norms• Build initial project plan	<ul style="list-style-type: none">• BPR workshop• Team work development where a special consideration is given to this issue through selecting the right people for the BPR teams and train them on basic teamwork principles.

Figure 4-9 Steps and Tools of Stage-3: “Plan Project and Educate design team”

Stage-4 Commit to Improvement Framework

In this stage, the design team starts its efforts to understand the environment of the targeted business process and all internal and external factors that influence its behavior. This is usually achieved by using the business process design organizational model as a tool during structured group discussion sessions by the team.

The team also will analyze the current performance of the business process. This analysis will cover business and financial results, customer needs fulfillment, and employee satisfaction. The team should refine and complete the project framework before the final agreement between the design team and the steering committee on the

proposed improvement framework. After the mutual commitment, it is the time for the design team to build the detailed project plan. Figure 4-10 shows the main steps and tools used during stage four.

Steps	Tools
<ul style="list-style-type: none"> Analyze process environment Analyze current process performance Refine and complete the project framework Steering committee and design team commit to project framework 	<ul style="list-style-type: none"> Business Process design organization model (See Figure 4 - 3) Improvement framework worksheets (See Appendix - 4) Findings of stakeholder analysis

Figure 4-10 Steps and Tools of Stage-4 “Commit to Improvement Framework”

Stage-5 Analyze Current Business Process

This stage represents the systematic redesign approach used by American Airlines in its BPR methodology where the analysis of the current business process will provide the basis for the design of the new business process.

This will be achieved through detailed analysis of the three main aspects of the business process, namely: technical, structural and social aspects. The technical analysis starts by mapping the business process as it runs today using simple flow charting techniques. Design teams often map processes using coloured ‘post-it’ notes which can be shuffled around the wall as the map begins to take shape. The technical analysis aims to assess the business process by focusing on the value-added activities, information flow, technology utilization, facilities, equipment utilization and cycle time performance.

The structural analysis aims to identify the responsibility and accountability limits for the process based on the results of the technical analysis. This will help to re-define the process ownership. Reporting and monitoring, decision making, individual and team empowerment, and resource management are all subjects to study and assess during the structural analysis.

The social analysis looks at the human aspects of the business process. This analysis includes a review of selection and recruitment criteria for required staff to operate the new process. It also establishes orientation and training programs, staff performance reviews and compensation, personal and career development, formal and informal communication needs and any other issues related to the social side of the business process.

It is the task of the design team during this stage to document all improvement recommendations that were generated in each type of analysis. The team then develops and presents a list of major improvement recommendations to the Steering Committee. These recommendations should represent the potential business opportunity which can be explored. The Steering Committee then makes the second GO/NO GO decision. Figure 4-11 shows the main steps and tools used during stage five.

Stage-6 Design New Business Process

At this stage in the methodology the design team organize the results of the analysis to identify some major improvement themes and validates these themes against the goals of their original improvement framework. The design team obtain feedback on the themes from the Steering Committee and key stakeholders.

Steps	Tools
<ul style="list-style-type: none"> Analyze the technical aspects of the business process: <ul style="list-style-type: none"> Inputs and outputs Value-added activities Information Flow Technology Utilization Facilities and equipments Utilization Analyze the structural aspects of the business process: <ul style="list-style-type: none"> Responsibilities and accountability Process ownership Control of resources Individual and team empowerment Reporting and monitoring Analyze the social aspects of the business process: <ul style="list-style-type: none"> Selection and recruitment criteria Orientation and training programs Staff performance review and compensation Reward and recognition Personal and career development Formal and informal communication Generate improvement recommendations. 	<ul style="list-style-type: none"> Process Mapping serves as an effective communication tool and helps to gain agreement among the team on the steps of the process. Cycle Time Analysis is a useful tool which involves a graphical representation of the time of each step of the process. This will help to quickly point out the most time consuming steps Root-Cause (Fishbone) Analysis is a powerful and dynamic tool used to determine root causes of key issues. It helps the BPR team reach a common understanding of the current problems. Organization Structure Mapping Flow charting softwares Coloured “Post-it” notes are a useful tool which can be shuffled around the wall as the map begins to take shape.

Figure 4-11 Steps and Tools of Stage 5 “Analyze Current Business Process”

The team then develops the leading themes into design options and seeks feedback to iteratively refine these options until a single design emerges.

The design team can now develop a second level design framework for this single theme. This framework will include identification of the following:

- New Process Map.
- Technical systems requirements
- New roles and responsibilities
- New business performance objectives, measures and targets.
- Benefits of the new design.
- Impacts of implementation.
- Challenges or barriers to overcome.
- Alignment with the improvement framework goals.

Figure 4-12 shows the main steps and tools used during stage six.

Stage-7 Validate and Gain Commitment to New Process Design

In this stage, the design team presents the new process design to the Steering Committee and solicits feedback and refinement suggestions. After finalizing the new design, the team will produce a Cost/Benefit analysis document showing the projected savings of the concept. The team must validate the feasibility of implementations, measure the organizational acceptance of the proposal and secure commitment to implement the new process. It is at this stage that the Steering Committee makes their third and final GO/NO GO decision.

Figure 4-13 shows the main steps and tools used during stage seven.

Steps	Tools
<ul style="list-style-type: none"> • Organize analysis findings around technical work systems • Revisit project framework to set context for design • Organize recommendations around major theme • Get feedback on major themes from key stakeholders and Steering Committee • Develop leading themes into design options • Get feedback and refine options until a single design emerges • Document the new design 	<ul style="list-style-type: none"> • Current process map • Breakthrough Thinking where BPR principles ask the BPR team to think out of the box and question the fundamentals and basic assumptions of the process. • Stratification is useful technique to break down the data of the current process into meaningful categories. This will make it easier for the team to focus on key problems and identify their solutions.

Figure 4-12 Steps and Tools of Stage 6 “Design New Business Process”

Stage-8 Plan Implementation of New Process Design

Here, the Steering Committee selects an influential and capable transition manager and the implementation team. Together, they develop the implementation strategy which is then approved by the Steering Committee.

Steps	Tools
<ul style="list-style-type: none"> • Evaluate design for completeness and accuracy • Validate alignment to framework (meets objectives, measures and targets) • Measure adherence to Business Process Design principles • Develop initial cost/benefit statement • Validate implementation feasibility • Measure organizational acceptance • Gain commitment to implement new design 	<ul style="list-style-type: none"> • Communication Plan of the BPR project. • New process map. • BPR Principles Assessment is a useful technique to evaluate the new process design. • Findings of Stakeholder Analysis • Cost/Benefit Analysis is a powerful tool to show an estimation and evaluation of net profits, and savings associated with the different alternatives for achieving new process design.

Figure 4-13 Steps and Tools of Stage 7 “Validate and Gain Commitment to New Process Design”

The implementation strategy includes identification of the following:

- New process owners
- New roles and responsibilities
- Implementation phases or modules.
- Transition plan including reward and recognition measures.
- A communication plan for sharing news and receiving feedback.
- A performance measurement and monitoring system.
- Training and development plans.

Stage-9 Implement and Monitor the New Business Process

The final stage of the AA BPR methodology will take place if the new design is seen to be sound and the transition plan is complete and feasible. This stage will include the following steps:

- Announcement of the new process and the implementation schedule.
- Implementation of the new business process.
- Putting transition monitoring in place.
- Executing transition plan.
- Monitoring and adjusting implementation.
- Establishing continuous improvement plan.

4.5 BPR Project life Cycle

According to American airlines, each BPR project is unique. The life cycle differs from one project to another depending on its scope, size of business process, external pressure etc. The average life cycle for BPR projects in AA is 18 months. Figure 4-14 shows a typical BPR project life cycle.

4.6 Discussion

The definition and application of business process reengineering in American Airlines are based on most of the generally accepted terms and concepts of BPR such as fundamental rethinking of current business, focusing on core business processes, eliminating of non value-added activities, and seeking breakthroughs in the way in which processes function.

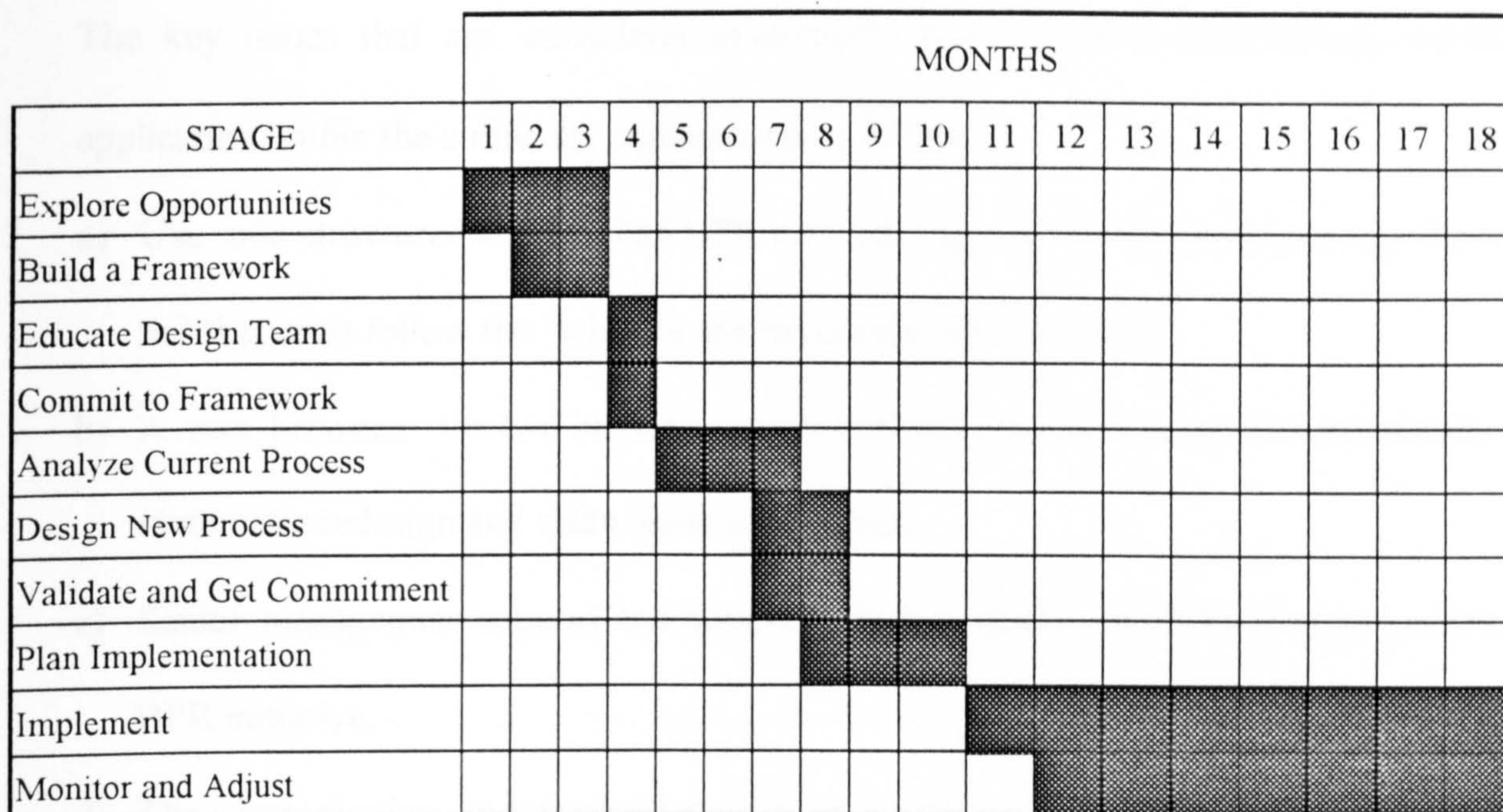


Figure 4-14 Typical AA BPR Project Life Cycle [166].

The important differences between the American Airlines BPR methodology and any generic BPR method are summarized as follows:

- a) The AA methodology provides enough explanation of how-to. It has a specific stages with a detailed steps and incorporates a number of traditional management techniques which used as a tools for implementing the method.
- b) Use of Steering Committee of key sponsors and process owners.
- c) BPR teams well organized and roles and responsibilities specified.
- d) The methodology has clear and definite milestones which facilitate the use of the method and help the steering committee to make the Go/No Go decision at the end of each stages.
- e) In addition to the technical design, it incorporates both structural and social design in the solutions
- f) Change management is considered to anticipate and address resistance to change.

The key issues that are considered as strengths in the AA BPR methodology and its application within the airline are summarized as follows:

- a) Use of a structured and detailed BPR methodology that provides the missing “how to” that must follow the “why” in any successful BPR initiative.
- b) A mix between the two basic approaches to redesign business processes; namely, systematic redesign and clean-sheet approaches.
- c) Senior management support and involvement throughout the different stages of the BPR initiative.
- d) The introduction and implementation of a previous total quality management program “Quality through Leadership” within the airline helped to facilitate the introduction and implementation of BPR. The previous TQM program helped to adopt a process perspective of the business and encourage teamwork throughout the company.
- e) A linkage of corporate (business) and new process objectives through effective use of the business process-design organizational model in the beginning of any BPR project.
- f) Well organized BPR project structure with clear roles and responsibilities for sponsors, reengineering teams, and consultants.
- g) Use of an effective communication plan throughout the different stages, of the BPR methodology to anticipate and address resistance to change.
- h) A thorough technical, structural, and social analysis of the business process to generate a new design with a comprehensive range of solutions for current business problems.

- i) Continuous improvement and performance feedback are an essential part of the implementation plan.

The key shortcomings of American Airlines BPR methodology and its application within the airline identified by this research are summarized as follows:

- a) There is no use of benchmarking of the process under consideration as an effective technique to identify targets at which to aim to break traditional ways of doing work and conducting business. Indeed, benchmarking a current business processes with “best-in-class” practices will ignite the innovation and creativity within the BPR team.
- b) The role of Information technology is not explicitly addressed, nor the mapping of the process changes to the underlying information systems.
- c) There is no initial awareness campaign at the beginning of a BPR project which considers as an important step of the change management plan to anticipate and address resistance to change at an early stage of the project.
- d) The methodology is not supported by a specialized BPR software to be used by the BPR team for planning, modeling, documentation, analysis and simulation throughout the different stages of the project.
- e) According to AA officials, the BPR efforts in the company were not planned at a corporate level. Effective BPR effort should be planned and prioritized on a corporate level based on the strategies of the company.
- f) The selection and prioritization of key processes to be reengineered are not addressed in the BPR methodology of American Airlines.

The above discussion of American Airlines BPR methodology and its applications within the airline is summarized as shown in Figure 4-15 and raises issues which must be addressed in any improved BPR methodology.

Strengths	Shortcomings
<ul style="list-style-type: none"> • Use of a structured and detailed BPR methodology. • A mix of systematic redesign and clean sheet approaches. • Senior management support and involvement. • Previous TQM effort • A linkage to corporate objectives. • Well organized BPR project structure. • Effective communication plan. • A thorough technical, structured, and social analysis of current processes. • Continuous improvement is considered. 	<ul style="list-style-type: none"> • No use of Benchmarking. • Roles of IT not explicitly addressed nor mapping of key process changes to the underlying information system. • No initial awareness campaign. • The methodology is not supported by specialized BPR software. • BPR effort not carried out on a corporate level. • Selection and prioritizing of process to be reengineered is not addressed.

Figure 4-15 Discussion summary of American Airlines BPR Methodology

CHAPTER FIVE

BPR in Saudi Arabian Airlines

(Case Study)

5.1 Introduction

The aim of this thesis, as set out in Chapter one, is to develop a generic business process reengineering methodology for commercial airlines. In order to achieve this aim and the underlying objectives, chapter five will present a BPR case study from the airline industry. Saudi Arabian Airlines (Saudia) is the subject of the main case study of this thesis. It is one of the first airlines in the Middle East and Arab world to implement BPR.

The reason for selecting American Airlines and Saudia as case studies is to give a representative view of BPR implementation within the airline business and because the Saudia BPR approach was developed from that used in American Airlines. American Airlines is one of the first airlines in the world to implement BPR using a methodology developed in-house by their training and consulting groups. This methodology was presented in chapter four of this thesis in detail. This methodology was used and further developed by Saudia during its later BPR effort.

Presentation and discussion of this case study starts by exploring the need for BPR in Saudia and the conditions that helped to facilitate and initiate the appropriate ground to embark on BPR as one of its key strategies to achieve its new and ambitious mission to be a world class airline with a distinctive Saudi character that is customer driven and a caring employer. Some of the major operational & organizational difficulties that emphasize the need for radical change and BPR in Saudia are also presented in this chapter.

This chapter also includes the two main approaches to reengineering used in Saudia, the development of the Saudia BPR methodology and the highlights of some major BPR projects undertaken. Finally, the chapter ends with a discussion of the Saudia case study with more focus on the implementation of the BPR methodology. Figure 5-1 shows the overall structure of Chapter 5.

**BPR in Saudi Arabian Airlines
(Case Study)**

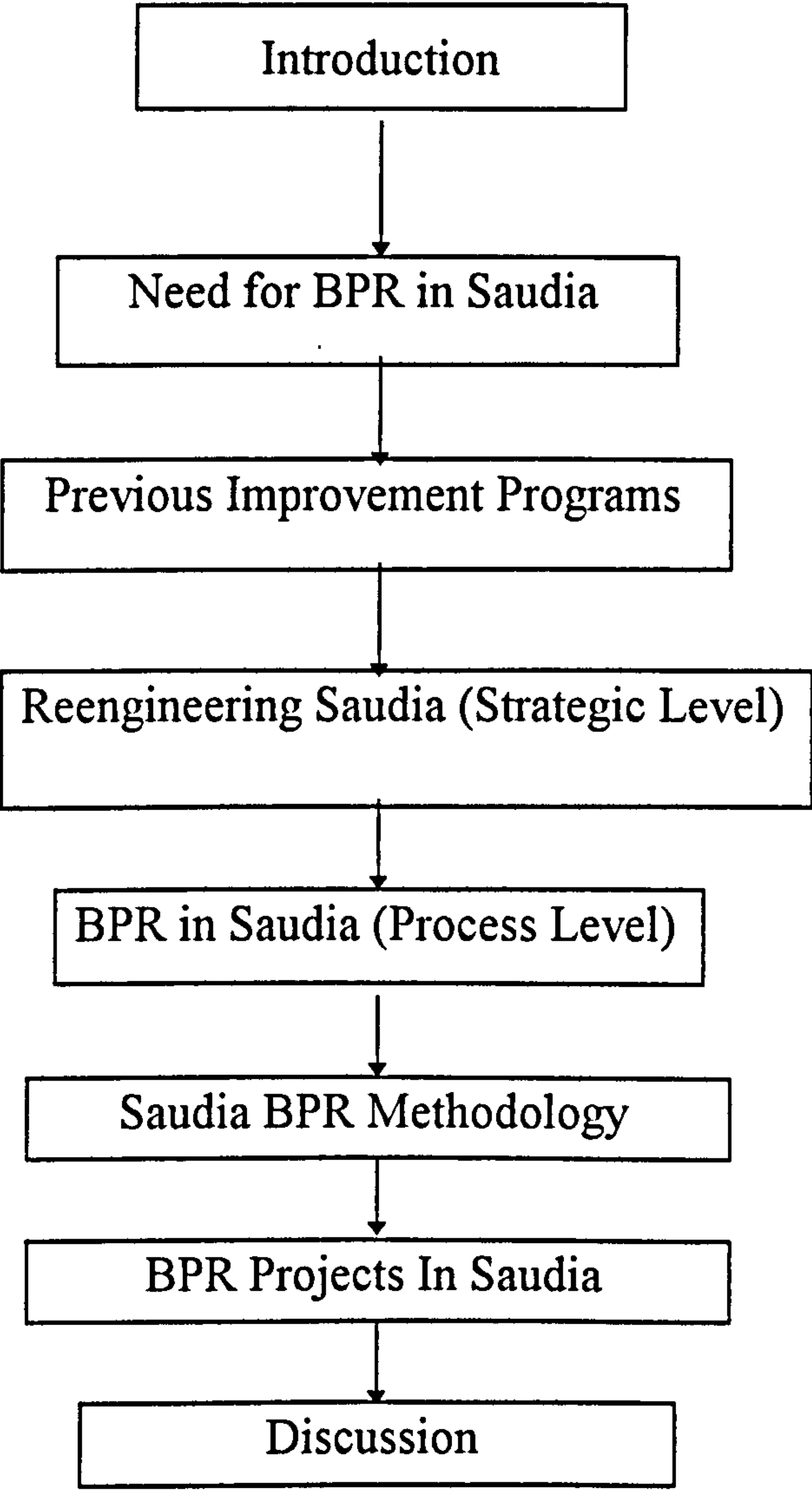


Figure 5-1: Structure of Chapter 5

5.2 Saudi Arabian Airlines

Saudi Arabian Airlines (Saudia) is the largest airline company in the Middle East. The growth and development of modern Saudi Arabia can be matched in parallel development in many areas, but none more typically than Saudi Arabian Airlines.

Starting with the gift of a small aircraft, a DC-3, given to King Abdulaziz by American President Roosevelt in 1945, Saudia has grown along with the kingdom in the forthcoming years to become the region’s major international carrier and one the world’s foremost airlines. Saudia’s Commercial fleet now consists of 22 Boeing 747’s, 17 Lockheed tristars, 11 Airbuses A-300-600 and 20 Boeing 737’s, plus 2 firefighters.

Saudia flies to 52 international destinations as well as 25 stations within Saudi Arabia.

Saudia currently carries around 12 million passengers a year and 170 million kilograms of cargo and throughout its 50- years history has played a pivotal role in the development of the kingdom’s modern transportation and communications industries. The present headcount of Saudia is 25000 employees. Figure 5-2 shows some facts and figures for Saudia.

Fleet Size	101	Revenue (\$)	2,507,000,000
Head count	25000	Net profit (\$) (loss)	(106,000,000)
Total Passengers	12,283,967	Passengers complaint ratio	9.95/100,000
On-time Performance	92%	Rank Worldwide	19
Load Factor	62%	No. of Stations	77

Figure 5.2: Saudia - Facts and Figures of 1996.

5.3 Need for BPR in Saudia

Intensified competition in international air transport has compelled airlines to concentrate on development and change for the better, if they are to survive.

The bulk of the previous efforts has been concentrated in the areas of customer services improvement, downsizing, quality concepts applications and cost cutting.

At the outset of the 90's the concept of Business Process Reengineering (BPR) emerged, opening a new era of management with ambitious ideas aimed at bringing about radical changes, allowing companies to entertain the dramatic improvements long sought by companies' executives. In line with the rapid changes & storage competition in the international air transport industry, Saudi Arabian Airlines (Saudia) decided in August 1994 to introduce & implement the concept of business process reengineering as part of its entire company change program.

The main reasons and drivers that helped to create the need for BPR in Saudia are summarized below.

5.3.1 Customer Needs

Today, customer satisfaction is one of the key reasons for most of the major change and improvement initiatives undertaken by various organizations worldwide. Saudia, the national air carrier of Saudi Arabia, is facing the challenge to satisfy and meet the accelerated demands and high expectations of its customers. Customers of Saudia today are totally different from customers in the past. This is a result of the fast development and rapid growth that took place in the kingdom of Saudi Arabia over the last twenty- five years in the different aspects of education and communications. The increased awareness of the travel industry

services provided by other airlines are all factors which contributed to increase local customers' expectations and made the task of satisfying those customers more difficult. This is particularly the case for Saudia, where domestic passengers represent 70% of the total passengers carried annually. Saudia believes that achieving customer satisfaction requires a new focus on current business activities and the redesign of the key business processes and services provided through them to its customers. Therefore, BPR was selected by Saudia as one of its key strategies to change the airline to be a customer driven company.

5.3.2 Competition

The second main reason for Saudia to embark on BPR is competition. The international air transportation industry is one that is distinguished by its rigorous competitive environment. Open skies policies, prices war, deregulation, merger of airlines, joint ventures, and acquisitions are all different results of the competition among airlines companies worldwide. Saudia, as part of this industry, is facing the challenges of this competitive environment not only outside Saudi Arabia but also inside the country where more than 47 other international airlines operate. Although Saudia still dominates the domestic network of Saudi Arabia, it is noteworthy that the modern network of ground transportation within the country is providing another alternative for passengers to avoid the congested terminals and complicated travel procedures found at airports. For Saudia to compete and to grow in such a competitive industry, BPR is an appropriate and essential management approach to achieve the radical changes that are needed to realise the dramatic improvements necessary. Incremental improvements would not meet the requirements of Saudia.

5.3.3 Globalization

Today, it is no longer good enough to be first-class; companies must be world class. This is due to the rapid globalization of products and services. Open skies policies, deregulation, and the full implementation of GATT agreements are all different means towards this globalization in the airline industry.

Saudia, and any other airline, must react quickly and start to rethink radically about its strategies, tactics, operations, and services in order to survive and compete in such global market. As part of Saudia strategies, BPR was selected to change and make Saudia as a world-class airline and the importance of benchmarking a wide range of service elements was recognised.

5.3.4 Privatization

In 1994, the government of Saudi Arabia announced its willingness to privatize Saudia in the future. The first step taken by the government towards the privatization of Saudia was to form a committee which consisted of selected businessmen and company executives within Saudia headed by the Director General of Saudia. The main task of this committee was to set the strategies and plans to prepare Saudia for privatization. Government officials believe that Saudia is not ready for privatization with its current operational and financial performance. Commercialization of Saudia requires the rethinking and redesign of current key business processes to become more commercially oriented with a greater customer focus. Effective implementation of BPR will be, with no doubt, a very practical way to commercialize Saudia as part of its journey to privatization.

5.3.5 Financial Results

Although, because of state ownership, there are no financial results published recently about Saudia, it was announced internally by the Saudi authorities that the financial situation of the company is unsatisfactory.

This financial situation encouraged Saudia’s executives to support the implementations of BPR as part of its strategy to reduce current operating costs and non- value added activities within Saudia’s operation.

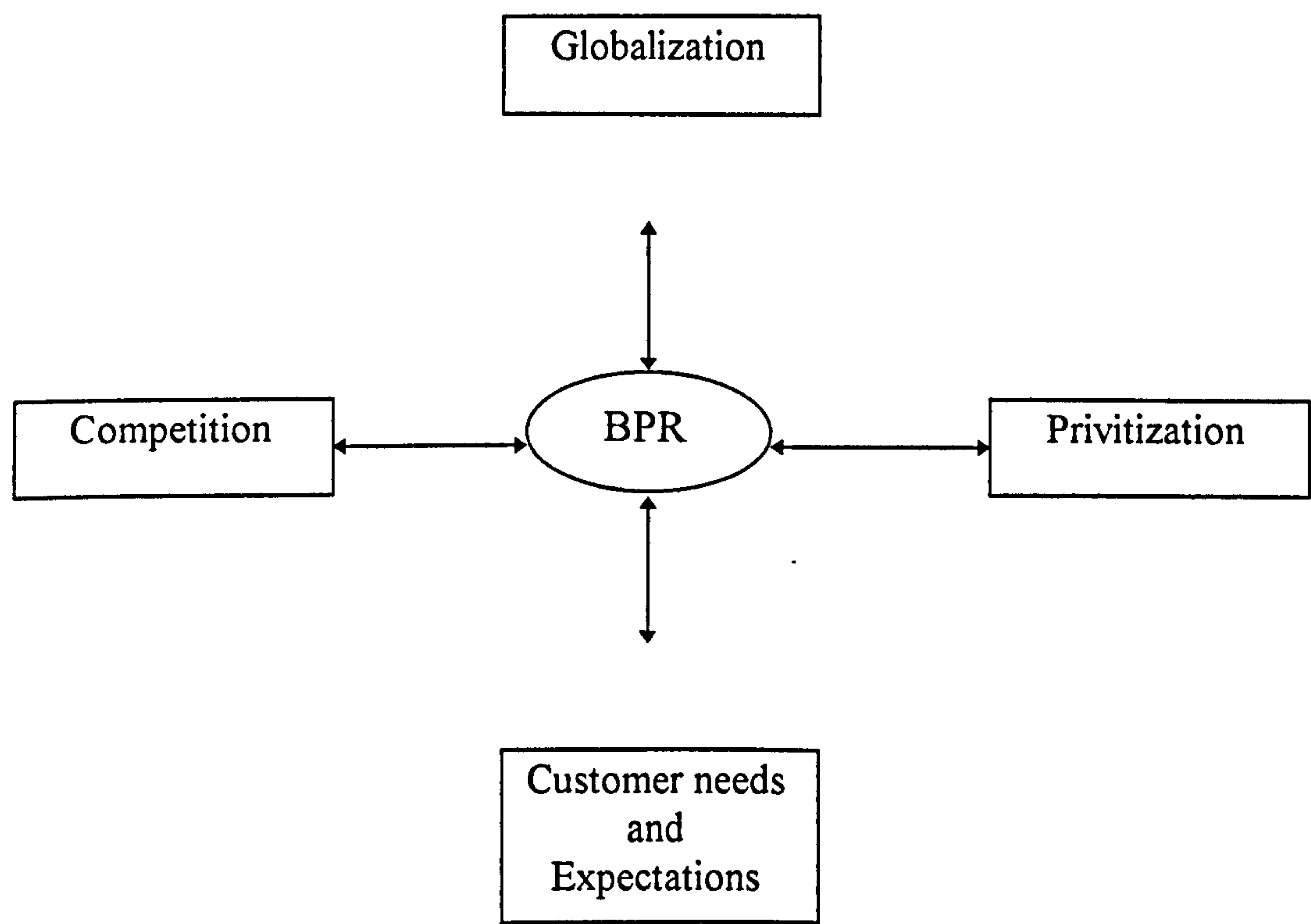


Figure 5.3 Drivers for BPR in Saudia

5.4 Current Difficulties facing Saudia

In addition to the business drivers mentioned in previous section that emphasize the need for BPR in Saudia and are summarised in figure 5.3, there are some other operational, organizational, and cultural difficulties and issues that significantly contribute to weaken the operational and financial performance of the airline. These difficulties are summarized in the following sub- sections.

5.4.1 Operational difficulties

The major operational difficulties that Saudia had before embarking on BPR are summarized below:

a) Old Fleet

The present fleet of Saudia, the largest in the Middle East, consists of 73 aircraft of which 23 are Boeing 747s, 20 Boeing 737s, 11 Air bus A300- 600s, 19 L-1011s. Because the fleet is the back bone of any airline, the age of the fleet became a key reason for many of the current airline problems. These were particularly high operating cost, high maintenance expenses, and low aircraft utilization. It is also important to highlight how the old fleet could effect the image and reputation of the airline and the negative impact on services provided to Saudia customers.

b) Old business processes

Most of the current key business processes in Saudia are old ones. This issue could be viewed from different angles. Firstly, most of these business processes were designed many years ago with no consideration and focus on customer needs. It is a fact in this regard to mention that most government owned enterprises have this problem. Secondly, current processes also need clearly defined owners to be responsible for their design and execution and to ensure

that customer needs are met. The difficulty in defining ownership comes from the poor structure of current processes and the fact that past organizational changes have seldom taken the process flow into consideration. .

The third deficiency of current business processes in Saudia is the lack or inefficient use of the modern information technology available today. This has resulted in lengthy manual procedures, a lot of unnecessary paper work, many hand offs, multiple re- keying of the same information and long cycle time for most processes.

Finally, most of previous efforts to improve current processes were minor and fragmented improvements that focused on small functions or parts of the entire business process. Indeed, the airline lacked the ability to see the big picture that will help to achieve the desired level of improvement.

c) Lack of clear performance measurements

Saudia, like most of the traditional governmental companies, gives a little attention to the importance of the development of clear and contemporary performance measurements. Most current performance measurements in Saudia today are based on limited activities and fragmented work, not on results. Examples are: total passengers carried per year, total flights per station, total freight, etc. These are all traditional airline measures that lack the focus on quality, cost and speed of the performed work which are appropriate to the operation of a modern airline. Another reason contributing to this limited focus on performance measures in Saudia, especially for individual employees, is the current scheme of compensation. Current compensation and salary programs are based on positions, seniority and time spent at work. They are not based on the contribution and performance of individuals in adding value for the end customer. This situation usually leads to less motivation and productivity.

Shifting the focus from functions and departmental work to processes will help considerably to improve this situation in Saudia. Effective implementation of BPR will involve designing contemporary performance measurement systems that focus on customer satisfaction and value-added work as part of supporting the new process design and maintaining a basis for the continuous improvement policy that must remain after the reengineering project.

d) Non- profitable domestic flights

According to the Flight Costing Department in Saudia, most of the domestic routes in Saudia's network, if not all, are non- profitable. This is due to the lower ticket prices of domestic flights as part of government policy to subsidize air transportation inside the country. In such a situation, cost reduction whilst maintaining a satisfactory level of customer service is considered the right strategy to embark on, especially in the case of Saudia where the airline monopolizes the domestic air transportation in Saudia Arabia.

The reengineering of key business processes related to domestic flights is essential for Saudia and has to be done in order to improve this situation as a prerequisite to the privatization of the airline.

5.4.2 Organizational difficulties

The major organizational difficulties that Saudia had before embarking on BPR could be summarized as follows:

a) Organizational Structure

The organizational structure of any traditional company usually establishes the lines of communication within the organization and determines the decision-making hierarchy, Currently Saudi has a very hierarchical, multi-layered, and functional based organizational

structure. Most of previous efforts to improve the organizational structure were minor and fragmented restructuring projects covering only some parts of the airline.

Lack of an appropriate level of empowerment for front-line staff, slow decision-making processes, poor communications, over-staffing, and creation of “Not-my responsibility” work attitudes are the expected results from such hierarchical organizational structure. Figure 5-4 shows an example of different layers between the customer at the front-line staff level and senior executives in some customer related departments in Saudia.

Therefore, it is true to say that Saudia has a definite need for a flatter organizational structure that organizes the work around key business processes and the teams that perform them. This type of organizational structure is the one which will close the current gap between senior executives and customers and will move them closer to the front-line staff who perform the airline’s value-adding work.

b) Poor internal communications

A recent organizational audit of Saudia performed by an international consulting firm indicated that one of the major weaknesses of Saudia is its internal communications. The findings of the study stated that communication within Saudia was very poor. In most cases, vertical and horizontal flows of information were perceived as either late, wrong or incapable of being understood. Corporate culture, organizational structure, lack of focus on processes, poor team work and lack of leadership are all reasons which contributed in the past to create this situation.

c) Life time job security

Although job security has a relationship with the improvement of the morale of employees and subsequently their productivity and participation. When employees are guaranteed a life

time job security, this can lead to poor motivation and productivity. Currently the local citizens employed by Saudia (who represent 70 % of the total headcount) enjoy lifetime job security as part of government employment policy. Lifetime job security could be a negative factor in any corporate culture in the absence of accountability and a motivational work environment. For Saudia, the challenge is how to utilize this situation effectively during its change especially when employees see privatization as a threat for their current life time job security.

5.4.3 Cultural issues

The major cultural issues and difficulties that Saudia had before embarking on BPR could be summarized as follows:

- a) There is a clear need for more service-orientated front line staff. Although it is not the objective of this thesis to discuss the cultural and organizational reasons of this situation, but it is important to highlight that Saudia should take this issue into consideration in its endeavors to change the airlines.
- b) Another important issue to consider during BPR effort in Saudia is the expected resistance to change within the various organizational levels of the company. It can be expected that there will be a technical, structural, and social resistance to any major change effort. The challenge for Saudia is how to manage and control the expected resistance throughout the period of the BPR effort.
- c) The third and final important cultural issue to highlight in the Saudia case study is the role of Islam within the culture. This may act as a strong motivational factor to encourage local staff to participate and commit to any corporate improvement effort. The position of Saudi Arabia lies at the heart of the Islamic World. Parts of the Holy Quran and sayings by Prophet Mohammed (peace be upon him) that encourage and prompt perfection and quality in the individual and in society are all forces that if used properly could facilitate Saudis to endeavor for improvement.

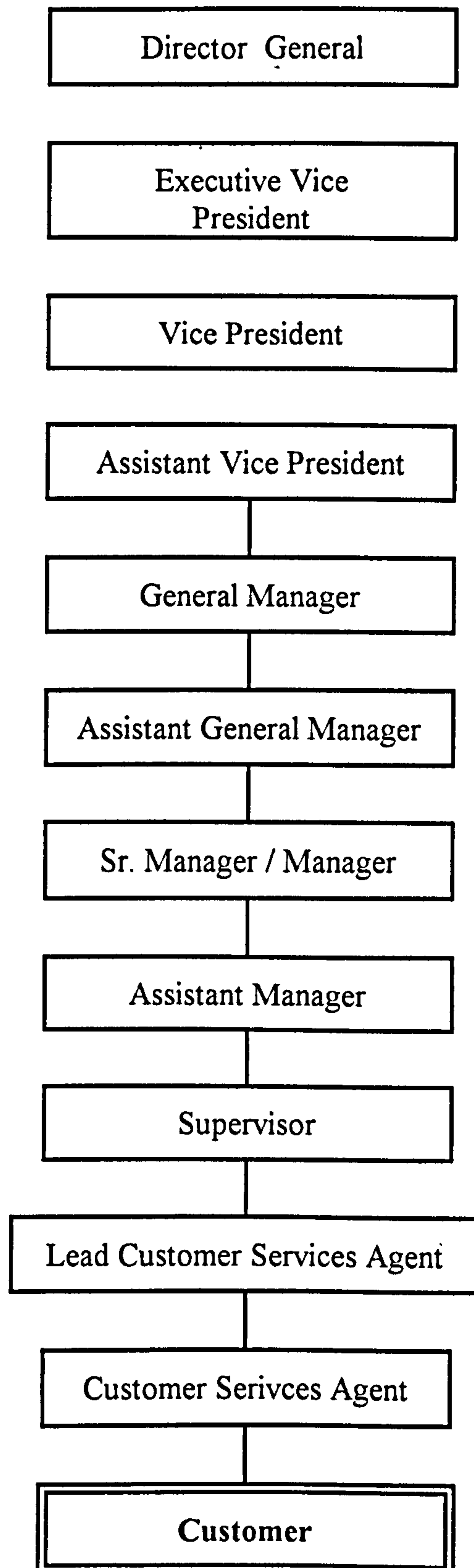


Figure 5-4: Multi-Organizational Layers Between Customer and Senior Executives in Some Departments in Saudia.

5.5 Previous Improvement Programs

Throughout the journey of development and growth of Saudia in the last fifty years, the airline embarked on various improvement and change programmes and projects such as:

- a) Automation of major business activities including the development of large information systems to run the basic functions of the airline such as ticketing, reservation, airport maintenance, etc.
- b) Downsizing or headcount reduction strategy was implemented by Saudia many times in its history as a cost reduction solution.
- c) Implementation of quality circles concept in various divisions of Saudia during the period of 1985- 1990.
- d) Reorganization of some parts of the airline and assessment of the front- line staff in some stations of Saudia's network.
- e) Benchmarking of some current or new services and systems against other major international airlines.

BPR is the latest improvement approach used by Saudia which could be an umbrella for most of the above approaches and may be the appropriate one for Saudia, as mentioned earlier in section 5.3.

5.6 Reengineering Saudia

Reengineering of Saudi Arabian Airlines could be described at the two basic levels of reengineering namely business reengineering and business process reengineering. Business reengineering in Saudia involves the development of radical changes in the overall business of the airline by redefining and reviewing the mission and vision, current markets and services, organizational structure and other strategic issues. The second level of reengineering in Saudia is business process reengineering which seeks a higher level of performance improvements in pursuit of the new mission of the airline through radical redesign of the key business processes.

The following sub- sections will present in sequence the major radical changes and programs that Saudia has initiated to reshape itself, to acquire a new identity, and to prepare itself for a totally different future.

5.6.1 New Director General

In March 1994, the Saudi Arabian government appointed Dr. Khaled Ben- Baker as the new Director General of Saudia. Indeed, this was the first milestone in Saudia's journey of change and development towards a better future. This new appointment in itself was a strong and clear message from the government for its intention to change and improve the airline before privatization. The new Director General of Saudia brought with him a clear vision of the future for the airline, willingness and commitment, support, and top- down involvement which all are considered as important critical success factors of any BPR effort. In brief, the appointment of Dr. Ben- Baker has given Saudia a new direction and infused the airline with a spirit much younger than its 50 years of operation.

5.6.2 New mission statement

On the basis of first things first, Saudia started its business reengineering by establishing a new and common mission statement for the entire airline. There was none previously and everybody in the airline had a different concept: to serve the government; to serve the people; to transport pilgrims and so on. This first basic step was very important to formally articulate the need for organizational change and to express it in simple and clear terms all employees could understand.

To achieve this, Saudia hired an external consultant (General Electric) and held a two- day executive workshop in a quiet retreat (Taif City) to set up the new mission statement of Saudia and outline new plans for the corporation commensurate with the current changes in the air transport industry, as well as to review future expectations.

This workshop resulted in the development of a short but powerful mission statement shown in Figure 5.5 that helped to provide a unified view of the airline’s future and pointed the way for establishing common goals for change and improvement.

A series of special one-hour workshops attended by all Saudia employees were held to disseminate this mission statement throughout the organization and to encourage all employees to think about their role and contribution to make it a reality.

To be a world class airline with a distinctive Saudi character that is customer driven and a caring employer

Figure 5.5 Saudia’s Mission Statement

5.6.3 Core values

To achieve the new mission statement of Saudia a new emphasis is being placed on the employees and their role in the evolving corporation. Six core values of Saudia employees were determined in a joint effort coordinated by the Management Development Programme department in Saudia. These core values, for the first time in Saudia on a corporate level, are very important for employees to clarify the direction, roles, responsibilities, success factors and desirable work relationships during and after the journey of change in Saudia. These values were also presented and communicated to all employees in the same special one hour workshops delivering the mission statement. Figure 5.6 shows these six core values of Saudia employees.

5.6.4 Vision plan

The next step was to develop a comprehensive plans to specify all required changes on a framework which ensures consistency and assists in the overall communications of what the airline is trying to achieve.

To achieve this, Saudia hired an international consulting firm (AMR) who developed, jointly with concerned staff in Saudia, a framework based on the new mission statement broken down into its basic elements, a succession of 37 strategies and the 197 detailed tasks that are needed to achieve them.

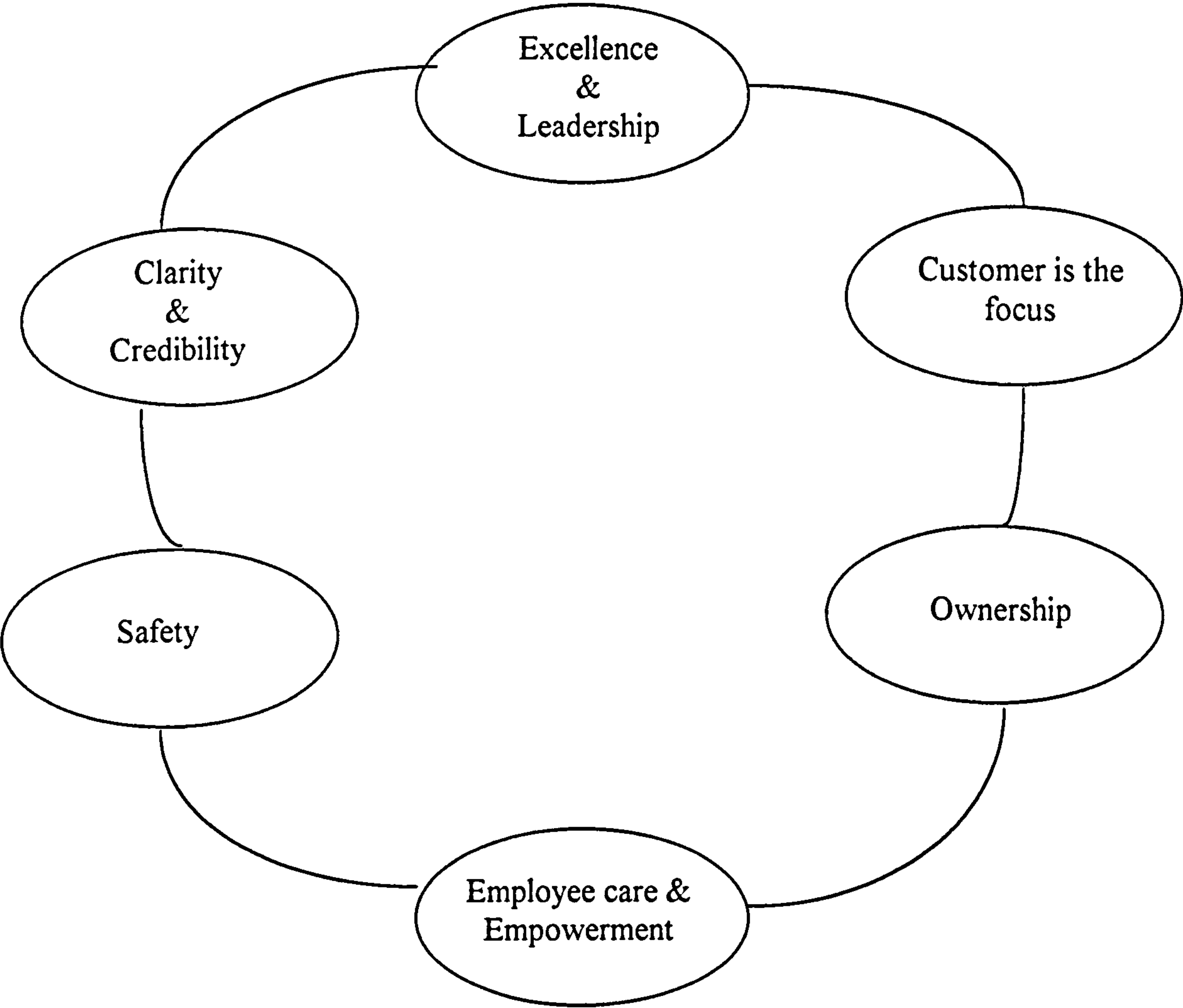


Figure 5.6 Saudia’s Core Values

This five year plan to achieve the vision was developed by conducting a special workshop for the senior management in each division of Saudia. The strategies in the vision plan were classified into four types namely immediate, mid- term, long- term, and operational strategies. Figure 5.7 shows the framework of the vision plans of Saudia.

5.6.5 Corporate identity renewal program

As part of its entire company change program, Saudia launched a comprehensive corporate identity renewal program to defocus the airline and reposition its image in the market place. Saudia hired an international consulting firm (Diefenback Elkins) to undertake the required study of this program. In July 1996, Saudia announced its new Logo and new color scheme. Indeed, the introduction of a new livery and logo design is a significant development for any major international airline, but especially for Saudia because it represented the external part of the total process of change and development and is symbolic of the “new start” of Saudia. In addition to the new logo and color scheme, the program involves a new staff uniform, new aircraft interiors and seats, new office and service counter appearance, introduction of “Guest Class” and other improvements that all aim to improve the overall image of the airline. Figure 5.8 shows the old and new logo of Saudia.

5.6.6 Restructuring

During 1996 Saudia began implementing a comprehensive corporate restructuring program based on in-depth studies made jointly by an international consultancy firm (AMR) and an internal committee headed by the Director General. The program is being implemented in stages to avoid adverse effects on the airline’s operation. This program aims to remove the organizational difficulties that were mentioned earlier in this chapter.

The key features of the new organizational structure of Saudia are summarized as follows:

- Eliminating two of the four Executive Vice President positions.
- Introduction of the human resources concept in all areas of the business.
- Integrating information systems and communications into a new division called Information Technology.

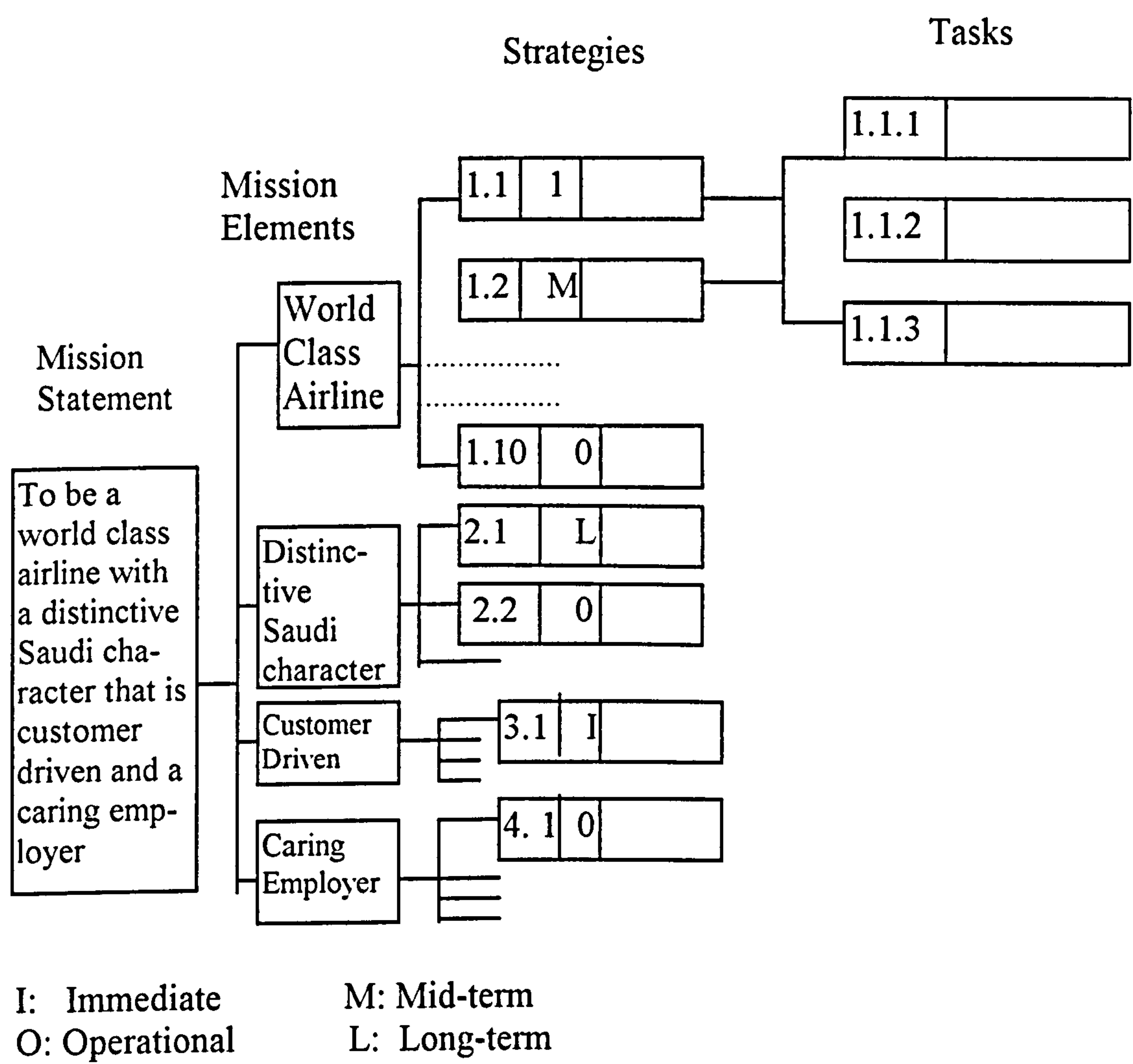


Figure 5.7 Vision Plan for Saudia



Figure 5.8 The old and new logos of Saudia.

- Major reorganization for Finance division including the introduction of financial planning and management accounting control.
- Major reorganization of Marketing division including the establishment of two vice president positions for cargo and marketing planning.
- Integrating the three basic elements of the airline product mix: flight scheduling, yield management and tariff under one umbrella within marketing division.
- Establishing an advisor position at executive level for outsourcing to emphasis the move towards commercialization of Saudia.

5.6.7 Commercialization program

The government's intention to privatize Saudia at some unspecified time has led top management to concentrate heavily on commercialization of the airline, cutting costs and finding new revenue sources. An example of the latter is the acceptance of advertising in the flights timetable, in-flight sky magazine and in-flight entertainment programmes.

Saudia also expanded its current program of selling its maintenance and airport services to other airlines operating from the main stations in the kingdom. Another serious action taken by Saudia was to increase the domestic fares and to reduce some of the non profitable domestic flights in order to rationalize its high costs of the domestic network.

A key part of the commercialization program is to make Saudia more competitive in international fares. In the past, the airline charged the official fares that often were 40 % higher than those of competitors in recent years. Indeed, Saudia has been forced to match the competition in price as well as in quality of service.

Another part of the program is the retaining of an international firm (Propsys Inc.) to improve the yield- management system by establishing a balance between maximizing seat utilization and accurately controlling sales. Saudia also entered into code-sharing and alliance arrangements as part of its program to work with, as well as compete with, foreign carriers while increasing its market share at the same time.

According to the Director General, Dr. Ben-Baker, Saudia intends to establish a firm commercial platform from which to launch the airline strategy for the next century, meeting and anticipating the challenges that lie ahead and driving forward towards the eventual goal of privatization.

5.6.8 Improving internal communication

It is true to say that never before in the history of Saudia has there been so much effective and meaningful communication up, down and across the corporation. This was a result of the comprehensive communication plan initiated by Saudia to improve the poor communication within the various divisions of the airline. The main aspects of this plan are summarized as follow:

- A daily briefing involves the Director General and about 20 top executives on the previous day's operations with displays showing load factors, yields and profit or loss statistics with comparison with previous performances.
- A weekly communications meeting is held headed by the Director General with about 25-30 senior staff, vice presidents and general managers, where strategic issues are addressed. The highlights of this meeting are summarized and immediately communicated to the staff of each attendee. Sometimes, these meetings take place in different departments rather than in the Director General's office and occasionally, they are held in other cities, all with the intention of bringing top management closer to staff.
- A bi-weekly newsletter called "For Your Information" is distributed to every employee as part of Saudia's drive to improve staff knowledge of the conditions of the airline and status of the on-going projects. In addition, improvement has been made for the monthly in-company magazine "Saudia World" to achieve its main objectives as a major means of communications within the company.

- Two days a week, the Director General has a 2- hours “open door” period in which any member of the staff can come to see him and talk over any problem.
- A daily briefing is held in every division headed by the concerned general manager with all managers and senior staff to discuss and review the status of various activities within each division. In addition, every division will continue to hold its weekly staff meeting.
- Every year Saudia organizes an open forum between the Director General and all sales and services managers during the annual sales conference of Saudia.
- A frequent open forum/ meeting is held between the Director General and the front- line staff to listen to their voice as part of Saudia’s program to improve its customer services.

5.6.9 New Fleet

In February 1994, Saudia government announced officially a contract valued at \$ 6 billions with Boeing for the new fleet for Saudia. The new fleet will consist of 61 state-of-the art aircraft which includes 29 Boeing 777s, 5 Boeing 747- 400s, 23 MD90s and 4 MD11 freighters. This makes Saudia one of the world’s largest international airlines. The fleet-renewal decision was the best possible 50th birthday present from the government to Saudia on its way to be a world-class airline and to prepare the airline in moving towards the eventual goal of privatization. Meanwhile, the present fleet is able to continue for several more years, if need be, with aging aircraft programmes being carried out at the Saudia technical base in Jeddah and at the Alsalam maintenance facility, a joint venture between - Saudia and Boeing in Riyadh.

5.7 Business Process Reengineering in Saudia

As mentioned earlier, the second level of reengineering in Saudia is Business Process Reengineering (BPR) which seeks a higher level of performance improvement in pursuit of the new mission of the airline through radical redesign of the key business processes. The definition of BPR in Saudia is the one given by Hammer and Champy in their famous book “Reengineering the Corporation’ [78]:

“BPR is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performances, such as cost, quality, service and speed”

Indeed, BPR in Saudia is a top-down process where a top management support was the starting point for the BPR program. BPR was listed as one of the key strategies of Saudia by Dr. Ben-Baker, the Director General of Saudia, when he announced Saudia's strategies to improve and prepare the airline for privatization in his speech during the ceremony of the introduction of the new livery and logo design of Saudia.

5.7.1 BPR unit

In September 1994, Saudia established a BPR Unit within the Industrial Engineering and Systems department in the Human Resources division. This was the real starting step in the entire BPR program in Saudia. The unit was run by a small full-time team consist of 4 industrial engineers and headed by a project manager. The official logo of the BPR unit in Saudia is shown in Figure 5-9.

Indeed, creating this unit and emphasizing its role by the top management was a real proof of how serious Saudia is about seeing the change through. Another important point to highlight here is the relationship between BPR and industrial engineering which was explained in section 3.4.5 in Chapter three of this thesis.

The BPR unit in Saudia acts as a focal point of the BPR program and has the roles of initiating, coordinating, supporting and controlling all ongoing BPR projects. The roles and responsibilities of the BPR unit in Saudia are summarized in Figure 5- 10.

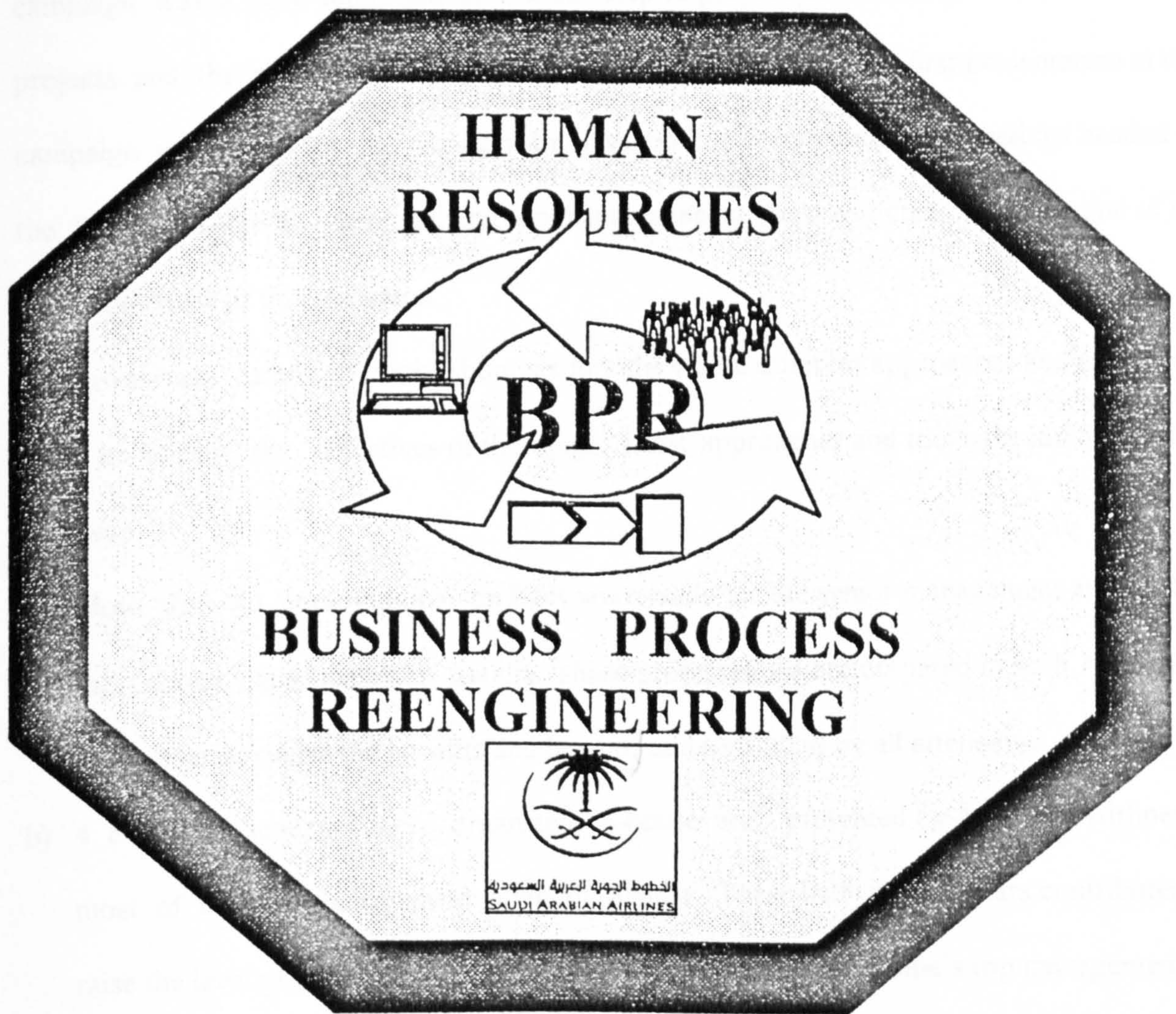


Figure 5-9 The official logo of the BPR unit in Saudia.

5.7.2 BPR awareness campaign

Based on the concept of first things first, a comprehensive awareness campaign of BPR and the need for it was made by the BPR unit before starting any BPR projects in Saudia. This campaign was a very important and wise step to prepare Saudia and its staff for the BPR projects and the changes that will result from such projects. The first presentation in this campaign was made for top management in one of the communications meetings headed by the Director General where gaining top management support and commitment is one of the main objectives of this campaign.

The awareness campaign took about six months where different approaches and tools were used to achieve the objectives of this stage. These approaches and tools are summarized as follows:

- a) More than 40 presentations on BPR were made for the senior management and staff of the various departments in Saudia. These presentations are prepared in both Arabic and English to maximize the benefits and level of understanding by all attendees.
- b) 4 executive seminars were organized in-house and presented by American Airlines to most of the top management team in Saudia. These half-day seminars contributed to raise the level of interest and commitment for BPR within the airline's top management.
- c) Several awareness articles on BPR were written in the in-company magazine (Saudia World).
- d) Several BPR video films were presented during the campaign.
- e) Attendance at local and international BPR conferences, courses, and seminars by members of the BPR unit as well as selected senior managers and staff from business processes that were targeted for reengineering.

5.7.3 Preparation for BPR

The preparation and planning for Saudia BPR efforts began from the first day after establishing the BPR unit. The main activities achieved during this stage to prepare and develop the required infra-structure for BPR projects are summarized as follows:

- a) In-depth training on the American Airlines (AA) BPR methodology for all BPR unit staff. Saudia had selected AA to start the BPR effort with a methodology developed and used within the airline industry. This methodology was later developed by further refinement and adaption to Saudia by the BPR unit. The next section of this chapter will present the Saudia BPR methodology in details.
- b) Key business processes of Saudia were identified for the first time in the history of Saudia. Two main approaches were used to identify the key business processes. Firstly, by forming a focus groups of selected specialists, managers, and senior staff from the concerned departments. The second approach was by using the traditional industrial engineering techniques of process flow identification and mapping.
- c) Selecting the required BPR tools and software to support teams in the various BPR projects. Saudia believes that there is a need for a BPR software package to support each team due to the nature and complexity of BPR projects and the critical importance of effective IT systems to a modern airline. The BPR unit, jointly with the Information Technology division, selected BDF from Texas Instruments as the BPR software in Saudia. A summary of the different BPR tools & software used by Saudia during its BPR efforts are shown in figure 5- 11
- d) Instituting BPR in Saudia and involving all concerned departments in the BPR efforts. Monthly meetings were held between BPR unit staff and Information Technology division, management development programmes department, quality assurance groups and production analysis groups in technical services division.

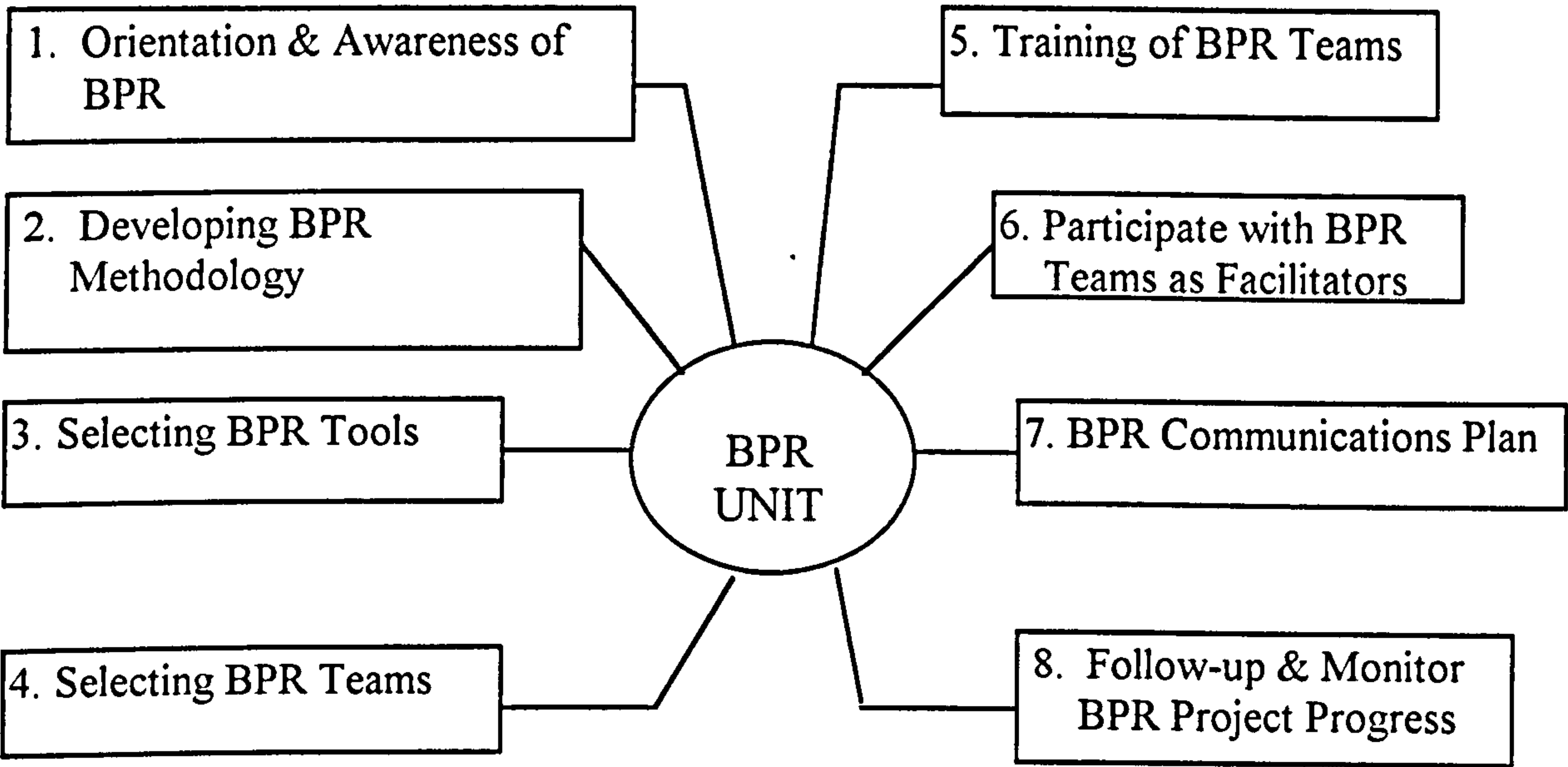


Figure 5.10 Roles and Responsibilities of the BPR Unit in Saudia

Tool/ Software	Use / Function
BDF	<div><div></div><div><div></div><div></div><div></div><div></div><div></div></div></div> <ul style="list-style-type: none">. Process modeling. Organizational modeling. Process model analysis. Process simulation. BPR project documentation
ABC	<div><div></div><div><div></div></div></div> <ul style="list-style-type: none">. Process mapping
all Clear	<div><div></div><div><div></div></div></div> <ul style="list-style-type: none">. Process mapping
Service Model	<div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none">. Process simulation. Pilot implementation
Cycle Time Reduction Kit	<div><div></div><div><div></div></div></div> <ul style="list-style-type: none">. Process redesign
Colored Post- it notes	<div><div></div><div><div></div></div></div> <ul style="list-style-type: none">. Process mapping on wall

Figure 5- 11 BPR tools in Saudia

- e) Benchmarking the application of BPR in other local and international companies through field visits and review of available literature.

5.7.4 Saudia BPR methodology

One of the major responsibilities of the BPR unit in Saudia was to develop an appropriate BPR methodology for an airline operating in the Middle East. Initially Saudia started by using American Airlines BPR methodology as the generic method and then developed and customized this to meet Saudia requirements and work environment. The development and customization of this BPR methodology was based on some basic considerations that emerged from specific difficulties that faced the airline and other drivers for change. These considerations and related developments in the Saudia BPR methodology are summarized as follows:

- a) The new mission of Saudia, the current operational and organizational difficulties, and other major drivers for change like privatization, competition and customer needs are all factors that were considered by the BPR unit in the process of developing and customizing American Airlines BPR methodology for Saudia.
- b) For Saudia to be a world class airline, as part of its new mission, benchmarking was considered as an effective tool to achieve this through comparing and learning from the best-in-class companies world wide. Saudia believes that benchmarking best practice is a useful way of breaking people's paradigms and helps to foster thoughts on alternative way of doing things.
- c) Saudia is putting more emphasis on customer needs and aims to be a customer driven airline as part of its new mission. In addition, as it was mentioned earlier in this chapter, most of current business processes in Saudia were designed initially with little customer consideration or involvement. For all these reasons, a separate and complete stage called "Listen to the voice of customer" is introduced to the Saudia BPR methodology.

d) The systematic redesign approach is used as the main approach for design of the new processes with a consideration for the clean-sheet approach at the beginning of the BPR effort in building the vision and expectations of the new process.

e) To achieve an effective analysis of the current process, Saudia use the ESIA approach developed by Peppard and Rowland [147]. ESIA is a systematic and simple analysis approach with clear guidelines for the BPR team in the stage of the technical redesign of a current process.

f) The Saudia BPR methodology was written and detailed in the Arabic language as well as English to achieve better understanding and ease of use by team members who are mostly from local Saudi staff.

g) Saudia BPR methodology assumes that a senior sponsor has initiated the BPR effort and is fully supportive, visible, and directly involved.

h) The BPR project started usually by identifying the key business processes in the targeted sector for reengineering in the airline (e.g. Marketing, Flight Operations, Cargo etc.). It is the responsibility of the BPR unit jointly with the senior management of the concerned departments of that sector to identify the key business processes and set the priorities for reengineering. This step is achieved by conducting a special workshop organized by the BPR unit which usually started by the awareness part which includes an introduction to BPR and the concept of business processes. The priority for reengineering is determined based on the following factors:

- Importance to Saudia's mission.
- Importance to Customers.
- Current Process Performance
- Quality of the process (complexity, use of technology etc.)

- Cost of the process.
- Importance to the concerned department.

Saudia BPR methodology consists of nine stages as shown in Figure 5- 12 The major steps and tools involved in each stage are summarized as follows:

Stage- 1 Explore Opportunities and Set Expectations

This stage in the Saudia BPR methodology involves steps and tools used in stage one of American Airlines BPR methodology which were shown in Figure 4-6. The main difference is that Saudia gives less attention to the assessment of change readiness because it believes that need for change in Saudia is clear and visible at a level that creates a sense of urgency and secures the strong commitment of senior management.

Stage- 2 Select/ Educate BPR team and Plan Project

The steps and tools of this stage are similar to those in stage 3 of American Airlines BPR methodology (Plan Project and Educate Design Team) that were shown in Figure 4- 9. An additional point to highlight about the Saudia BPR methodology is the use of the profile of a reengineering team member (“reengineer”) which was developed by Hammer and Stanton [79] to help in the selection of members of the BPR team. The profile of a reengineer is shown in Figure 5- 13.

• Process- orientation	• Optimism
• Holistic perspective	• Persistence
• Creativity	• Tact
• Restlessness	• Team player
• Enthusiasm	• Communications skills

Figure 5- 13 The Profile of a reengineer [79].

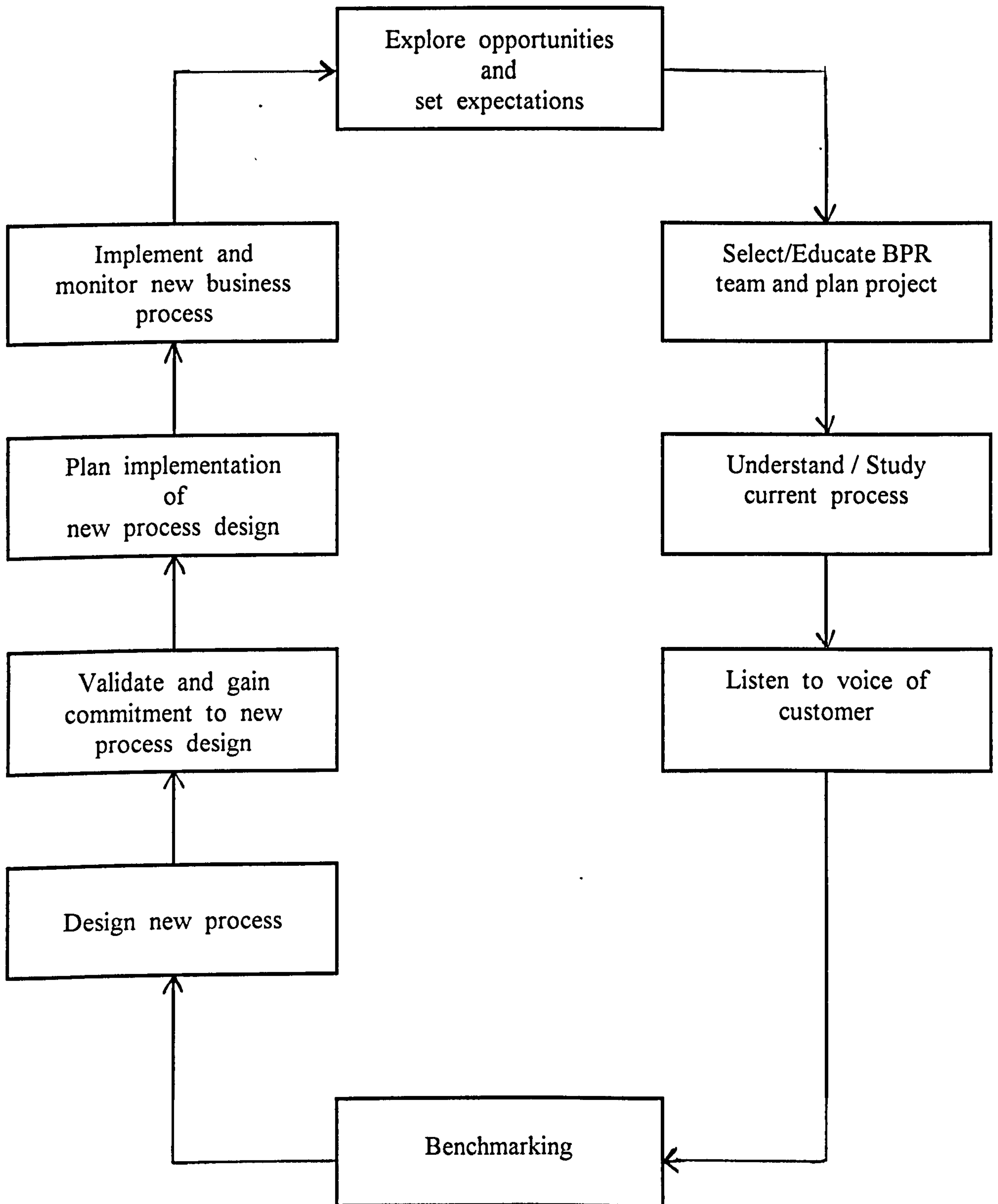


Figure 5.12 Saudia BPR Methodology

Stage- 3 Understand/Study Current Process

The objective of this stage is to understand the technical, structural, and social aspects of the current business process. This stage is considered as a prerequisite for the systematic redesign approach used by Saudia in its BPR methodology where understanding of the current process will provide the basis for the design of the new process. In addition, this stage aims to prepare the BPR team for the following stages in the methodology, namely, “Listen to the voice of customer” and “Bench marking”.

The technical understanding of the process starts by mapping the current process as it runs today using colored “post-it” notes which could be shuffled around the wall as the map begins to take shape. The BPR team will map and document the process in parallel using the BDF software. Saudia prefers to use wall mapping in addition to BDF, because of its benefits to ease and maximize the understanding of the current business process by both the BPR team and the steering committee. Figure 5-14 shows the main steps and tools used during this stage of Saudia BPR methodology.

Stage- 4 Listen to the Voice of the Customer

The objective of this stage is to obtain meaningful customer input and feedback about their experience with the current process and their needs and expectations of any new process.

Indeed, Saudia introduced this stage in the BPR methodology to ensure a customer- driven design of the new business processes.

The findings of the previous stage “Understanding Current Business Process” will have determined the internal and external customers of the process and their areas of interest that should be covered during this stage.

Saudia used two main techniques to listen to the voice of the customer in different BPR projects. These techniques were using customer questionnaires and conducting focus groups. Figure 5-15 shows the main steps and tools used during stage four “ Listen to the voice of the customer”.

Stage- 5 Benchmarking

Benchmarking was introduced to the Saudia BPR methodology to compare the current process with similar ones in other organizations. This allowed the identification and study of the best practices in these organizations and to use these findings as a key input in the redesign stage. Saudia believes that benchmarking best practices is a useful way of breaking people's paradigms and helps to foster thoughts on alternative ways of doing things. Another important driver for the use of benchmarking within the Saudia BPR methodology is the new mission that aims to make Saudia a world-class airline. Benchmarking is a practical technique that will help Saudia to learn from the best practices within other world-class airlines. Saudia used three basic types of benchmarking during its various BPR projects as shown in Figure 5-16.

It is important to highlight the benefit of conducting the benchmarking at this stage of the methodology after understanding the current business process and listening to the voice of the customer. Indeed, this will help to ensure an effective benchmarking effort by the BPR team. Figure 5-17 shows the main steps and tools used during the benchmarking stage.

Stage-6 Design New Business Process

In this stage, the BPR team will be in a good position to redesign the current business process due to the availability of the following information and findings from previous stages:

- Vision and expectations of the new process (findings from stage 1)
- Clear understanding of the technical, structural, and social aspects of the current process (findings from stage 3).
- Customer needs and expectations (findings from stage 4)
- Best practices and how other companies are performing their business process. (findings from stage 5).

Steps	Tools
<ul style="list-style-type: none"> • Understand the technical aspects of the business process: <ul style="list-style-type: none"> - Inputs and outputs - Work and activities flow - Information Flow - Cycle time - Technology Utilization - Facilities and equipment Utilization • Understand the structural aspects of the business process: <ul style="list-style-type: none"> - Responsibilities and accountability - Process ownership - Control of resources - Individual and team empowerment - Reporting and monitoring • Understand the social aspects of the business process: <ul style="list-style-type: none"> - Selection and recruitment criteria - Orientation and training programs - Staff performance review and compensation - Reward and recognition - Personal and career development - Formal and informal communication 	<ul style="list-style-type: none"> • Process Mapping • Organization Structure Mapping • Post- it note type papers which considered a useful tool to map the current process on the wall. • BDF: BPR software selected by Saudia to support the BPR teams. • Process information sheet which was developed by Saudia BPR Unit to collect process information during the field visit. A sample of this form is shown in Appendix-5.

Figure 5-14 Steps and Tools of Stage 3 “Understand Current Business Process”

Steps	Tools
<ul style="list-style-type: none">• Determine customer of the process• Select the appropriate sample for survey• Determine areas of interest to be covered in the survey• Conduct focus groups meeting• Prepare customer questionnaire• Distribute/ collect questionnaires• Analyze findings• Present findings to steering committee	<ul style="list-style-type: none">• Current Process map is a useful tool to facilitate the discussion during this stage• Focus groups meeting for a selected samples of process customers• Questionnaires• Customer survey software “Survey Pro” a user friendly software used by Saudia to document and analyse customer feedback• Personal interview• Mail

Figure 5-15 Steps and Tools of stage 4 “Listen to the voice of the customer”

The BPR team usually starts by organizing the above findings to use them effectively in a technical, structured, and social redesign of the process. The technical redesign is made using the ESIA systematic redesign approach. ESIA is a simple approach with clear guidelines to help the BPR team eliminate all non-value-adding activities, simplify the core value-adding ones, integrate the simplified activities to create a smooth delivery of the customer requirements and automate these simplified and integrated activities to speed up the process and deliver higher quality customer services. The main areas of attention within the four steps of ESIA are shown in Figure 5.18.

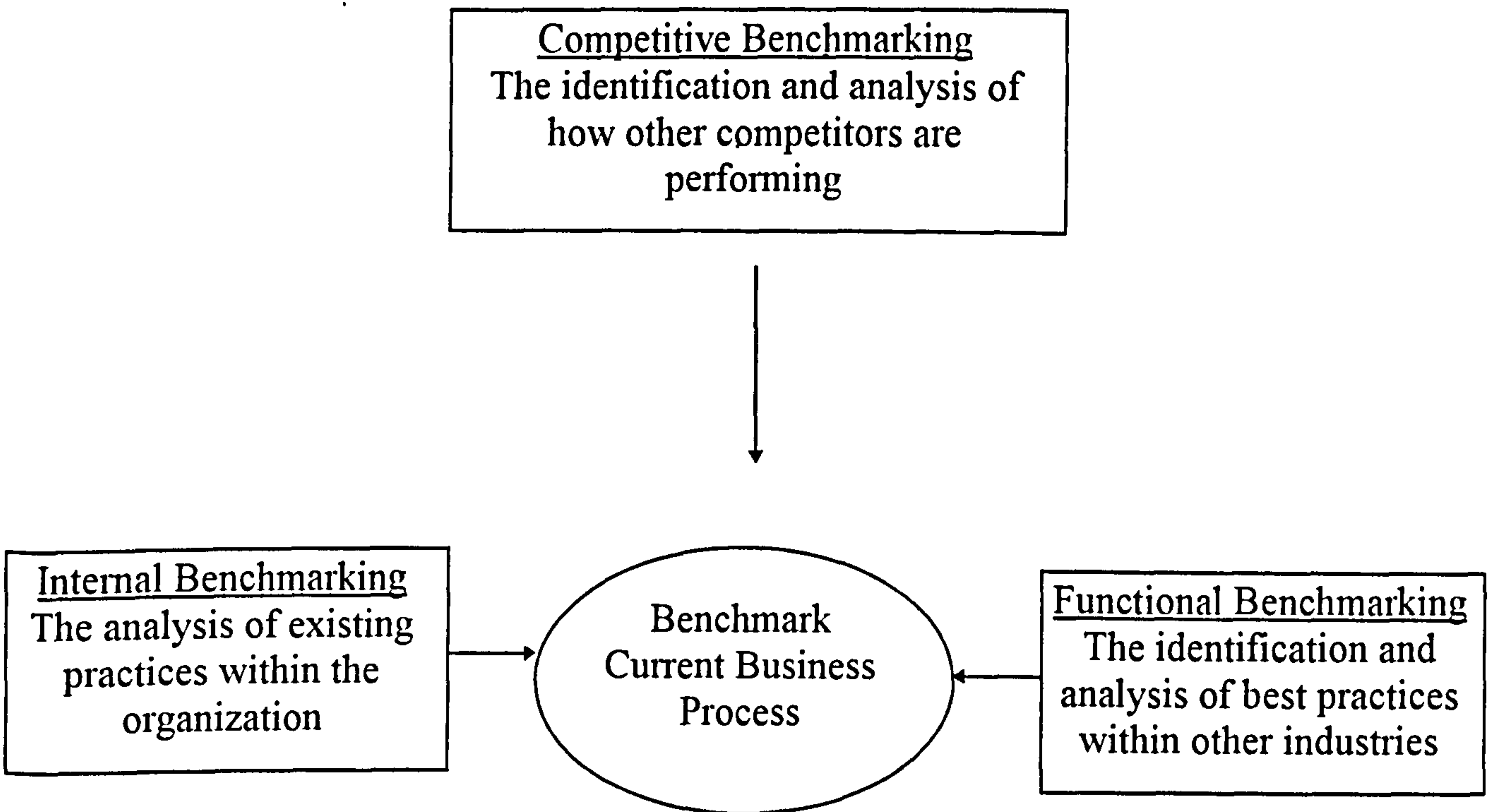


Figure 5-16: The three types of benchmarking used by Saudia

Steps	Tools
<ul style="list-style-type: none"> • Identify issues/ topics to be benchmarked • Selection of companies to be benchmarked (cost/ time) • Team selection • Prepare benchmarking questionnaire and check list • Team preparation (roles/ plan) • Conduct field visits/ meetings to collect benchmarking information • Analyze collected information • Consolidate findings • Conduct comparative analysis • Generate ideas for redesign • Present findings to steering committee 	<ul style="list-style-type: none"> • Current Process map is useful tool to identify issues and topics to be benchmarked • Questionnaires is an important tool to help the BPR team to cover all topics and areas of process • Field visits • Meetings with concerned staff of the benchmarked companies will help to discover the new practices and development regarding the concerned process • Related books and reading materials

Figure 5- 17 Steps and Tools of Stage 5 “Benchmarking”.

ELIMINATE	SIMPLIFY	INTEGRATE	AUTOMATE
Over-production	Forms	Jobs	Dirty work
Waiting time	Procedure	Teams	Difficult activities
Transport	Communication	Customers	Dangerous work
Processing	Technology	Suppliers	Boring work
Inventory	Problem areas		Data capture
Defects/failures	Flows		Data transfer
Duplication	Processes		Data analysis
Inspection			
Reconciling			

Figure 5-18: Areas of Attention for Systematic Redesign (ESIA) [147].

Steps	Tools
<ul style="list-style-type: none"> • Organize and classify findings of previous stages including: <ul style="list-style-type: none"> - Vision of new process - Technical, structural, social aspects of current process. - Voice of the customer - Benchmarking • Conduct technical redesign using ESIA approach • Review structural and social requirements of new process design • Get feedback on the new process redesign from internal or external expert resources • Revise the new process design and develop alternatives for major recommendations. 	<ul style="list-style-type: none"> • Findings from previous stages. • ESIA approach • Breakthrough thinking • Internal /External consultants

Figure 5.19 Steps and Tools of Stage 6 "Design New Business Processes"

Stage 7 Validate and Gain Commitment to New Process Design

This stage in the Saudia BPR methodology involves steps and tools similar to stage 7 of the American Airlines BPR methodology which were shown in Figure 4-12. An additional point to add here about this stage in Saudia BPR methodology is the use of a simulation technique as a tool for validating and testing the new process design. A special simulation software called Service Model is used by Saudia to simulate and validate new process design and some recommendations which involve major changes of facilities layout or physical process flow.

Stage-8 Plan Implementation of New Process Design

In this stage, the Steering Committee selects an influential and capable transition manager and implementation team. Together, they develop the implementation strategy which is approved by the Steering Committee. The implementation strategy includes the following:

- Establish new process owners
- Define new roles and responsibilities
- Identify Implementation phases or modules.
- Produce a Transition plan including reward and recognition measures.
- Create a communication plan for sharing news and receiving feedback.
- Develop a performance measurement and monitoring system.
- Provide Training and development plans.

Stage -9 Implement and Monitor new Business Process

The final stage of Saudia BPR methodology will only take place when the new design is sound and the transition plan is completed and well managed. This stage will include the following steps:

- Announcement of the new process and the implementation schedule. Implementation of the new business process.
- Putting transition monitoring in place.
- Executing transition plan.
- Monitoring and adjusting implementation.
- Establishing continuous improvement plan.

5.7.6 The Role of Business Design Facility (BDF)

Due to the nature and complexity of its BPR projects, Saudia used a comprehensive BPR software package, called Business Design Facility (BDF) from Texas Instruments to map and document current and proposed business processes. BDF was selected by the Information Technology division of Saudia to be used as the official BPR software. BDF is a suite of software tools that provide the BPR team with the capability to thoroughly document, model and analyze current business processes. In addition BDF provides a means to design new processes and to measure how well they meet the business vision and objectives.

Analysis of current processes in BDF is made by using standard or customized matrices describing activities such as cost and cycle time. BDF also allows users to interface with word processing packages, spreadsheets, communication and analysis tools such as those supporting simulation and activity-based costing. This same interface will enable BDF to link to other computer-aided systems engineering (CASE) tools to facilitate information systems development activities. Figure 5-20 shows a summary of BDF capabilities and features.

The required support and training on BDF for the BPR teams in Saudia is provided by information technology specialists where, usually, the IT member of the BPR team has the responsibility to run and use BDF throughout the BPR project. The use of BDF in Saudia was limited mainly to modeling and documenting current and new processes.

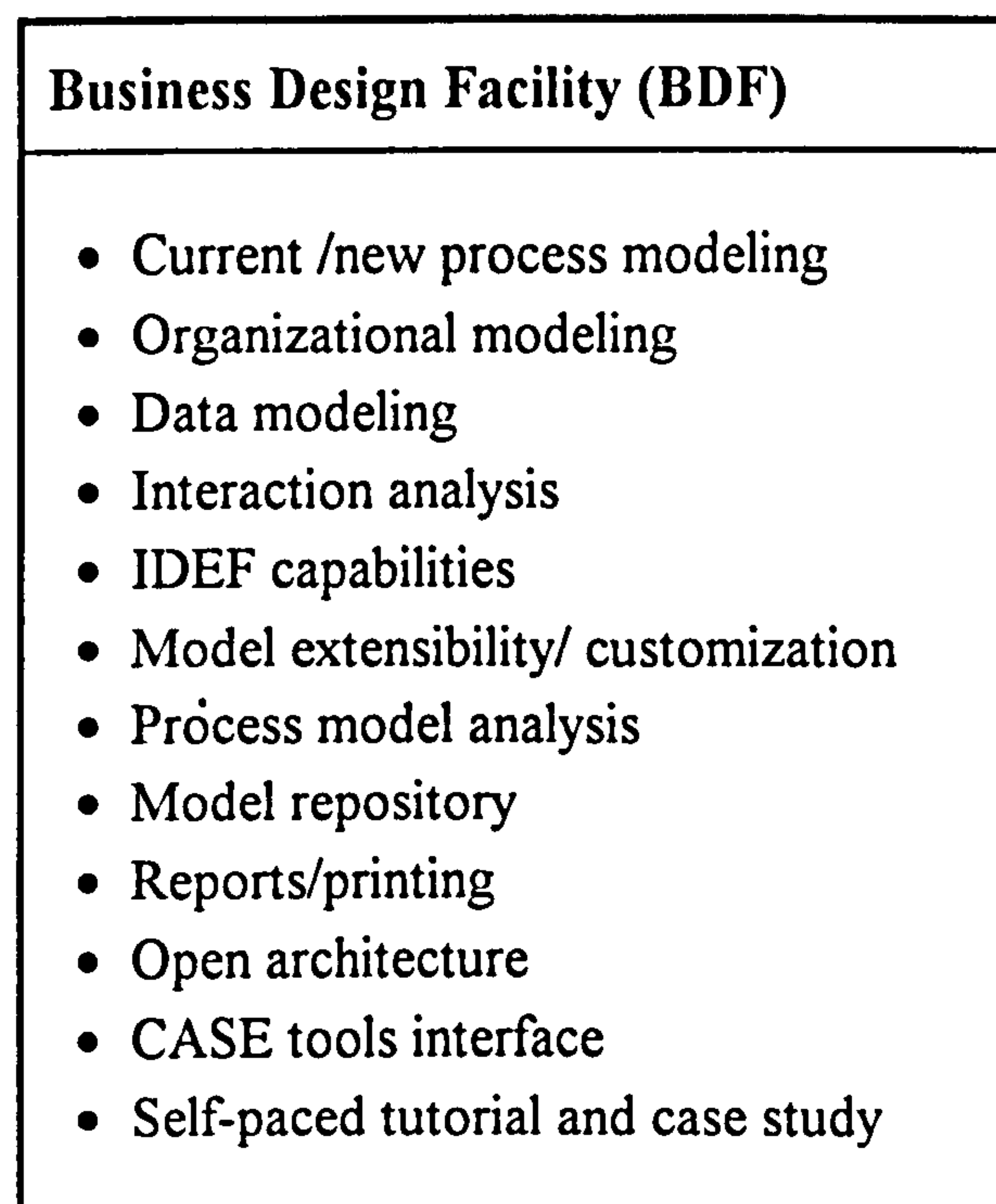


Figure 5-20 BDF Capabilities and Features

In some BPR projects, the BPR teams extended the use of BDF to analyze the current business process in term of cycle time and organizational interfaces in performing various activities of the current process. BDF was also used in some BPR projects as a tool to run a simulation of the new process in terms of the cycle time and to compare it with current process. It provides a powerful tool to convince the steering committee with expected improvements in the new process.

The limited use of BDF in most of BPR projects in Saudia is mainly due to three main reasons. Firstly, the limited technical support provided by Information Technology division in this regard. Secondly, there was no insistence from IT division to use BDF as a formal approach to formulate the user requirements and data flow diagrams for new information systems needed to enable and support the new business processes. Thirdly, the difficulty in use of BDF was high when compared to the ease of using other flow charting software such as “ABC” and “All Clear”. A sample of process mapping and analysis using BDF is shown in Appendix - 6.

5.8 BPR Projects in Saudia

The BPR projects in Saudia started once the BPR unit completed a major part of the preparation stage which included the comprehensive awareness campaign and the development of the BPR methodology. The process of selecting and prioritizing the processes for reengineering varied from project to project. Some BPR projects were initiated by the top management committee and some projects were initiated and requested by the process owner.

One of the first processes that was reengineered was the recruitment process. In addition to the need to improve the performance of this process, it was chosen as the pilot project because it was sizable in terms of time and expenses and had a clear project owner. This project became the model that provided the learning experience for future BPR projects.

Figure 5- 21 shows a list of the major BPR projects in Saudia.

BPR Projects (1995- 1997)
<ul style="list-style-type: none">• Recruitment Process• Flight scheduling Process• Passenger Departure Process (Airport)• Out- bound Cargo Process• Financial Processes<ul style="list-style-type: none">• Cash Flow Process• Revenue Accounting Process• Accounts payable Process• Human Resources Processes<ul style="list-style-type: none">• HR Planning Processes• HR Administration Processes• HR Benefits and Services Processes• Medical Services Processes

Figure 5- 21 BPR Projects in Saudia.

5.8.1 Recruitment Process Reengineering Project

One of the first BPR projects in Saudia was recruitment process reengineering which was initiated by Saudia due to the urgent need to improve the recruitment process which was considered as one of the core HR processes which is vital to attracting and retaining the right people to run the airline and achieve its new mission and vision.

The project was achieved through the implementation of the Saudia BPR methodology. The major stages of the recruitment process reengineering project are summarized as follows:

Stage 1 Explore Opportunities and Set Expectations

This stage started by a BPR awareness campaign within Human Resources Division (HRD-called Personnel during that time) where a series of presentations were made by the BPR unit to all staff and senior management of HRD as part of the preparation for the changes expected from the reengineering project. A steering committee was formulated and headed by the Vice President - personnel who was very committed and supportive throughout the different stages of the project. Two main tasks were achieved by the steering committee at this stage. The first task was to determine and set the boundaries for the recruitment process and related sub-processes.

The recruitment process includes the following sub-processes:

- Hiring staff from outside Saudia Arabia
- Hiring staff from Saudi Arabia
- Promotion process
- Transfer process
- Hiring of trainees
- Assessment and testing process.

The second task was development of the vision for the new and desired recruitment process based on the recently created Saudia mission statement. Figure 5-22 shows this vision.

All of the above tasks were achieved in special workshops designed and managed by the BPR unit.

Vision of the new recruitment process
<ul style="list-style-type: none">• World-class recruitment process.• Customer driven recruitment process.• Adopting and learning from best practices.• Reduction of paper work.• Reduction of current long cycle time• Elimination of duplicated work and interferences.• Improving information flow and exchange using advanced information technology.• Automation of manual activities.• Alignment of process with the organizational structure.

Figure 5.22 Vision of the new recruitment process in Saudia

Stage 2 Select/Educate BPR team and plan project

This stage started by selecting the right members for the BPR team who were assigned for this project on a full-time basis. The selection process was made by managers of the department concerned based on the reengineer profile mentioned earlier in this chapter. The BPR team also involved also two outsiders representing Information Technology division and Industrial Engineering department. Three special training sessions were conducted jointly with information technology division and training department to educate the BPR team in the following subjects:

- BPR definition and principles.
- Need for BPR
- Saudia BPR methodology
- Process mapping.
- BDF and other BPR tools
- Team work principles
- Problem solving techniques
- Leadership skills.

The first step was to develop a detailed project plan with clear and reasonable milestones to facilitate the progress of the project. The intention was that the team would give a presentation to the steering committee at the end of every stage of the project. This was considered an important approach to maintain the team's momentum from stage to stage. The estimated project duration in the initial project plan was six months. This plan was revised and updated later to reflect the actual progress of the project which was completed in nine months.

Stage 3 Understand/ Study current recruitment process

In order to understand and study the current recruitment process, the BPR team began this stage by visiting all concerned departments. The objective was to follow the process and identify where the work began, how it was processed, by whom it was processed, how long it took and what it processed. The team used a simple check-list prepared by the BPR unit to ensure collection of all technical, structural and social information related to the targeted processes. At the end of each day, the team used the collected data to map the entire process

on the wall of the project room by sticking coloured post-it notes. Indeed, this approach of process mapping helped the team to see clearly the big picture of the process and provides a focal point for discussion about every aspect of the recruitment process. Once the process had been agreed, the team mapped and documented the process using the BDF software. In some cases, the team invited some internal functional experts to give some education about various processes about which the team had a limited understanding. The final process map was reviewed and verified by concerned managers and specialists before presentation of the findings to the steering committee. In brief, it was the first time in the history of both Saudia and personnel division to enable the senior management and concerned staff to see the big picture of the entire recruitment process and how customer orders were handled and travelled slowly across the various organizational boundaries of personnel division.

The findings of this stage encouraged the steering committee to support this improvement effort and emphasized the need to reengineer the recruitment process and achieve the desired vision.

Stage 4 Listen to the voice of customers

The objective of this stage was to get feedback from the internal as well as external customers about the current recruitment process and their expectations in the reengineered process. The first step was to identify the process customers and select appropriate samples to represent the different categories of those customers. These categories include:.

- Newly appointed staff.
- Staff promoted recently (within Saudia).
- Expatriate staff.
- Walk-in customers in Recruitment department.
- Senior management of Saudia.

The BPR team used two main techniques to listen to the voice of the selected customers. Firstly, by conducting special focus group meetings started usually by an introduction about the project and its objectives and a brief highlight for the current recruitment process which guided the discussion during the meeting. The second technique was to design and distribute a questionnaire to serve the same purpose. The findings of this stage were organized and analyzed by the BPR team and presented to the steering committee at the end of this stage. It is important to mention here that feedback from the senior management groups during this stage had contributed to improve and strength the vision of the new process.

Stage 5 Benchmarking

As part of Saudia BPR methodology, the BPR team benchmarked selected companies both within and outside the airline industry to find and learn from the best practice in the process of recruitment. A comprehensive questionnaire was prepared by the BPR team to cover all related issues during the benchmarking visits. The team visited the following companies:

- Singapore Airlines
- South West Airlines (USA)
- Saudia ARAMCO (Oil company)
- SABIC (Saudia Petro- chemical company)
- King Fahad Print Shop of Holy Quran (Large complex)

These visits contributed to the breaking of the team's paradigms and helped to foster their thoughts on alternative and better ways of performing the recruitment process in Saudia. In addition, the BPR unit provided the team with the latest literature and books available on this subject today.

Stage 6 Design New Recruitment Process

In order to begin the redesign of recruitment process, the BPR team started this stage by reviewing and organizing the findings of the previous stages which form the basis for the new design in addition to the results of the technical, structural , and social redesign.

Figure 5-23 shows the basis on which the recruitment process was designed and built. The technical redesign was performed using the ESIA approach where every activity within the recruitment process was a subject for elimination, simplification, integration, and automation. It is important to highlight here that the BPR team viewed the need for new technology as an important but secondary reason for process change. The same policy was applied in all other BPR projects in Saudia, where information technology was viewed as an enabler but not a driver for the change.

The major features and changes in the new recruitment process are summarized as follows:

- Integration of all simplified value-added activities within the current fragmented sub-processes into one process.
- Introduction of the Human Resources concept where all personnel departments were retitled to HR.
- Introduction of the concept of the HR generalist.
- A major reorganization of the personnel Administration division to streamline the reengineered recruitment process as shown in Figure 5-24. The new organization structure is based on the concept of a single contact point for all HR customers.
- Major improvements in the following aspects of the recruitment process:
 - Number of activities within the process.
 - Number of forms used in the process
 - Automation level
 - Cycle time of the process.

Figure 5-25 shows a summary of the expected improvements in the new recruitment process.

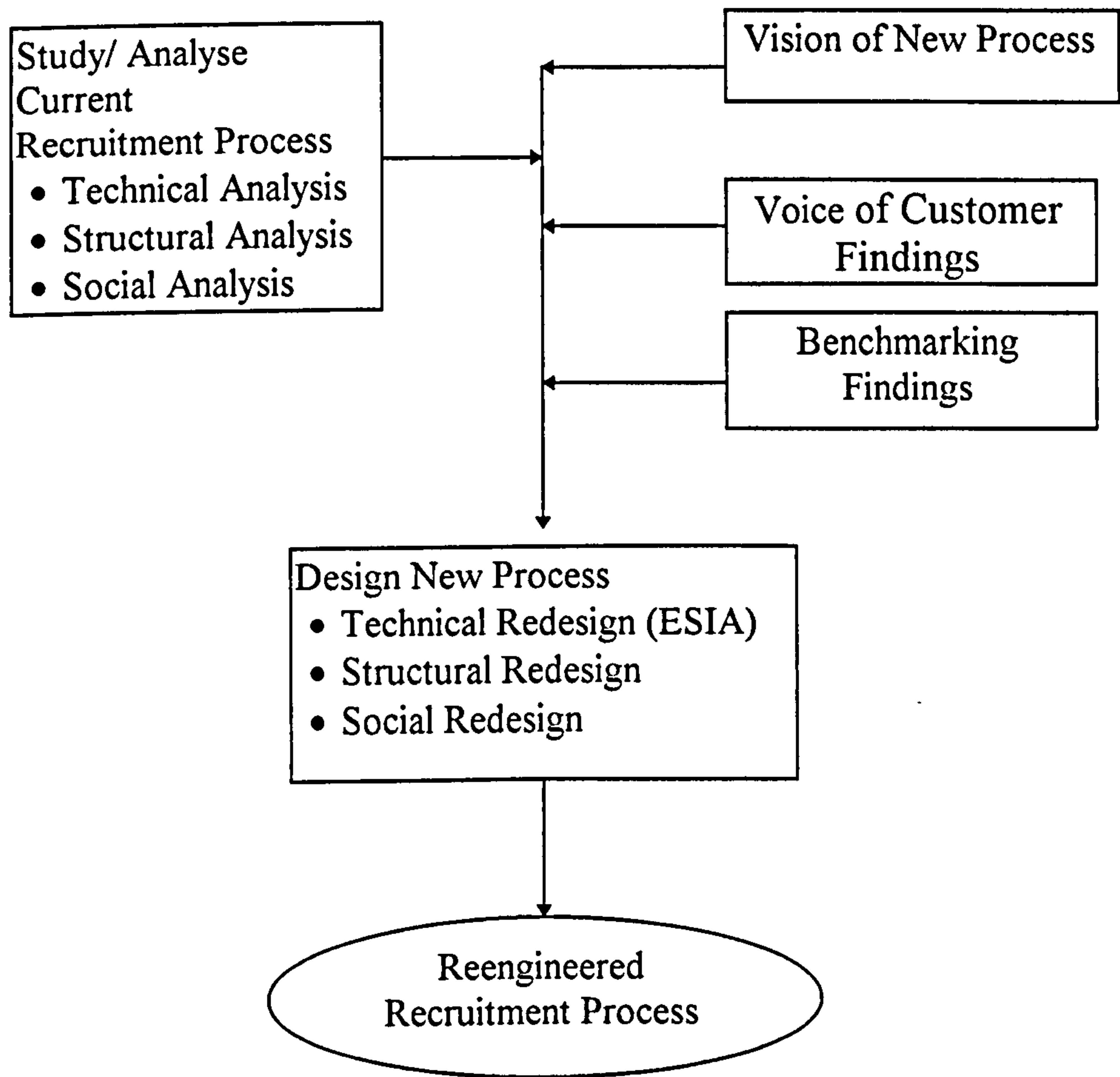
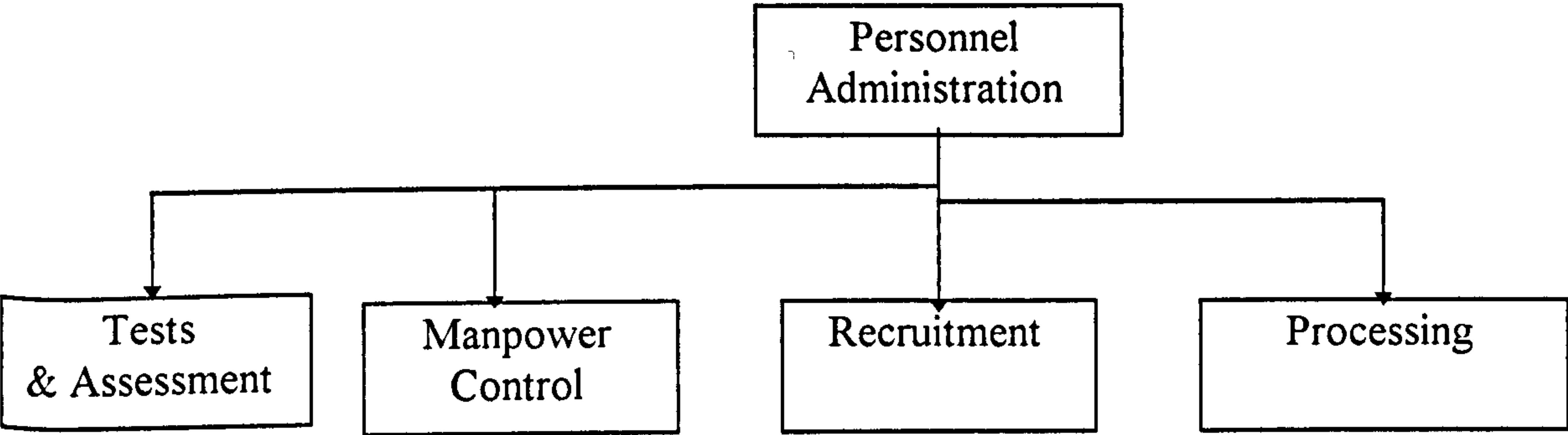


Figure 5-23 The basis of the new design for Recruitment Process

Before BPR



After BPR

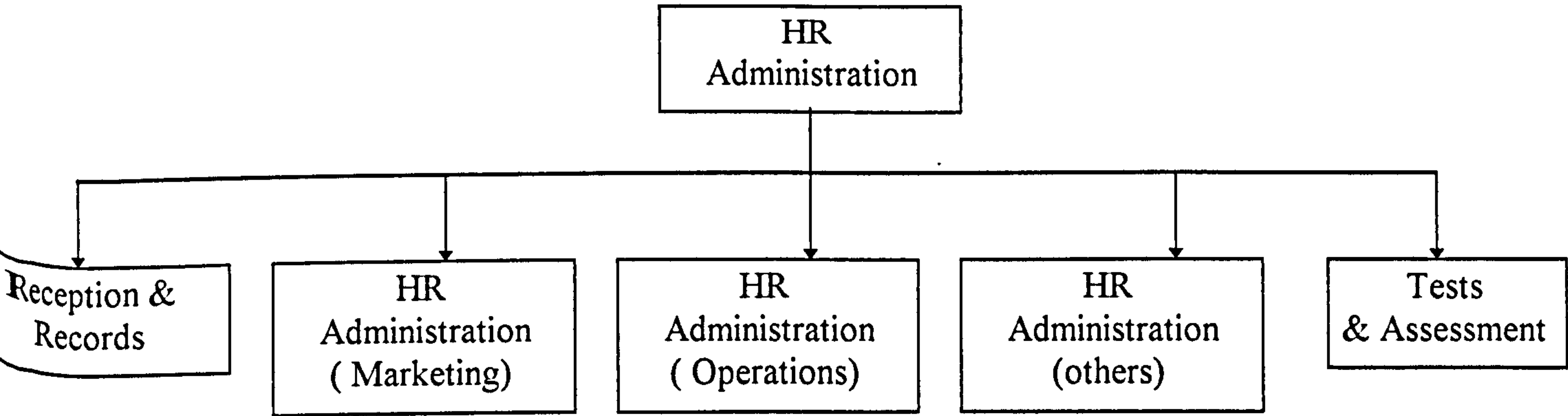


Figure 5-24 Organizational structure before and after reengineering of the recruitment process.

	Current Process	New Process	Change %
Process activities	62	28	- 55%
Forms	20	11	- 45%
Automation	22%	63%	+186%
Cycle time (Hrs)	526	138	- 74%
Cost (SR)	325,000	80,000	- 75%

Figure 5- 25 Expected improvements in the new recruitment process

Stage 7 Validate and gain commitment to new process design

After the completion of the new design, the BPR team invited selected key staff from concerned departments to review and judge the validity of this design in the various functions within recruitment process.

A comprehensive presentation of the new process was made by the BPR team to the steering committee to obtain their approval and commitment to the new process design. In addition, a complete and detailed project report was prepared by the BPR team at this stage.

After the approval of the steering committee, an executive brief was prepared by the BPR unit and submitted to the Director General of Saudia who gave the green light for implementation.

Stage 8 Implement and monitor the new recruitment process

This stage started by forming three implementation teams. These teams are:

i) New process implementation team

This team has the responsibility to implement all technical and procedural changes of the new process.

ii) Facilities and offices Relocation team.

This team has the responsibility to plan and monitor the implementation of all structural and social changes required to implement the new process.

iii) Transition period team.

This team has the responsibility to handle all recruitment orders and customers inquiries during the transition period from the old to the new process.

A pilot implementation was carried out in the same regional HR offices prior to the full implementation of the new recruitment process.

5.8.2 Flight Scheduling Process Reengineering Project

This project was one of the major BPR projects running in Saudia due to the importance of the flight scheduling process which was considered as one of the key business processes of the airline. Flight schedules represent one of the primary products of an airline and are one of the leading factors in a passenger's choice of a particular carrier. Some of the key issues related to this project are summarized as follows:

- a) Flight scheduling process is a major one that cuts across more than 30 departments in Saudia that are directly or indirectly involved in the process of planning, constructing and running the flight schedule.**

For this reason the BPR team were divided to two sub-teams. The first one is a full-time core team (6 members) to carry on the main tasks during the various stages of the project. The second team is a part-time support team consisting of those less involved.

- b) The findings of the benchmarking stage were very valuable and helpful to the BPR team during the redesign stage.
- c) A major reorganization for the planning and scheduling division was implemented as a result of the structural redesign.
- d) One of the major changes was the replacement of the old flights scheduling system with a new and customized system based on the requirements of the new flight scheduling process.

A sample of flight scheduling process map is shown in Appendix - 7.

5.8.3 Passenger Departure Process Reengineering Project

As part of its strategy to achieve the new mission to be a customer driven airline, Saudia initiated a BPR project to streamline and radically improve its current passenger departure process at Jeddah airport. The new process will be used as a model for other stations in Saudia's network. To facilitate the achievement of this objective later, a key representative of other main stations were invited to be members of the steering committee of the project. One of the key events during this project was conducting for the first time in Saudia's history a symposium setup specifically to listen to the voice of external customers (regular passengers). This symposium was headed by the Director General who gave a full support and commitment for this project. Another distinguished point to highlight here is the effort made by the BPR team to integrate all fragmented projects and other efforts within Saudia to improve the departure process.

During the stage of listening to the voice of customers, the BPR team arranged a series of focus groups meetings with all other governmental agencies and companies operating in Saudia's terminal that has a control and involvement in the department process. This step was very important to get support and commitment to the new process from those agencies.

A sample of customer questionnaire and survey results are shown in Appendix - 8.

5.8.4 HR Processes Reengineering Project

The success of the recruitment process reengineering encouraged Human Resources division to launch a major BPR project for all key business processes within HR division. Some of the key issues to highlight here about this project are:

- a) In order to achieve this major project, a total of 4 full-time BPR teams were formed to reengineer the key processes in the 4 sectors of HR division. These sectors are HR planning, HR administration, HR benefits and services, and medical services. These four teams meet on a bi-weekly basis to share experiences and view points of mutual subjects and to report their findings to the steering committee on a monthly basis.
- b) A special integration workshop was held between the four teams before announcing the new processes. The main objective of this workshop was to build an integrated picture of HR processes and to avoid any duplication and contradiction in the final recommendations by the four teams.
- c) Due to the problems of year 2000, HR decided to introduce a new HR system. After a long debate and discussion, it was decided to reengineer the HR processes first and then to develop or select the new HR system based on the reengineered processes. To achieve this, a full-time IT specialist was appointed in each team to use the BDF software to capture and provide the new process requirements for the new HR system team.

5.9 Discussion

Saudi Arabian Airlines is a pioneer in the Middle East by introducing and implementing business process reengineering. The Saudia BPR case study was characterized by the scale of implementation of the BPR concept within the airline which involved large projects with cross-functional teams on both senior management and process levels. Another important characteristic of Saudia BPR case study to be highlighted here is the in-house development of the Saudia BPR methodology which was based originally on American Airlines BPR methodology but tailored to meet specific Saudia requirements.

The key strengths of the Saudia BPR methodology and its applications within the airline are summarized as follows:

- a) Top management support and involvement in the different BPR projects within the airline was ensured by tailoring the method to suit the local culture .
- b) Implementing BPR was one of the key strategies of Saudia to achieve its new mission and vision. It was also used as one of the main approaches to improve the poor financial performance of the airline.
- c) Establishing a central BPR unit which acts as a focal point of the BPR effort within the airlines. Indeed, creating this unit helped to develop the required infra-structure for reengineering projects and showed that the Saudia is serious about seeing the change through.
- d) The use of a structured and customized BPR methodology which was developed in-house by the BPR unit based on the generic model of American Airlines BPR methodology ensured a closer fit to the requirements of the airline .
- e) A Well organized BPR project structure with clear roles and responsibilities for the steering committee, BPR teams, and consultants .

- f)** A comprehensive awareness campaign at the beginning of the BPR effort to reduce the level of expected resistance to change and to gain more support and commitment from top management and staff within Saudia.
- g)** Introduction of a complete and separated stage to listen to the voice of customer to ensure a customer-orientated design of the new business process.
- h)** Introduction of a complete and separated stage to benchmark current business process with the best and world-class practices in other organizations.
- i)** Use of ESIA approach to ensure a systematic and thorough analysis and redesign of current business processes.
- j)** Use of a BPR tool (BDF) by the BPR teams to model, document, analyse, and simulate business processes.
- k)** Participation and involvement of Information Technology division in the BPR projects.
- l)** Use of full-time members in the different BPR teams.
- m)** Use of the profile of a reengineer to select the appropriate members for the BPR team.

The key shortcomings of Saudia BPR methodology and its applications within the airline are summarized as follows:

- a)** Selecting and prioritizing the processes to reengineer was not made on a corporate basis at the beginning of the BPR effort. This situation delayed the reengineering of some key business processes where many of resources were devoted to reengineer some support processes that would otherwise have been given a low priority for reengineering.
- b)** There was no assessment of readiness for change prior to the BPR effort in Saudia.

- c) There was no emphasis to do a cost/benefit analysis during the various stages of the BPR methodology.
- d) The usage of BDF was limited only to modeling and documentation of business processes in most of the BPR projects.
- e) The urgent need to introduce a new information system in some divisions of Saudia under the pressure of the year 2000 problem, imposed a time pressure on some BPR teams to finalize the new design requirements. This haste impacted and reduced the quality of the results of some BPR projects.
- f) There was some confusion among company staff and also some contradiction in the recommendations of some BPR projects concerning the organizational structure due to the launch of the company reorganization program at the same time with no link between these efforts. However, there was some flexibility to allow some adjustment in the new organization structure to achieve the required alignment between processes and organization structure.
- g) The organizational position and reporting channel of the BPR unit (currently part of Industrial Engineering department within Human Resources Division) need to be attached to a higher organizational level to facilitate and empower the roles and involvement of the BPR unit especially in the effort and programs of strategic business reengineering.

The above discussion of Saudia BPR methodology and its applications within the airline is summarized as shown in Figure 5-26.

Strength Points	Shortcomings
<ul style="list-style-type: none"> • Top management support and involvement. • BPR was a key business strategy • Establishing a BPR unit. • Use of a structured and customized BPR methodology. • Well organized BPR project structure. • A comprehensive awareness campaign at the beginning of the BPR effort. • Listening to the voice of the customer • Use of Benchmarking. • Use of ESIA approach to analyze the process. • Use of a BPR software (BDF). • Participation of Information Technology division in the BPR effort. • Use of full-time members in the BPR teams. • Use of a profile to select BPR team members. 	<ul style="list-style-type: none"> • Selecting and prioritizing processes to be reengineered was not made on a corporate-wide basis. • No assessment of readiness for change. • Little emphasis on cost/benefit analysis. • Limited usage of BDF features and capabilities. • Introduction of new information systems due to year 2000 problem imposed a lot of time pressure on some BPR projects. • Some confusion and contradiction due to the launch of a major reorganization program at the same time of the BPR effort. • Need for a higher and empowered organizational position for the BPR unit.

Figure 5-26 Discussion Summary of Saudia BPR methodology.

CHAPTER SIX

Proposed BPR Methodology for a Commercial Airline

6.1 Introduction

The aim of this research is to develop a business process reengineering methodology for a commercial airline that could be used to reengineer the various levels and types of processes within the airline business today.

This aim and related objectives were established based on two main hypotheses. The first one is that BPR is a key agent for change today and the second hypothesis is that there is a need to develop a BPR methodology for commercial airlines that fits its operation and meets the specific requirements of this type of business.

This need is based on the fact that use of an appropriate methodology will provide a road map for BPR projects within airlines and is considered as one of the critical success factor for effective BPR. The nature of airline business and its unique characteristics including severe global competition, high labor and fuel expenses, high technological turnover, and sensitivity to economic fluctuations are all characteristics that emphasise the need for BPR methodology that is customer-driven and provide the route towards a profitable world-class airline.

As a main part of the steps toward the development of the proposed BPR methodology, this Chapter presents a comparative analysis of AA and Saudia BPR methodologies is presented in section 6.2 of this Chapter. The proposed BPR methodology for a commercial airline is presented in section 6.3. Finally, a discussion of the major differences between the proposed BPR methodology and Saudia BPR methodology is presented in the last section of this Chapter.

6.2 Comparison of American Airlines and Saudi Airlines BPR Methodologies

In order to develop the proposed BPR methodology for a commercial airline, the approach of this research was to conduct a comparative analysis between American Airlines (AA) and Saudi Airlines BPR methodologies which are considered the main sources that lead to the development of the proposed methodology.

These two methodologies were described and discussed thoroughly in chapters four and five respectively. The objectives of this comparative analysis are:

- To stress the strengths of each methodology which must be incorporated in the proposed BPR methodology.
- To highlight the shortcomings of each methodology which must be avoided in the proposed BPR methodology.
- To discuss and analyse these shortcomings and recommend the appropriate solutions to overcome them based on the best practices mentioned in the literature review and the learning experience during the course of this research.

6.2.1. Comparison of major stages

As previously stated, the Saudia BPR methodology was evolved and developed based on the AA BPR methodology. The level and range of this development resulted in a stand alone BPR methodology used later by Saudia to reengineer some of its key business processes as detailed earlier in Chapter five. Each methodology consists of nine major stages covering the four basic phases of any generic BPR methodology which are initiation, analysis, redesign and implementation. In addition, both methodologies share most of the BPR concepts and assumption such as:

- Fundamental rethinking of the old ways of doing work.
- Focus on business processes.
- Seek to achieve breakthroughs in the performance measures of targeted processes.
- Use of cross-functional teams.
- Top-down support and commitment.
- Down-top involvement
- Systematic redesign of current processes.
- Elimination of non value-added activities.

Figure 6.1 shows a comparison of the major stages of AA and Saudia BPR methodologies distributed on the basic phases of any generic BPR methodology.

Phase	Major Stages	
	AA BPR Methodology	Saudia BPR Methodology
Initiation	<ol style="list-style-type: none"> 1. Explore Opportunities and Set Expectations. 2. Build a framework for change. 3. Plan Project and Educate Design team. 4. Commit to Improvement framework. 	<ol style="list-style-type: none"> 1. Explore Opportunities and Set Expectations. 2. Select/Educate BPR team and plan project.
Analysis	<ol style="list-style-type: none"> 5. Analyze current Business Process. 	<ol style="list-style-type: none"> 3. Understand/Study current process.
Redesign	<ol style="list-style-type: none"> 6. Design New Business Process. 7. Validate and Gain Commitment to New Process Design 	<ol style="list-style-type: none"> 4. Listen to the voice of Customer. 5. Benchmarking. 6. Design New Process. 7. Validate and Gain Commitment to New Process Design
Implementation	<ol style="list-style-type: none"> 8. Plan Implementation of New Process Design. 9. Implement and Monitor New Process Design. 	<ol style="list-style-type: none"> 8. Plan Implementation of New Process Design. 9. Implement and Monitor New Process Design.

Figure 6.1 Comparison of Major Stages of AA and Saudia BPR Methodologies.

Review of the comparison shown in Figure 6.2 reveals that AA BPR methodology put more emphasis on the initiation phase where four out of the nine stages are dedicated to ensure a clear vision of the new process and top management commitment which are considered as key critical success factors for any BPR effort. On the other hand, the Saudia BPR methodology put more emphasis and effort on the redesign phase which considers the heart of the BPR effort.

It is important here to mention the introduction of two new major stages in Saudia BPR methodology. These stages are Listen to the voice of Customer and Benchmarking which provide a very valuable input to the redesign stage based on customer needs and learning from best practices.

Based on the detailed description of the steps and tools of the stages of the two methodologies in the previous chapters, it is clear that they differ from each other in five major stages which are shown in Figure 6.6.

Similar Stages	Different Stages	
	AA BPR Methodology	Saudia BPR Methodology
1. Explore Opportunities and Set Expectations.	1. Build a framework for change.	1. Select/Educate BPR team and Plan Project.
2. Validate and Gain Commitment to New Process Design	2. Plan Project and Educate Design team.	2. Understand/Study Current Process.
3. Plan Implementation of New Process design.	3. Commit to Improvement framework.	3. Listen to the voice of Customer.
4. Implement and Monitor new Process Design.	4. Analyze current business process.	4. Benchmarking.
	5. Design New Business Process.	5. Design New Business Process.

Figure 6.2 Similarities and Differences of AA and Saudia BPR Methodologies.

6.2.2. Strengths and Shortcomings Comparison

Comparison and analysis of strengths and shortcomings of both AA and Saudia BPR methodologies is an important step to generate a useful input to the process of developing the proposed BPR methodology for a commercial airline. These strengths and shortcomings of each methodology were identified and discussed in chapter four and five respectively. Review of these strengths and focusing on both mutual and unique ones resulted in a common list of strengths that should be considered in the proposed BPR methodology. This, strengths were classified to three basic categories namely; methods/techniques, management/people, and information technology/tools. These classified strengths are shown in Figure 6.7.

Category	Strengths
Methods/Techniques	<ul style="list-style-type: none">• Use of a structured BPR methodology.• A mix of systematic redesign and clean sheet approaches.• A thorough technical, structural, and social analysis of current process.• Use of ESIA approach to redesign current process.• Listening to the voice of the customer.• Use of Benchmarking.
Management/People	<ul style="list-style-type: none">• Top management support and involvement.• BPR is a key business strategy.• Establishing a BPR unit.• Well organized BPR Project Structure.• A comprehensive awarenace campaign at the beginning of the BPR effort.• Use of a profile to select BPR team members.• Use of full-time members in the BPR teams.• Effective communication plan.
IT/Tools	<ul style="list-style-type: none">• Use of a BPR software (BDF).• Participation of information technology specialists in the BPR teams.• Use of simulation.

Figure 6.3 Classification of Strengths of AA and Saudia BPR methodologies.

On the other hand, shortcomings of both BPR methodologies are categorized and summarized in Figure 6.8.

6.2.3. Analysis of Shortcomings

The next step after identifying and classifying the shortcoming of AA and Saudia BPR methodologies is to analyse them and recommend the appropriate solutions to overcome them in the proposed methodology. The proposed solutions will be generated based on the best practices mentioned in the comprehensive literature review of this research and also based on the learning and practical experience gained during the period of this study.

Category	Shortcomings
Methods/Techniques	<ul style="list-style-type: none"> • Selecting and Prioritizing Processes to be reengineered was not made on a corporate-wise basis (Saudia/AA). • No assessment of readiness for change (Saudia). • No emphasis on cost/benefit analysis (Saudia).
Management/People	<ul style="list-style-type: none"> • Some confusion and contradiction due to the launch of a major reorganization program at the same time of the BPR effort (Saudia). • Need for a higher and empowered organizational position for the BPR Unit (Saudia).
IT/Tools	<ul style="list-style-type: none"> • Roles of IT not explicitly addressed (AA). • Limited usage of BDF features and capabilities (Saudia). • Introduction of new information systems due to year 2000 problem imposed a lot of time pressure on some BPR projects (Saudia).

Figure 6.4 Classification of Shortcomings of AA and Saudia BPR methodologies.

Shortcoming No. 1: Selecting and prioritizing processes to be reengineered was not made on a corporate-wise basis.

Discussion: In both Saudia and AA, this situation led to delay in the reengineering of some key business processes. The selection of the process to be reengineered was subject to the willingness and commitment of the concerned process owners. As a result of this shortcoming, a lot of effort and resources were devoted at the beginning of the BPR programme to reengineer some support processes that must be given low priority for reengineering. Therefore, it is essential at the beginning of any BPR program to identify and prioritize the key business processes that have the potential to impact the business strategy and fulfill the needs of the key stakeholders. This step must be achieved on a corporate level with a full participation and involvement of the top management team.

Solution:

1. Identify the key stakeholder of the airline.
2. Understand their needs through questionnaire and focus group meetings.
3. Determine and map on a high level the key and support business processes of the airline based on the mission, vision, and current and anticipated operations.

Usually, this step is achieved by the BPR unit or the facilitators of the BPR effort.

4. Conduct a special workshop for the appropriate level of management to select and prioritize the right processes for the reengineering. The selection of processes to be reengineered is based on the following criteria:

- Contribution to the mission of the airline.

- Contribution to the competitive advantage of the airlines.
- Potential impact on key stakeholders with more emphasis on external customers.
- Cost reduction.
- Profitability.
- Cash flow improvement.

5. Avoid reengineering too many processes at the same time.

Shortcoming No. 2: No assessment of readiness for change at the beginning of the Saudia BPR effort.

Discussion: BPR is a major change program that has a major impact on people and disrupts the entire organization. Therefore, it is essential to assess and test the organization's readiness for change. Although AA has a good consideration for this point in its BPR methodology, Saudia BPR effort started without conducting such an important step. The justification for this from Saudia's point of view that the need for change is very clear and breakthrough improvement are a must to survive and compete in the global marketplace. Another reasons that encouraged Saudia to overreach this initial assessment was the strong support and commitment from Saudia's top management.

Despite of all these justifications, learning from the best practices in BPR and exploration of available literature in the BPR field indicated that it is wise and professional to conduct an initial assessment for the organization's readiness for change prior to the launch of BPR. The results of this assessment will provide useful information to develop an effective communication plan for the BPR projects that will facilitate the management of change.

Solution:

1. Launch an awareness campaign for BPR to prepare people and the airline for the change.
2. Collect and evaluate evidence (data and facts) which indicate the need for change.
3. Assess the airline's readiness and willingness for change using one of the available change management techniques (such as the one used in AA BPR methodology which was detailed earlier in chapter 4).

Shortcoming No. 3: No emphasis on the usage of cost/benefit analysis in Saudia BPR methodology.

Discussion: As BPR projects are commonly large scale in nature and require a big investment in technology and human resources, the need for careful cost-benefit analysis is apparent. One of the main reasons to delay the implementation of some new processes in Saudia BPR effort was the high costs required to introduce desired changes. Despite of the clear need for change and the availability of the organization's readiness for this change, it is important to screen the feasibility of the BPR projects at the beginning of the initiation phase. Cost-benefit analysis could be a useful technique in the hand of the BPR team to prepare an estimation and evaluation of net benefits associated with the different alternatives for achieving new process design. At the same time, cost-benefit analysis might result in diverting the BPR effort to more profitable and beneficial projects.

Solution:

1. Incorporate cost-benefit analysis within the BPR methodology and train the BPR team on its principles.
2. Conduct a cost-benefit analysis at the beginning of the BPR effort as part of assessing the feasibility of the project.
3. Conduct a cost-benefit analysis prior to the announcement of the new process design.

Shortcoming No. 4: Some confusion and contradiction due to the launch of a major reorganization program at the same time as the BPR effort in Saudia.

Discussion: Saudia BPR methodology involves a thorough and detailed structural analysis of the current business processes aimed to create the appropriate organizational structure to support the new processes. Indeed most BPR projects ended with reorganization of the current structure since BPR tends to flatten the organization structure and empower front-line staff. In Saudia, having a major reorganization program in isolation of the BPR effort has created a lot of confusion among staff and resulted in some contradiction with structural recommendations of some BPR projects. This situation created a debate within Saudia of which comes first? BPR or reorganization? Review of available BPR literature and understanding of BPR principles indicated clearly that BPR come first where reorganization might take place as a result of the BPR effort. Sometimes the organization might be forced to launch a major reorganization due to some other strategic reasons. However if this happened, there should be a strong coordination between the concerned teams to harmonize the recommendations of these major programs.

Solution:

1. BPR must take place prior to reorganization.
2. If early reorganization is a must, coordination is required to ensure harmony between these major programs.

Shortcoming No. 5: Need for a higher and empowered organizational position for the BPR unit in Saudia.

Discussion: BPR is a strategic effort in nature and to be a successful program, it has to be on a corporate level. The creation of a focal group or unit to coordinate and monitor all BPR projects throughout the organization is an essential requirement to manage such a large program. In order to achieve this important task, this unit should be a neutral, empowered and report directly to the top management of the organization.

Solution:

1. Establish a BPR group or unit to act as a focal point to coordinate and monitor the various of BPR projects.
2. Attach the BPR unit to the top management of the organization to ensure neutrality and the required level of empowerment to such group.

Shortcoming No. 6: Roles of information technology not explicitly addressed in AA BPR methodology.

Discussion: In BPR projects, Information Technology (IT) acts as a powerful enabler in the redesign of business processes. The strong relationship between BPR and IT was discussed earlier in chapter three where most of BPR literature emphasised the need to address IT in the BPR methodology and to integrate IT specialists into reengineering teams. This integration will maximize the team's ability to consider the IT capabilities in the new process design and will also facilitate the development or purchasing of new information systems that are often needed to deliver the full potential of redesigned processes.

Solution:

1. BPR methodology must address IT especially during the stage of building the vision of the new process and the stage of redesign of current processes.
2. Position IT as an enabler not a driver of the change.
3. IT specialists should be integrated into BPR teams.

Shortcoming No. 7: Limited usage of BDF features and capabilities in Saudia BPR projects.

Discussion: Business Design Facility (BDF) is a comprehensive BPR software used by BPR teams in Saudia to document, model and analyze current business processes. Despite the multi capabilities and features of BDF, the use of BDF was limited to modelling and documenting current and new processes. Process analysis and Simulation capabilities were used in some projects. The reasons for this limited usage of BDF were summarized in section 5.7.6 as follows:

- The limited technical support provided by IT division.
- No insistence from IT division to use BDF to formulate the user requirements and data flow diagrams for new information systems needed to support new processes.
- Difficulty to use BDF effectively comparing to other flow charting softwares such as ABC and “all Clear.”

However, whatever the reasons that led to this situation in Saudia, it is important to emphasise the need to use a BPR software to support the BPR team throughout the various stages of the BPR methodology.

Solution:

1. Select the appropriate BPR software that support the chosen BPR methodology.
2. Train IT specialists and selected members of the BPR team how to use this software effectively during the BPR project.
3. Provide the required technical support to the users (BPR teams).
4. Use the BPR tool fully from modelling current processes to the development of new information systems.

Shortcoming No. 8: Introduction of new information systems due to year 2000 problem imposed a lot of time pressure on some BPR Projects.

Discussion: Due to the late reaction to the year 2000 problem in Saudia, a lot of time pressure was imposed on some BPR projects where the decision was made to reengineer current business process before developing or purchasing new information systems. This situation impacted the quality and level of improvements recommended by BPR teams in some projects. The full implementation of the BPR methodology consumes on average from 6 to 18 months, so it is important to put this time frame into consideration whenever such a situation occurred.

Solution:

1. Allow a large enough time frame to ensure a full and successful implementation of the BPR methodology.

2. In a situation like the year 2000 problem, there should be a full integration and coordination between BPR unit and IT division to avoid this shortcoming in the Saudia BPR effort.
3. Early planning and preparation for the year 2000 problem or any similar IT problem will eliminate such a situation.

Figure 6.5 shows a summary of these shortcomings and the proposed solutions to overcome them.

6.3 Proposed BPR Methodology for Commercial Airline

In order to develop the proposed BPR methodology for a commercial airline or any other industry, it is important to consider the general attributes and criteria of any successful BPR methodology which were explored in chapter three . These criteria are summarized in Figure 6.6.

The steps undertaken to develop the proposed BPR methodology for a commercial airline are summarized below:

- An extensive and comprehensive review of available literature on BPR and current practices in this field.
- Study and review of American Airlines (AA) BPR methodology which was developed in-house by AA specialists based on the generic BPR methodology.
- Study and review of Saudi Arabian Airlines (Saudia) BPR methodology and its applications within the various parts of the airline. This methodology was based on a further development of AA BPR methodology.

No.	Shortcomings	Proposed Solutions
1.	Selecting and Prioritizing Processes to be reengineered was not made on a corporate-wise basis.	<ol style="list-style-type: none"> 1. Identify the key stakeholders. 2. Understand their needs. 3. Determine and map the key and support processes. 4. Conduct a special workshop for top management to select and prioritize processes for BPR. 5. Avoid reengineering too many processes at the same time.
2.	No assessment of readiness for change at the beginning of Saudia BPR effort.	<ol style="list-style-type: none"> 1. Launch a BPR awareness campaign. 2. Collect and evaluate evidence which indicate the need for change. 3. Assess the airline's readiness and willingness for change using change management techniques.
3.	No emphasis on the usage of cost-benefit analysis in Saudia BPR methodology.	<ol style="list-style-type: none"> 1. Incorporate cost-benefit analysis within the BPR methodology and train the BPR team on its principles. 2. Conduct a cost-benefit analysis at the beginning of BPR effort to assess the feasibility of the project. 3. Conduct a cost-benefit analysis prior the announcement of the new process design.
4.	Some confusion and contradiction due to the launch of a major reorganization program at the same time of the BPR effort in Saudia.	<ol style="list-style-type: none"> 1. BPR must take place prior to reorganization. 2. If reorganization is a must, coordination is required to ensure harmony between these major change programs.
5.	Need for a higher and empowered organizational position for the BPR unit in Saudia.	<ol style="list-style-type: none"> 1. Establish a BPR group or unit to act as a focal point to coordinate and monitor the progress of BPR projects.

No.	Shortcomings	Proposed Solutions
		<ol style="list-style-type: none"> 2. Attach the BPR unit to the top management of the airline to ensure neutrality and the required level of empowerment to such group.
6.	Roles of Information Technology not explicitly addressed in AA BPR methodology.	<ol style="list-style-type: none"> 1. BPR methodology must address IT especially during the stage of building the vision of the new process and the stage of redesign current process. 2. Position IT as enabler not driver of the change. 3. IT specialists should be integrated into BPR teams.
7.	Limited usage of BDF features and capabilities in Saudia.	<ol style="list-style-type: none"> 1. Select the appropriate BPR software that support the chosen BPR methodology. 2. Train IT specialists and selected members of BPR team on how to use the BPR software effectively during the BPR project. 3. Provide the required technical support for the users (BPR teams). 4. Use the BPR tool fully from modelling current processes to the development of new information systems.
8.	Introduction of new information systems due to year 2000 problem imposed a lot of time pressure on some BPR projects.	<ol style="list-style-type: none"> 1. Allow large enough time frame to ensure a full and successful implementation of the BPR methodology. 2. There should be a full integration and coordination between BPR unit and IT division to avoid this situation. 3. Early planning and preparation for year 2000 problem or any similar IT problem will eliminate such situation.

Figure 6.5 Summary of the proposed solutions to overcome the shortcomings of Saudia and AA BPR methodologies.

- Consider company goals and strategies.
- Consider satisfying the customer as the driving force of the change.
- Process orientated.
- Facilitate the identification of value-added and non value-added activities.
- Use of proven management techniques and tools.
- Integrate information technology to enable change.
- Consider solution to maximise employee empowerment.
- Develop an actionable implementation plan.
- Tailored to the company's needs.
- Flexible and learnable.

Figure 6.6 Criteria of a successful BPR methodology.

- Comparative analysis of both AA and Saudia BPR methodologies.
- Analysis of the learning experience from various external BPR projects studied throughout the period of this research.

Figure 6.7 shows a summary for the basis of the proposed BPR methodology for a commercial airline.

6.3.1. BPR Initiation Phase

The proposed BPR methodology starts by initiating the BPR program on a corporate level. The main objective of this phase is to link the BPR effort to the airline mission and strategies. It aims to prepare the airline for the expected changes and focus the BPR efforts on key business processes that add value to the airline and its customers.

The main steps of the initiation phase are summarized as follows:

1. Establish a BPR Unit

Since BPR effort is a major change program that might effect and involve the entire airline, it is important to start the BPR effort by establishing a BPR unit report directly

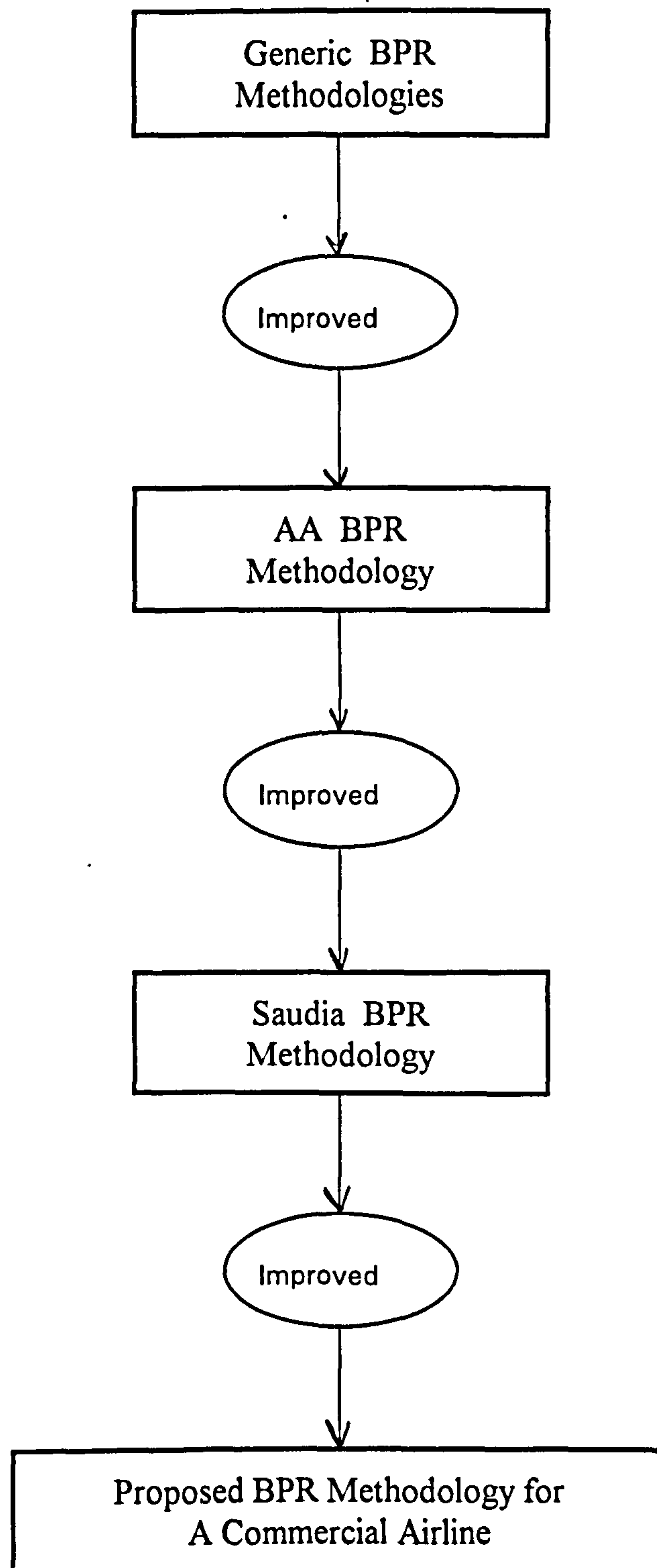


Figure 6.7 Basis for the proposed BPR methodology for a commercial airline.

to the president or top management team of the airline. The BPR unit will act as a focal point of the BPR program and has the roles of initiating, coordinating, supporting and controlling all ongoing BPR projects. The BPR unit should consist of a small group of 4 to 6 full-time members with a strong background in industrial engineering and information technology.

2. Launch a BPR awareness campaign

This is a very important step to prepare the airline for the radical changes expected from the BPR program. The BPR awareness campaign must include all levels of staff within the airline. This awareness can take several forms such as presentations, newsletters, invited speakers, executives seminars, video film etc.

3. Assess readiness for change

The objective of this essential step is to explore the required level of communication and top management support to facilitate the management of change during the BPR program. This assessment will be the responsibility of the BPR unit and could be made using one of the available change management techniques such as the one used in AA BPR methodology which was detailed earlier in Chapter 4.

4. Create a shared vision for change

A critical step in setting the stage for change is creating a clear vision for change that must be shared at all levels of the airline. This vision should explain why proposed changes are required to meet the airline's objectives and how these changes will benefit the airline and the staff involved. The proposed BPR methodology assumes that the airline has created a common mission and vision which are considered as an essential prerequisite of any BPR program.

5. Identify key business processes

The objective of this step is to identify and map on high level the key business processes that have the potential to impact the airline's strategies and fulfill the needs of the key stakeholders. The key business processes of any typical commercial airline could be classified into five basic categories as follows:

- a) Passenger-related processes.
- b) Aircraft-related processes.
- c) Cargo-related processes.
- d) Marketing processes.
- e) Management and support processes.

These processes were discussed earlier in section 1.2 of Chapter One.

6. Prioritize Processes for BPR

Once processes are identified based on the categories mentioned above, top management, jointly with the BPR unit, will prioritize the processes of each category in a special workshop.

As a prerequisite for this step the airline should identify its key stakeholders and understand their needs and expectations.

The priority for BPR is determined based on the following criteria:

- Contribution to the mission of the airline.
- Contribution to the competitive advantage of the airline.
- Potential impact on key stakeholders with more emphasis on external customers.
- Current process performance.
- Cost reduction possibilities

- Profitability increase possibilities.

At the end of this exercise the airline will have two lists of priorities.

The first list includes key processes targeted for business process reengineering which are most crucial to the airline’s success and most inconsistent with the airline vision.

The second one includes processes targeted for business process improvement which are in a good condition or with less importance to the operation of the airline.

It is important to remember here that the airline should focus its BPR effort and avoid trying to reengineer too many processes at the same time.

7. Integrate BPR with other change efforts.

A successful BPR program must be on a strategic level and aligned with other change programs. Therefore, it is important at this phase to integrate the BPR program with other improvement and change efforts to avoid any contradiction or duplication of effort within the entire airline. A special consideration and review must be given to all automation, new information systems introduction and reorganization projects since BPR might result in one or all of these changes

Figure 6.8 shows a summary of the major steps of the BPR initiation phase.

The BPR Initiation Phase
<div>1. Establish a BPR unit.</div> <div>2. Launch a BPR awareness campaign.</div> <div>3. Assess readiness for change.</div> <div>4. Create a shared vision for change.</div> <div>5. Identify key business processes.</div> <div>6. Prioritize processes for BPR.</div> <div>7. Integrate BPR with other change programs.</div>

Figure 6.8 Major steps of the BPR initiation phase of the proposed BPR methodology for a commercial airline.

6.3.2. Business Process Reengineering Phase

Once priorities for BPR are identified, the airline should start the BPR phase which involves implementing the proposed BPR methodology. This phase aims to reengineer the targeted process and radically redesign its technical, structural, and social systems in order to achieve a dramatic improvement in the overall performance.

The proposed BPR methodology during this phase consists of the following stages:

1. Determine Process Boundaries and Vision

The first stage in the proposed BPR methodology starts by determining the boundaries of the targeted business process. This step will help to define the process owner who must be involved in and committed to the project at an early stage. It will also facilitate the selection of the appropriate executives for the steering committee. The first responsibility of the steering committee will be developing the vision of the new process and setting the scope and objectives of the BPR project. The vision should reflect the airline's vision and be linked to its strategies. This vision must be used to produce a set of objectives which stretch and challenge current airline operation. They should cover contemporary performance measures such as cost, quality, services offered, and speed of thier delivery. The steps and tools of this stage are shown in Figure 6.9.

2. Select/Train BPR Team and Plan Project

This stage starts by selecting the BPR team which should consist of members from inside the targeted process and members representing the BPR unit and information technology division. The selection of the BPR team members will be the responsibility of the process owner using the profile which was presented earlier in

Figure 5-13 in Chapter five. The team leader should be one of the insiders to gain more commitment and loyalty from the concerned staff in the targeted process.

STEPS
<ul style="list-style-type: none">• Determine process boundaries• Appoint process owner• Form Steering Committee• Measure current process performance• Conduct high level benchmarking• Develop the vision of the new process• Determine project scope and objectives• Communicate vision and objectives of new process.
TOOLS
<ul style="list-style-type: none">• Site visits• Process walk-through• Process mapping• Workshops and Focus groups• Benchmarking

Figure 6.9 Steps and Tools of Stage 1:
“Determine process boundaries and vision”

The BPR unit representative will play the role of project facilitator. The team size should be limited to 4-6 members who must be assigned to the project on full-time basis. Once the BPR team is selected, the next step will be to conduct a special BPR training workshop to train and educate the team members on the following subjects:

- BPR concepts and principles
- Process mapping
- Use of the selected BPR tools

- Creative and out of box thinking
- Problem solving techniques
- Benchmarking
- Team working principles
- BPR methodology

If the airline is planning for a comprehensive BPR program which will include many BPR projects, it is recommended to establish a scheduled BPR training course to support the BPR program. Indeed, the airline must give a special consideration for the process of selecting and training the BPR team since the strength of this team is considered as one of the key success factors of any BPR project.

It is the responsibility of the process owner to provide an appropriate operation room for the BPR team and to provide the team with the required facilities, equipment and budget during the various stages of the project. The initial assignment for the BPR team will be the development of the detailed project plan. The plan should reflect the various stages of the BPR methodology with very clear milestones and a time-frame which may vary from 6 to 12 months.

The plan should include also a strong communication plan that covers the various levels within the Project structure and concerned staff and management of the targeted process. Finally, the team will review and finalize the project plan with the Steering Committee. The steps and tools of this stage are shown in Figure 6.10.

3. Analyse Current Process

Since the proposed BPR methodology uses a systematic redesign approach, the objective of this stage is to study and analyse the technical, structural and social aspects of current process where the findings of this analysis will provide the basis for the design of the new process.

STEPS
<ul style="list-style-type: none"> • Select BPR team members • Train BPR team • If feasible, establish scheduled BPR training course • Secure BPR team with required facilities and equipment • Develop project plan • Develop project communication plan • Review and finalize the project plan with Steering Committee
TOOLS
<ul style="list-style-type: none"> • Reengineer profile • BPR workshop • BPR Training Course • Project Management Tool.

Figure 6.10 Steps and Tools of Stage 2:
 “Select/Train BPR Team and Plan Project”

The BPR team should start this analysis by conducting a process walk-through to confirm the process flow and identify all areas and people who will be visited and interviewed during the analysis stage.

The technical analysis starts by mapping the current process on the wall of the operation room using coloured “post-it” notes which can be shuffled around the wall as the map begins to take shape. The proposed BPR methodology recommends this simple approach because of its benefits to ease and maximize the understanding of the big picture of the current process. The final process map will be modeled and documented using the BPR software (i.e. BDF) to be used in the next stages.

The technical analysis will cover the following subjects:

- Process Flow and number of hand-offs
- Information flow

- Value-added activities
- Cycle time analysis
- Review of Information Technology infra-structure and level of utilization
- Forms used (level of paper work within the process)
- Customer and supplier contact points

The structural analysis aim to identify the responsibility and accountability limits for the process based on the results of the technical analysis. This will help to re-define the process ownership. Reporting and monitoring, decision making, individual and team empowerment, and resource management are all subjects for study and assessment during the structural analysis.

The social analysis looks at the human aspects of the business process. This analysis includes a review of selection and recruitment criteria for required staff to operate the new process. It also establishes orientation and training programs, staff performance, rewards and compensation, personal and career development, formal and informal communication needs and any other issues related to the social side of the business process.

It is the responsibility of the BPR team to review and confirm with the concerned departments the validity and completeness of the current process model.

The BPR team must control the level of details to be collected and analysed about the current process. This will be subject to the time frame allocated to this stage and the relative importance of some activities within the process especially the value-added ones. However, it is important to mention here that a full understanding and through analysis of the current process is needed since the proposed BPR methodology use a systematic redesign approach to reengineer the current processes.

The use of BPR software to map the current process will be a useful tool for the BPR team during this stage to speed up and extend the scope of the analysis of various activities within the process.

It is important during the stage to document all improvement and reengineering ideas that were generated in each type of analysis which will represent a useful input to the redesign stage later on.

Finally, the BPR team should present the findings of this stage to the Steering Committee for review and approval before the team move to the next stage. Figure 6.11 shows the main steps and tools of this stage.

4. Listen to the voice of the Customer

The proposed BPR methodology includes a complete and separate stage to listen the voice of the process customers. The objective of this stage is to obtain meaningful customer input and feedback about their experience with the current process and their needs and expectations of any new process. The BPR team will use two main approaches to listen to the voice of the customer.

The first one is to conduct focus group meetings for each category of process customers such as internal customers, external customers, suppliers, end users, etc. The second approach is to use customer questionnaires. The findings of these focus groups and questionnaires will be analysed, classified and ranked according to their value and importance to the surveyed customers. These findings will be used later by the BPR team in the redesign stage.

Finally, the BPR team will present these findings to the Steering Committee. The main steps and tools of stage 4 are shown in Figure 6.12.

STEPS
<ul style="list-style-type: none"> • Conduct a process walk-through • Identify process flow • Conduct field visit to concerned department and meet with concerned staff • Map current process on wall using coloured “post it” notes • Collect information regard technical, structural and social aspects of the current process • Map and document current process using the BPR software • Review and confirm the validity and completeness of current process with concerned department • Analyse the technical, structural and social aspects of the process • Document all improvement and reengineering ideas that were generated during the analysis • Present findings to the Steering Committee
TOOLS
<ul style="list-style-type: none"> • Process mapping • BPR software • Coloured “post it” notes • Cycle time analysis • Process information form (see appendix-5)

Figure 6.11 Steps and Tools of Stage 3:
“Analyse Current Process”

5. Benchmarking

The objective of this stage is to identify and learn from best practice by benchmarking current processes with similar ones in other organisations.

The BPR team will start this stage by identifying core issues and areas to be benchmarked based on the findings of previous stages. The identified issues must cover the technical, structural and social aspects of the current process. It is the responsibility of the BPR team to determine the appropriate benchmarking type to be used and the right companies to be benchmarked.

STEPS
<ul style="list-style-type: none"> • Identify customers of the process • Select the appropriate samples of customers (i.e. external, internal, etc.) • Conduct Focus Group meetings • Prepare Customer questionnaire • Distribute/collect questionnaire • Analyse findings • Present findings to Steering Committee.
TOOLS
<ul style="list-style-type: none"> • Focus group meetings • Current process map which consider a useful tool to guide and facilitate the discussion during the focus group meetings • Questionnaires • Personal Interview with customers • Mail

Figure 6.12 Steps and Tools of Stage 4:
“Listen to the voice of the Customer”

Selection of other airlines or companies to be benchmarked will be subject to the process type, level of operations, reputation in the industry, time available and cost of the benchmarking. Once the targeted companies are selected, the normal benchmarking process begins. This typically will involve questionnaire preparation, team preparation, benchmarking visits, collection of benchmarking information, comparative and gap analysis and generating ideas for redesign.

Finally, the BPR team should present the findings of the benchmarking stage to the Steering Committee for their review and feedback before proceeding to the redesign stage. The steps and tools of this stage are shown in figure 6.13.

STEPS
<ul style="list-style-type: none"> • Identify core issues and areas to be benchmarked in the current process. • Identify current performance measurements • Use the appropriate benchmarking type • Select the companies to benchmark • Prepare benchmarking questionnaire • Prepare/train the BPR team for benchmarking • Conduct benchmarking visits • Collect benchmarking information • Analyse collected information to compare with current process • Identify the gap between current process and the best practices • Generate/recommend solutions and new ideas to close the gap in the new process design • Present findings to Steering Committee.
TOOLS
<ul style="list-style-type: none"> • Current Process map could be used to facilitate the identification of issues and areas to be benchmarked • Benchmarking questionnaires to be mailed and used during the benchmarking visits • Field observations for the concerned areas within the targeted process during the benchmarking visit • Meetings and personal interview with concerned staff in the benchmarked companies • Mail survey is a useful and cheap tool to benchmark with more companies • Related books, reports, journals and electronic networks databases are all a useful tools to provide benchmarking information to the BPR team.

Figure 6.13 Steps and Tools of Stage 5:
“Benchmarking”

6. Design new process

The objective of this stage is to create and model the new design for the reengineered business process. In this stage, the BPR team will be in a good position to redesign the current business process due to the availability of the following information and findings from previous stages:

- Vision and expectations of the new process (findings from stage 1)
- Clear understanding of the technical, structural , and social aspects of the current process (findings from stage 3)
- Customer needs and expectations (findings from stage 4)
- Best practice and how other companies are performing their business processes (findings from stage 5).

The proposed BPR methodology involves a mix of the two main approaches used to redesign a business process. The BPR team must start the redesign of every part of the process by a clean sheet approach which involve a fundamental rethinking of the reason and value of doing these activities.

The second redesign approach to be used by the BPR team during this stage is a detailed systematic redesign using the ESIA approach [147] which will provide the BPR team with clear and systematic guidelines to eliminate all non-value-adding activities and redesign the core value-adding ones. The EISA approach consists of four basis steps which must be applied to each part and activities within the current process.

These 4 steps which must applied in the given order are eliminate, simplify, integrate and finally automate. Figure 6.14 shows the major areas of attention for systematic redesign using the ESIA approach.

ELIMINATE	SIMPLIFY	INTEGRATE	AUTOMATE
Over-production	Forms	Jobs	Dirty
Waiting time	Procedures	Teams	Difficult
Transport	Communication	Customers	Dangerous
Processing	Technology	Suppliers	Boring
Inventory	Problem areas		Data capture
Defects/failures	Flows		Data transfer
Duplication	Processes		Data analysis
Reformatting			
Inspection			
Reconciling			

Figure 6.14 Areas of Attention for Systematic Redesign using ESIA approach [147].

It is important to highlight here that the proposed BPR methodology emphasises that BPR must take place when the airline is contemplating large system replacement or development efforts. Since BPR seeks to define new and dramatically different and improved ways of doing business, the BPR team should take into consideration the information technology capabilities and their organisational impacts during the technical redesign of the process. To help the BPR team in this regard, it is proposed to use the IT capabilities table developed by Davenport and Short [40] to identify IT levers that can reshape current processes. Figure 6.15 shows the IT capabilities table.

At the end of the technical redesign, the BPR team should evaluate the new process design within the BPR guidelines and principles which were presented and detailed earlier in Chapter two and three of this thesis.

It might be wise for the BPR team at this stage to develop more than one redesign option especially when some parts of the process are owned by outside agencies (i.e. Airport processes) or there are some constraints that beyond the control of the airline such as airport facilities or government and international regulations.

CAPABILITY	ORGANISATIONAL IMPACT/BENEFIT
Transactional	IT can transform unstructured processes into routine transactions.
Geographical	IT can transfer information with rapidity and ease across large distances, making processes independent of geography.
Automation	IT can replace or reduce human labor in a process
Analytical	IT can bring complex analytical methods to bear on a process
Informational	IT can bring vast amounts of detailed information into a process
Sequential	IT can enable changes in the sequence of tasks in a process, often allowing multiple tasks to be worked on simultaneously
Tracking	IT allows the detailed tracking of task status, inputs and outputs
Knowledge Management	IT allows the capture and dissemination of knowledge and expertise to improve the process
Disintermediation	IT can be used to connect two parties within a process that would otherwise communicate through an intermediary (internal or external).

Figure 6.15 Information Technology Capabilities and their Organisational impacts [40].

Having generated a new process design, it is vital that the people requirements are identified . This is considered one of the key success factor in BPR.

This will be the aim of the structural and social redesign which will generate recommendations regarding responsibilities, organisation structure, empowerment, recruitment criteria, rewards, training, career development and other structural and social aspects of the reengineered process. The final step in this stage will be mapping and documenting the new process using the BPR software chosen . Figure 6.16 shows the main steps and tools used during stage six of the proposed BPR methodology.

7. Validate and Gain Commitment to New Process Design

In this stage, the BPR team should achieve two important tasks before proceeding to the implementation stage. These tasks are validation of the new design and gaining the required commitment to the new design from the various levels within the organisation

STEPS
<ul style="list-style-type: none"> • Organise and classify findings of previous stages including: <ul style="list-style-type: none"> - Vision of new process - Technical, structural and social aspects of current process - Voice of the customer - Benchmarking • Apply clean sheet approach at the beginning of the redesign of every part of the process • Conduct technical redesign using EISA approach • Explore information technology capabilities to reshape the process • Evaluate the new design with basic BPR guidelines and principles • Develop redesign options • Conduct structural and social redesign • Map and document new process design

TOOLS
<ul style="list-style-type: none"> • Current Process map could be used to facilitate the team discussion throughout the this stage • Findings from previous stages are considered an important input to the process of generating the new design • Breakthrough and out of box thinking is required during the clean sheet approach • ESIA approach which represents the systematic redesign approach in BPR and consists of 4 basis steps: Eliminate, Simplify, Integrate and Automate • BPR software will be used to map and document the new process design.

Figure 6.16 Steps and Tools of Stage 6:
“Design New Process”

to ensure a successful implementation of the new process. The validation of the new process design starts by presenting and discussing this design with a selected sample of the best staff of the current process. The team must obtain feedback on the completeness of the proposed process and the feasibility of its implementation.

Sometimes support from external consultants is required in this stage to review and validate the new process design. This is especially the case in the reengineering a complicated or high technology process. It is the responsibility of the BPR team to confirm and take into consideration interfaces of new process with other processes and functions within the airlines. Simulation is one of the most useful techniques that could be used by the BPR team to validate new process design. The lessons learned from the simulations should be incorporated back into the new design and the new process simulated again in an iterative fashion until the team is confident that the process will perform as required. This stage will involve also the validation of the alignment of the new process design to the vision and targets approved by the steering committee at the beginning of the project.

After finalising the new process design, the team will produce a cost-benefit analysis document showing an estimation and evaluation of net benefits and savings associated with the different alternatives for achieving the new process design.

Cost-benefit analysis and simulation are useful techniques in the hands of the BPR team to gain the required commitment from the steering committee and process owner to implement the new process. The main steps and tools of stage seven are shown in Figure 6.17.

STEPS
<ul style="list-style-type: none"> • Review and validate the new process design with selected staff of the current process. • Use an external consultant to validate the new process design if needed • Consider interfaces of the new process with other processes and functions • Use simulation to validate the new process design • Validate the alignment of the new process to the proposed vision and targets • Prepare cost-benefit analysis document to gain commitment to implement the new process • Present the final process design to the steering committee for final approval.
TOOLS
<ul style="list-style-type: none"> • New process map is a useful tool to present and discuss the validation of the new design with internal staff and external consultants • Simulation softwares such as Service Model or Witness are a user friendly tools that could be used early by the BPR team members to simulate the new process design. • Cost-benefit analysis is a powerful tool in the hand of the BPR team to evaluate and gain commitment to the new process.

Figure 6.17 Steps and Tools of Stage 7:
 “Validate and Gain Commitment to New Process Design”

8. Implement New Process

Once the new process design is completed, validated and approved, it is time to begin the implementation phase. The first step will be the formation of an implementation team. This team should include members from the best staff from the concerned departments as well as the supporting areas. Also, it is important that some of team members should be carry-overs form the previous BPR team to ensure team continuity and full understanding of the new process.

It is the responsibility of the steering committee to select and appoint an influential and capable transition manager who should head the implementation team. The first task of this team is the development of a detailed implementation plan which should be phased on an agreed priority basis to ensure a successful roll-out of the new designed process. A successful implementation plan must address and specify all requirements and actions needed to implement the technical, structural and social recommendations of the new process design. Once the implementation plan is reviewed and approved by the Steering Committee, it is the right time to announce officially the new process and the implementation schedule. This implementation plan should be clearly communicated across the airline to raise motivational level and get early feedback on the proposed transition plan.

Before the full implementation, the team should select an appropriate pilot project to test the implementation of the new design in the real-world with less risks. It is the responsibility of the implementation team to identify and share the learning on the method by identifying what worked well and what could be improved and adjusted before the full implementation.

During the implementation, the team should demonstrate early success with focus on quick hits as well as long-term benefits of the new process. This is important to mobilise and motivate people and management during this lengthy and time-consuming stage of the BPR Project. Strong project management, on-going communication of progress, and continuous monitoring and improvement progress are all key success factors of the implementation stage. The main steps and tools of stage eight are shown in Figure 6.18.

STEPS
<ul style="list-style-type: none">• Form implementation team• Appoint an influential and capable transition manager to head the implementation team• Develop detailed implementation plan• Announce new process and the implementation schedule• Start the implementation with a pilot project• Implement new process• Monitor and communicate progress of the implementation• Establish continuous improvement program.
TOOLS
<ul style="list-style-type: none">• Presentations and workshops are useful tools to announce and communicate the new process and the implementation plan• Project management software is needed to facilitate and monitor execution of the various activities during this stage.

Figure 6.18 Steps and Tools of Stage 8:
“Implement New Process”

6.3.3. Continuous Improvement Phase

The objective of this phase is to create a continuous improvement environment that will sustain the intent and performance of the reengineered processes.

Another important objective of this phase is to provide regular performance measurement and problem solving data to alert management when it is time to reengineer and achieve breakthrough improvement. It is the responsibility of the process owner as well as the key staff of the reengineered process to perform this stage.

The major stages of this phase are summarized as follows:

1. Measure Process Performance

Creation of a performance measurement system is one of the key success factors of any BPR project. This stage involves a continuous measurement and monitoring of the operational and financial measures of the reengineered business process. These measures will provide a powerful tool to screen the process health and to identify areas targeted for continuous improvement or reengineering. Whenever it is feasible, it is recommended to develop a computerized performance management system to facilitate the execution of this important stage.

2. Benchmarking Process Performance

It is the responsibility of the process owner to perform a high level benchmarking exercise on a periodic basis for the current process measures and level of performance. The benchmarking findings will help to compare the reengineered process with the best practices and identify any gap in performance. Benchmarking will help also to keep track of the latest developments and technological advancements related to the business process.

3. Listen to Voice of the Customer

Another important stage within the continuous improvement phase is listening to the voice and feedback of the customers and stakeholders of the process. The new process design must involve establishing a suggestion scheme for both internal and external customers with the objective to maintain and continuously improve the performance of the process. This stage may involve conducting a focus group with selected customers as well as using questionnaires to survey customer reactions and feedback regard the business process.

4. Evaluate Process Situation

Despite the difference in focus and results, BPR and continuous improvement phases should be compatible and complementary. The objective of this stage is to evaluate and assess the situation and the overall performance of the business process based on the findings of the previous stages. The end result of such evaluation either to reengineer the entire process or to improve some parts of it. It is recommended to form a process board consists of process owner and key members of top and support management of the concerned departments involve in the process. The process board will have the responsibility to evaluate and make the appropriate decision in this regard.

Figure 6.19 shows the overall structure of the proposed BPR methodology for a commercial airline.

6.4 Discussion

Although the proposed BPR methodology has a lot of similarity to Saudia BPR methodology especially in the BPR phase, it is important to highlight here some of the major differences between the two methodologies which are considered as an advantage for the proposed methodology. These important differences are summarized as follows:

- a) It represents a business process management model that ensure for the airline the achievement of process awareness, process ownership and process alignment with the airline vision and strategies.
- b) A comprehensive and well prepared initiation phase to ensure some of the key success factors of any BPR effort such as top management support, process and

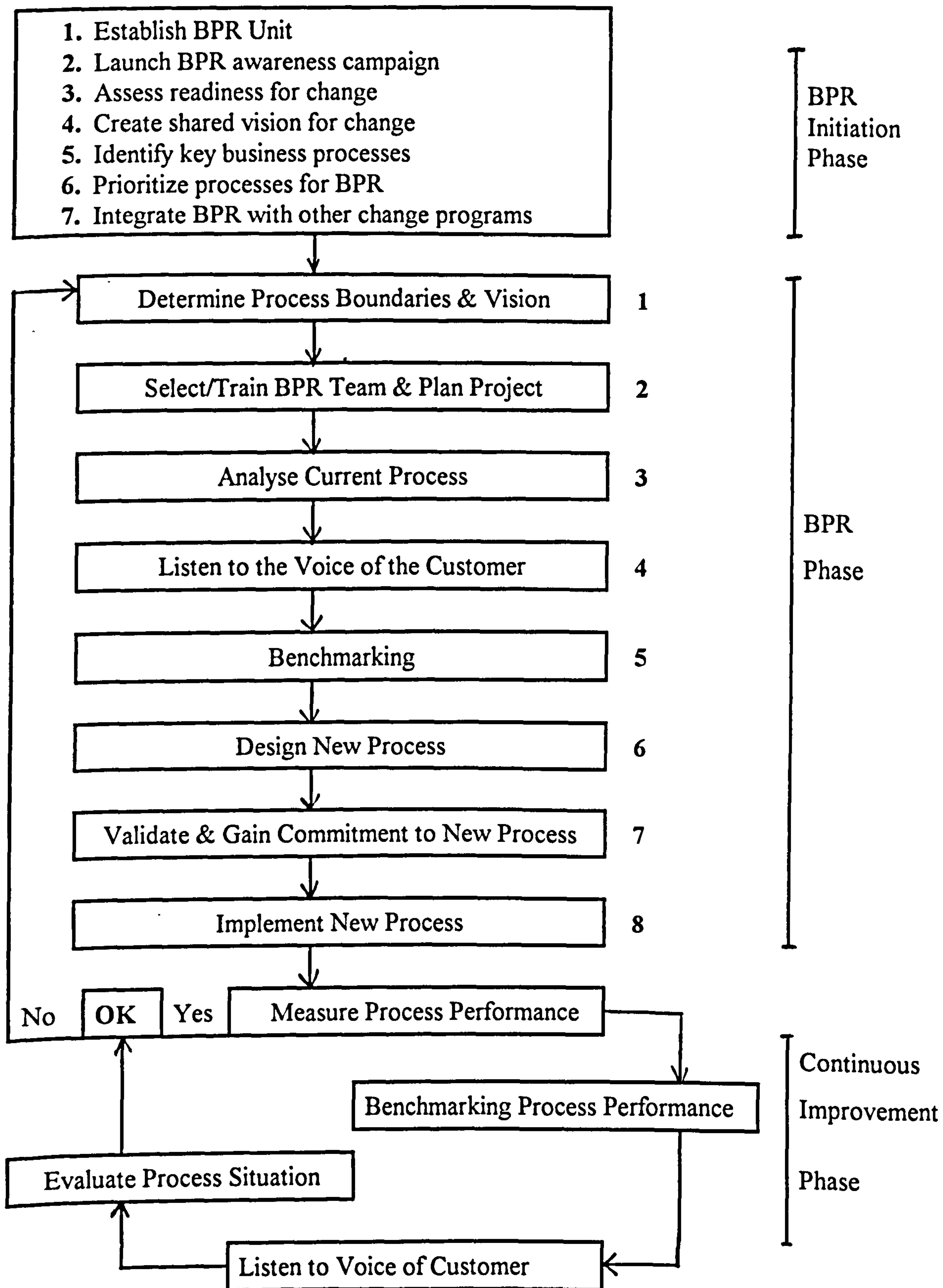


Figure 6.19 The Proposed BPR methodology for a commercial airlines.

BPR awareness, readiness for change and establishing a focal point to coordinate and support to entire BPR program.

- c) Selecting and prioritizing processes for reengineering made at a corporate level.
- d) It ensures that corporate and process objectives and goals must be synchronized.
- e) Assessment of readiness for change at the beginning of the BPR effort.
- f) Use of cost-benefit analysis to allow the steering committee to make an informed decision about the new design.
- g) The BPR unit is highly empowered by reporting to the top management as a neutral body in the organization.
- h) Information technology seen as a primary enabler to make the desired changes.
The methodology address this by considering the IT levers at the redesign stage and the inclusion of IT specialists on BPR teams.
- i) Continuous improvement phase is well defined and linked to the entire BPR effort.
- j) Use of benchmarking and voice of customers in the continuous improvement phase to assess the need for radical or incremental process improvements.
- k) Finally, the proposed methodology avoid all the shortcomings of the Saudia BPR methodology and it incorporates the proposed solutions to overcome these shortcomings.

CHAPTER SEVEN

Conclusions

7.1 Introduction

The aim of this research was to develop a Business Process Reengineering methodology for a commercial airline. The research approach chosen includes review of literature, review of current BPR Practices, study of the American Airlines BPR methodology, study of the application of BPR in Saudi Arabian Airlines as a main case study of the research, and finally develop the proposed BPR methodology for a commercial airline.

7.2 Meeting the Research Objectives

The research objectives have been met through the implementation of the approach mentioned above. The first objective, the need for a business process reengineering methodology for a commercial airline, has been clearly established through detailed review of the literature. This review revealed the need for BPR as an effective approach to achieve radical organizational transformation and at the same time emphasized the relevance of BPR to service sector and explored the facts that established the need to develop a BPR methodology for airline companies. An extensive review of current BPR practices based on the literature explored the basic elements of any generic BPR methodology and all related issues that must be taken into consideration during the process of building the basis for the proposed BPR methodology. The third objective, study the American Airlines BPR methodology, was achieved by conducting a field visits to American Airlines headquarter at Dallas, Texas in United State of America. These visits involved meeting with some key AA

officials, interviewing with some BPR specialists, visiting some BPR teams and attending a special training course on AA BPR methodology. Since this methodology was developed in-house by AA specialists based on the generic BPR methodology, the research helped to focus on the major differences between the AA methodology and the generic one and identified its major strengths and shortcomings.

The achievement of the fourth objective was made through the personal involvement of the researcher in the development and implementation of BPR in Saudi Arabian Airlines who are considered the official sponsor of this research.

The findings that resulted from achieving the previous objectives have facilitated and built the basis to develop the proposed BPR methodology. This includes a detailed comparative analysis between American Airlines and Saudia BPR methodologies which was considered a major step toward the development of the proposed methodology.

The research has resulted in a BPR methodology which represent an integrated business process management model with a major differences which distinguished it from both the AA and Saudia BPR methodologies and any other generic one.

7.3 Research Hypotheses Validated

The hypothesis stated at the beginning of this research has been proven. The proof of the validity of the hypotheses has been demonstrated by the outcome of the review and analysis of the relevant literature, understanding of current BPR practices, findings and results generated from studying and comparing the two case studies of this research. The details have been provided in the previous chapters. The first hypothesis underlying this research work is that business process reengineering must be

considered as a key agent for change in companies that are looking for a strong competitive edge in the international market place. This hypothesis has been firmly demonstrated by the work done to achieve the first research objective discussed above. Findings of the extensive surveys published in the related literature showed that BPR is the number one initiative taken by senior executives to achieve their strategic goals. Discussion of the current changes and new business trends emphasised the need to use BPR as an effective approach to achieve rapid and step improvements in performance. The wide scope and range of the BPR concept, its linkage to strategic planning, and its strong dependence on advance information technology as major enabler to make the radical change happened are all factors that made BPR a key agent for change in companies that are looking for strong competitive edge in the market place.

The second hypothesis underlying this research work is that there is a need to develop a BPR methodology that fits the operation of commercial airlines and meets the specific requirements of this type of business. This hypothesis has been validated in this research based on the facts and findings presented in the review of BPR and its current practices in the related literature. The increasing complexity and variety of operations and processes within the airline industry and at the same time the increased interest in BPR as a way to change and improvement to meet current and future challenges are all facts that emphasis the need to tailor a generic BPR methodology to suit the particular requirements of a commercial airline. The results of the discussion of both the American Airlines and Saudia BPR methodologies are supporting the validation of this hypothesis. Indeed, review of the available literature on BPR at the beginning of this study showed that no single paper or research study was devoted to

BPR applications within the airline industry. In addition, personal benchmarking for many airline companies since the rise of BPR in 1992 revealed that most of the BPR methodologies used by those who have already launched BPR programs are generic methods which were not originally developed for use in the airline industry and show a number of weaknesses.

7.4 Contributions of the Research

The contributions and findings resulted from this research have been discussed and documented in the preceding chapters.

This section presents a summary of the main contributions of this research. First of all, achieving the aim of this research helped to satisfy the need to develop a business process reengineering methodology for commercial airline. The proposed methodology took into consideration all shortcomings of AA and Saudia BPR methodologies and the proposed solutions to overcome these shortcomings.

The learning and findings of reviewing the BPR literature and studying its current practices have contributed to the process of developing the proposed methodology. The main characteristics of the proposed BPR methodology, which in their interlinking differentiate it from all generic BPR methodologies, are summarized as follows:

- 1) A comprehensive and well prepared initiation phase to ensure some of the key success factors of any BPR effort such as top management support, process and BPR awareness, readiness for change and establishing a focal point to coordinate and support to entire BPR program.
- 2) A linkage of airline and process objectives where establishing a shared vision for change is essential to set BPR priorities and expectations of the new process.

- 3) Selecting and prioritizing processes for reengineering made at a corporate level.
- 4) Use of the systematic redesign approach as a way to create the new design by focusing on value-added activities with a consideration for the clean sheet (out of box) approach at the beginning of the redesign phase.
- 5) Focusing on the needs of customers as a driver for the new process design. This considers as a key factor for the success of any BPR effort within the airline industry which naturally is service-orientated and driven by customer needs.
- 6) Use of benchmarking with best practices as a way break current people's paradigms and to foster thoughts on new ways of performing processes.
- 7) Incorporates structural and social solutions in the new process design to consider the people side in the BPR effort.
- 8) Information technology seen as a primary enabler. The methodology addresses this by considering the IT levers at the redesign stage and the inclusion of IT specialist on BPR team.
- 9) Flexible and learnable BPR methodology enables the airline to implement BPR using in-house BPR teams selected based on a special profile.
- 10) Clear roles and responsibilities for leader, steering committee, BPR team, consultant if needed, and the BPR unit.
- 11) Strong and effective communication plan throughout the different stages of the methodology to ensure top management involvement and better management of change.
- 12) Use of cost-benefit analysis to allow the steering committee to make an informed decisions about the new design.
- 13) Use of simulation to validate the new process design.

14) Continuous improvement phase is well defined and linked to the entire BPR effort.

Indeed, the proposed BPR methodology represents a business process management model that ensures for the airline the achievement of process awareness, process ownership and process alignment with the airline vision and strategies. It helps to focus the airline effort on core business processes that add value to the end customer of the airline and contributes in achieving its mission. In addition, the proposed methodology was developed within the airline industry. This involves the application of the roots of this methodology in both American Airlines and Saudia in major BPR projects. Therefore, the proposed BPR methodology has the characteristic of being evolved and tested within airline industry which increase the probability of successful implementation of this methodology for any commercial airline. Finally, this research has contributed a lot to the development and success of the BPR program within Saudi Arabian Airlines and produced many tangible benefits .

Most of these achievements were made through the personal involvement of the researcher in the development and implementation of the BPR program. Some of the personal contribution in the development side is summarized as follows:

- Introduction of the BPR concept in Saudia.
- Design and implementation of a comprehensive BPR awareness campaign within Saudia.
- Use of “reengineer profile” to select BPR teams.
- Design the BPR workshop and train BPR teams.
- Customization of the American Airlines BPR methodology to meet Saudia requirements and culture.

- Translation of the BPR methodology to the Arabic language.
- Introduction of benchmarking and listen to voice of customers as a major stages in the Saudia methodology.
- Introduction of ESIA approach to facilitate the analysis of current business processes.
- Design and implementation of the communication plan of various BPR projects in Saudia.

7.5 Potential for Future Research

For the purpose of advancing the current research on the BPR, the following suggestions for further studies are proposed:

- 1) The development of improved BPR software to support and facilitate the implementation of the proposed BPR methodology.
- 2) To study and evaluate the use of simulation in BPR projects. This subject needs more attention because of the numerous benefits of using simulation within the BPR methodology.
- 3) How to use cost-benefit analysis effectively within the BPR methodology? Further work in this subject is needed to maximize the importance and benefits of using such techniques in any BPR methodology.
- 4) Integration of existing benchmarking methodologies with the proposed BPR methodology. This might involve the development of a new benchmarking methodology that fits more closely to the BPR concept.
- 5) The integration of the proposed BPR methodology with information system development methodologies. This is important since BPR efforts usually lead to the introduction of new information systems and new technology requirements.
- 6) The impact of corporate culture on BPR projects.

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APPENDIX - 1

List of Major Questions Used as
Guidelines for the Research
Case Studies

MAJOR QUESTIONS

1. When did BPR effort start ?
2. What is the current stage of the BPR project ?
3. How many BPR projects (completed/on-going) so far ?
4. Why did the company select BPR concept ?
5. Is there any previous TQM/Continuous improvement programs ?
6. Is there link between these programs and the BPR effort ?
7. What were the goals of the BPR projects ?
8. What were the results of the BPR projects ?
9. Who is the sponsor of the BPR projects ?
10. How long (on average) it takes to complete a BPR project ?
11. Was there any difficulties to meet the project work plan ?
12. What basis were used to select processes to be reengineered ?
13. Is there a special unit facilitate the BPR projects ?
14. How many members in the BPR team ?
15. What are the basis to select BPR team members ?
16. What a percentage of time is devoted by team members to the BPR project ? (for every stage if possible)
17. Is there any special training for the team members ?
18. What types of training ? How long ?
19. How much was the contributions of the top management in the different stages of the BPR project ?
20. What a BPR methodology was used ? (give details)
21. Who was the developer of this methodology ?

22. Is there a user-guide or a manual for this methodology ?
23. How this methodology was customized to fit your company ?
24. Is there any software (tools) support this methodology ?
25. What techniques were used to collect the details of the current process ?
26. What techniques were used to map the process ?
27. Is there any involvement of the people inside the process in this stage ? If yes How?
28. How was the role of information technology considered in this methodology ?
29. Is there any practical techniques to take the voice of the customer into consideration in this methodology ?
30. Is there any consideration for cultural and organisational issues within this methodology ? If yes how ?
31. Did your company use any consultants during the BPR projects ?
32. What plans and techniques were used in the implementation stage of the reengineered process ?
33. What were the difficulties that faced the company in the implementation stage ?
34. How did the company deal with the fact of resistance to change during the BPR effort ?
35. What are the plans for continuous improvement of the reengineered process ?
36. If you had to do this BPR project over again, what would you do differently ?

APPENDIX - 2

Change Readiness Assessment Worksheet (American Airlines BPR Methodology)

Change Readiness Assessment

Objective

To identify an organization's need for improvement and its readiness for change by:

- Evaluating evidence (data and facts) which indicate the need for change
- Assessing the organization's readiness and willingness to change

The results of this assessment will also provide information that can be used to create a communication plan that:

- Makes clear and visible the need for change
- Creates a sense of urgency
- Secures the commitment of senior management
- Unfreezes the organization and lays a foundation for change
- Provides an opportunity for employee feedback and involvement
- Provides a gauge of the level of support that exists in the organization

Instructions

Determine the overall need and readiness for change using the Need Assessment and Readiness Assessment worksheets. For each of the need and readiness criteria, list the measures or evidence that can be used to support a Need for Improvement rating. Rate the organization and business process from 0 = low to 4 = high to indicate the improvement required. Total the Need score and the Readiness score and plot the results on the Readiness Matrix.

Initiatives with the greatest chance of success are those that have a high need and high readiness score (quadrant 4).

For those initiatives with high need and low readiness, identify actions to improve the organization's readiness for change.

For the high scoring initiatives consider the following readiness criteria before final selection or moving forward.

- **Initiative is of manageable complexity.**
- **Initiative will return benefits within an acceptable timeframe.**
- **Risk is within acceptable limits.**
- **Results can be leveraged in future improvement efforts.**

Need Assessment

Performance Criteria

Need for Improvement
0 = low, 4 = high

Business (Financial/Market) Performance
Measures, Evidence:

Customer Satisfaction
Measures, Evidence:

Employee Satisfaction
Measures, Evidence:

Industry Leadership and Innovation
Measures, Evidence:

Flexibility and Responsiveness
Measures, Evidence:

Direction and Alignment
Measures, Evidence:

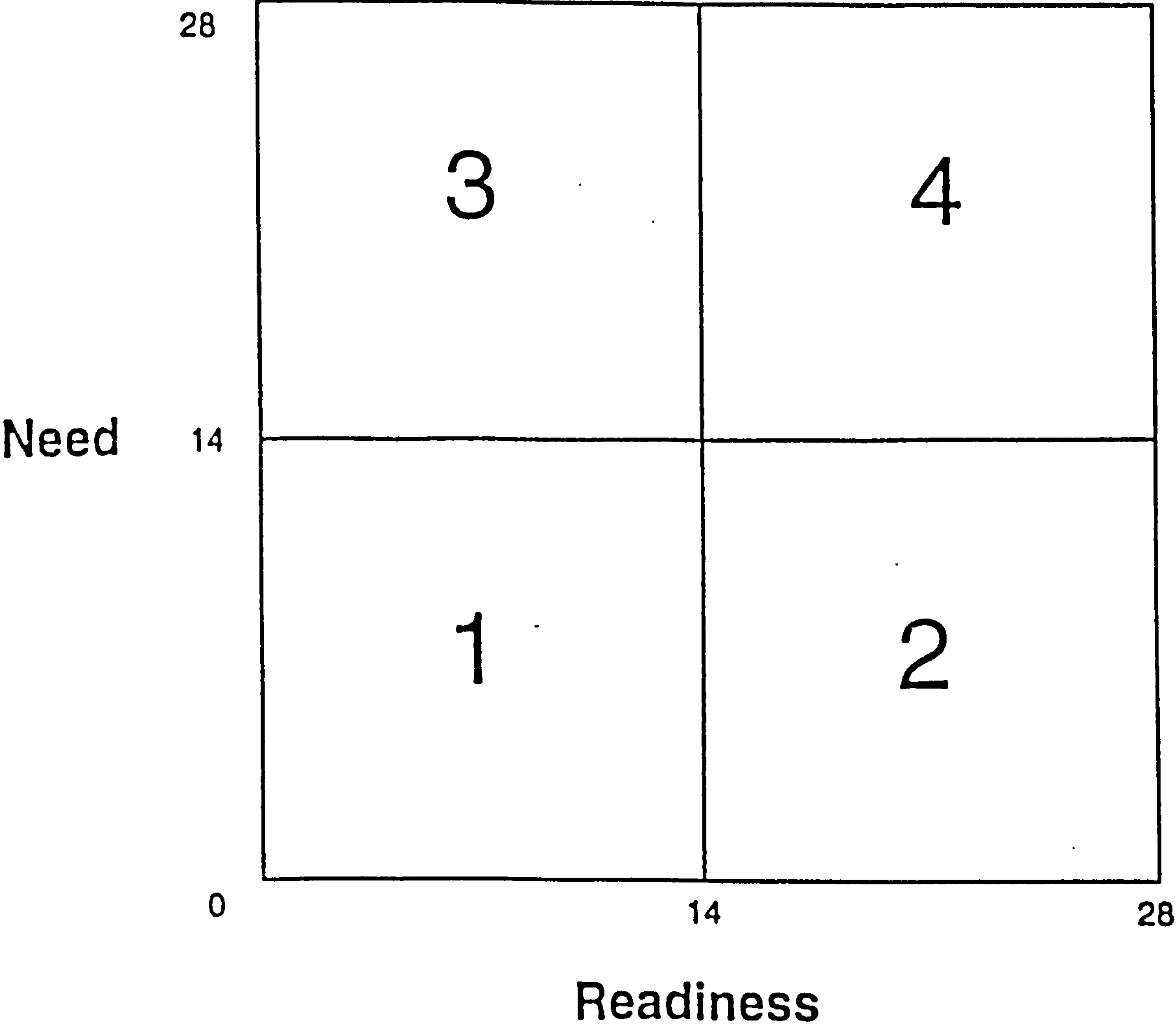
Process Complexity
Measures, Evidence:

Need Assessment Total

Readiness Assessment

Readiness Criteria	0 = low, 4 = high
Agreement on the Need for Change Measures, Evidence:	<input type="text"/>
Appropriate Sponsorship Measures, Evidence:	<input type="text"/>
Clear Direction and Improvement Objectives Measures, Evidence:	<input type="text"/>
Clearly Defined Roles and Responsibilities Measures, Evidence:	<input type="text"/>
Adequate Resources Committed and Empowered Employees Measures, Evidence:	<input type="text"/>
Favorable Historic Precedence Measures, Evidence:	<input type="text"/>
Agreement on the Improvement Process Measures, Evidence:	<input type="text"/>
Readiness Assessment Total	<input type="text"/>

Change Readiness Matrix



Action Plan

What is the desired situation?	Action Required	By whom? By when?

APPENDIX - 3
Stakeholder Analysis
(American Airlines BPR Methodology)

Stakeholder Analysis

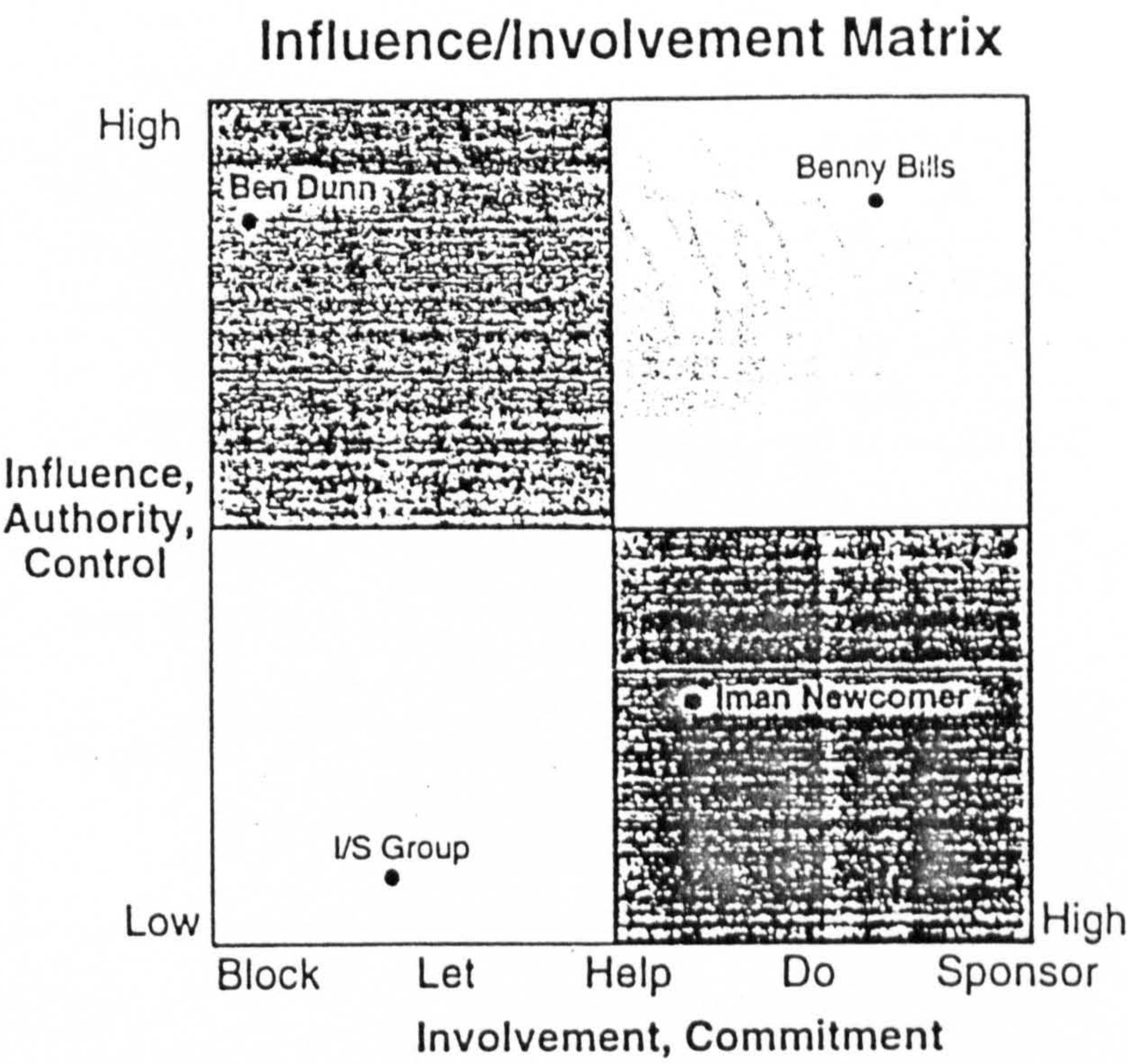
Objective	To ensure the success of a business improvement initiative by identifying, gaining and keeping the appropriate levels of support and involvement of all individuals and groups having a stake in the outcome.	
Stakeholder	An individual or group of individuals with an interest (stake), something to be gained or something to be lost, in the outcome of the project.	
Stakeholder Involvement and Commitment	Block	will attempt to block action
	Let	will allow the project to proceed but may not directly support it
	Help	will help in some way to ensure the success of the project
	Do	will take responsibility for a significant portion of the project
	Sponsor	will provide the resources and leadership necessary for the success of the project
Stakeholder Influence, Authority, Control	The ability to affect the behavior of others through the control of information, expertise, resources, or authority.	

Influence/Involvement Matrix

Objective

To identify the Influence/Involvement of key stakeholders and identify actions that will:

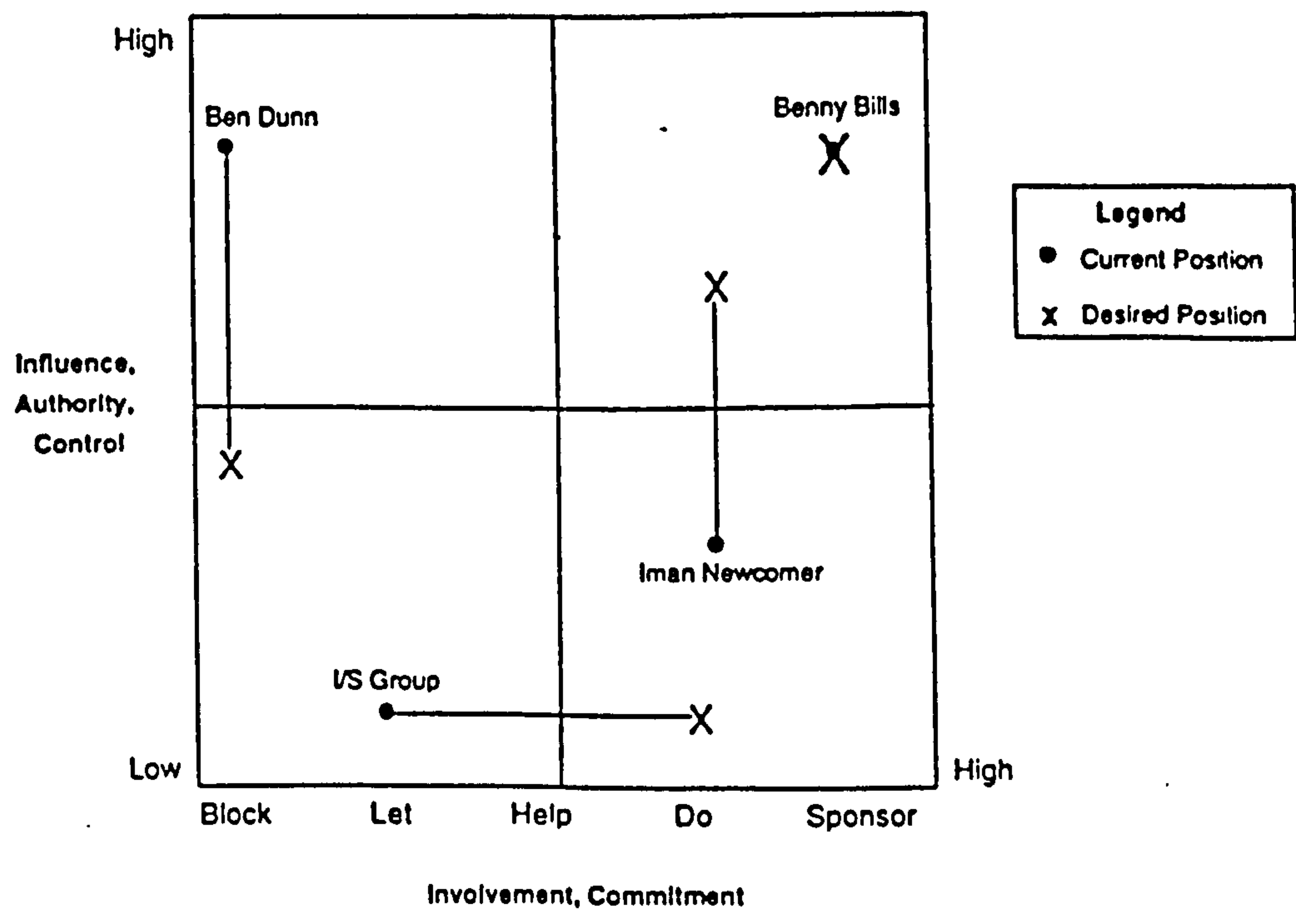
- Fill influence and/or involvement gaps
- Move high influence/low involvement stakeholders to high influence/high involvement or low influence/low involvement
- Move low influence/high involvement stakeholders to high influence/high involvement or low influence/low involvement



Instructions

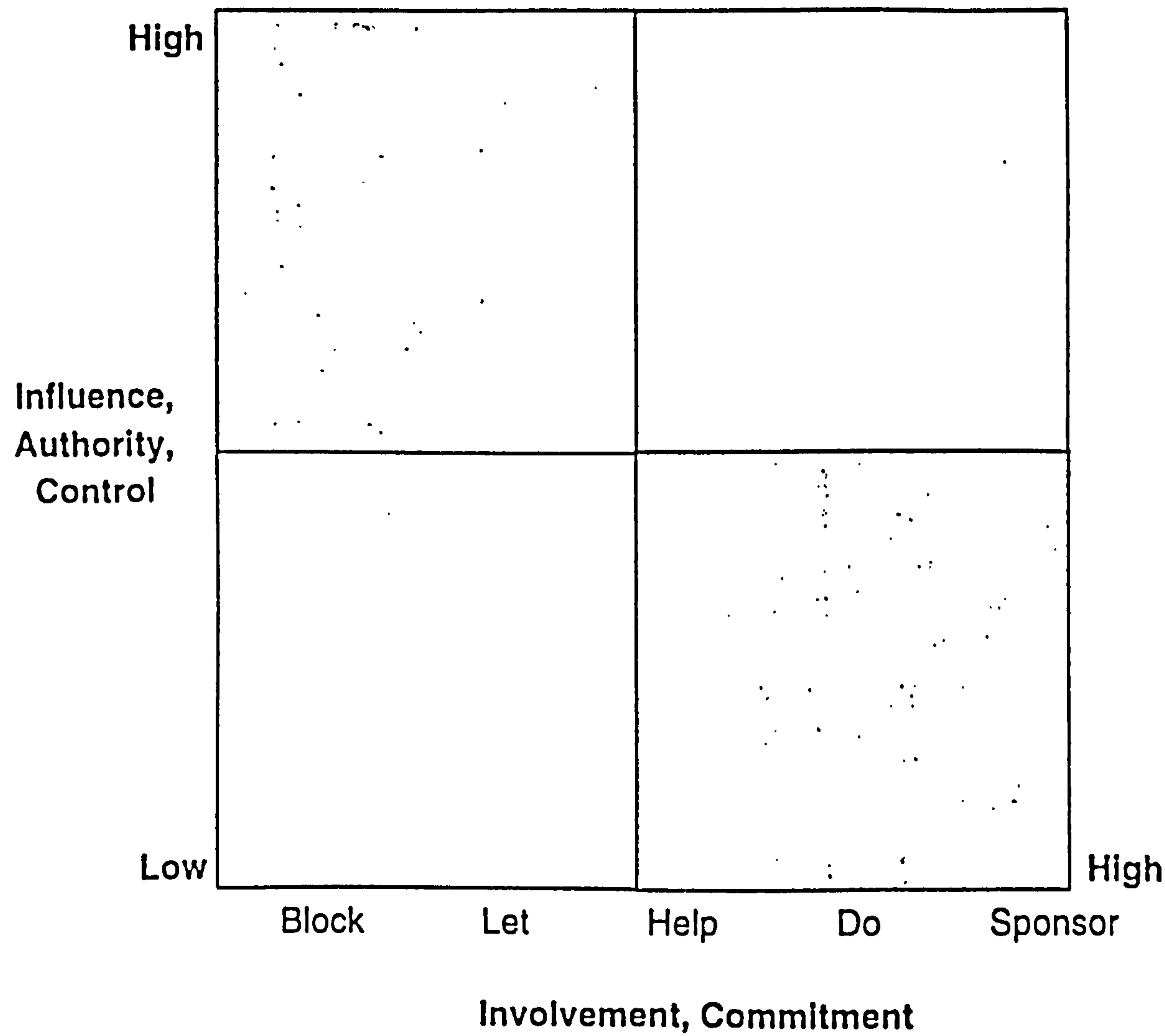
1. Identify individuals or groups that will be most affected by the outcome.
2. Determine their current level of influence, authority, control.
3. Determine their current level of involvement and commitment.
4. Determine the desired future level of influence and involvement.
5. Identify outstanding issues.
6. Create an action plan to resolve issues and reposition stakeholders.

For Example



Stakeholder	Issues	Actions
Benny Bills (President)		Strong supporter, keep posted
Ben Dunn Dir. of Bureaucracy	Will hold on to current command/control structure	Have B. Bills help reduce his influence in this project
Iman Newcomer (Shop Steward)	Reflects new business approach but is not visible to management	Get on Steering Committee
I/S Group	EDI possible enabling technology for new design	Identify expert resources, secure commitment for I/S proposal

Influence/Involvement Matrix



Stakeholder Action Plan

Stakeholder	Issues	Actions

APPENDIX - 4

Improvement Framework Worksheet
(American Airlines BPR Methodology)

Improvement Framework

Objective

To build a framework and charter for a business process design initiative.

Before creating an improvement framework for a business process improvement initiative, it is important to understand the business context in which the business process operates. The Business Process Design methodology stresses the importance of making the purpose of each business process visible. The purpose of each process must be aligned with the strategic direction of the business.

For this reason, creating the improvement framework begins with a strategic analysis of the business (or organization) in which the target business process operates.

Instructions

1. Describe the organization's current mission and vision.
2. Describe the current market.
3. Describe the organization's competencies.
4. Describe the organization's core values.
5. Describe the organization's competitive advantage.

Strategic Analysis

Organization's Mission and Vision

Market	
Products and Services	Customers
Competition	Means of Trade

Competencies -- Infrastructure	Competencies -- Human Resource
--------------------------------	--------------------------------

Owner Values	Employee Values
--------------	-----------------

Competitive Advantage

Improvement Framework

Instructions

After completing the strategic analysis, make notes about the purpose of the target business process with respect to the strategic direction just described. Review the available performance information for the target process and, using the Improvement Framework worksheet:

1. Describe the improvement direction/opportunity.
2. Define measures of performance.
3. Describe the current and desired paradigms.
4. Describe the problem boundaries (boundaries of investigation).
5. Describe the design constraints. For example:
 - Growing or shrinking the employee base
"Be radical but don't hire anyone."
"The union contract calls for no job losses through '95."
 - Expenditures for implementation
"We'll go for anything but we can't spend any money."
"The Board will need a business case for any technology investment."
 - Sacred Cows
"Don't touch product pricing on this go-around."
"HR policies are not within our control to change."
"You wouldn't eliminate our annual retreat to Aspen would you?"
4. Create a mission and/or vision for the process.
6. Create a problem statement.
7. Define the objectives for the improvement initiative.

Improvement Framework

Outcomes Needing Improvement

Measures of Performance		
Business/Financial	Customer Satisfaction	Employee Satisfaction

Foundations	
Current Paradigms	Desired Paradigms
Boundaries of Investigation	Constraints on the New Design
Mission and Vision for the Process	

Charter
Problem Statement for the Improvement Initiative
Improvement Initiative Objectives, Measures and Targets

APPENDIX - 5

Process Information Sheet

(Saudi Airlines BPR Methodology)

APPENDIX - 6

A Sample of Process Mapping & Analysis

Using BDF Software

(Flight Scheduling Process Re-engineering Project)

Saudi Airlines

CREW SCHEDULING

FLIGHT COVERAGE

MONTHLY COVERAGE PLAN

RECEIVE PAIRS

RECEIVE LINES

BID AWARD CLOSURE

BID CLOSE

BID ASSIGNMENT

BID AWARD

CREW QUALIFICATIONS

CREW QUALIFICATION COCKPIT

CREW QUALIFICATION CABIN

CREW LEGALITIES

EXCEPTIONS

OPEN TIME COVERAGE

NOTIFICATION

FLIGHT CANCELLATION

RECEIVE MESSAGE

MDOS

PAIR INFORMATION CHANGE

CREW ASSIGNMENT

EQUIPMENT SUBSTITUTION

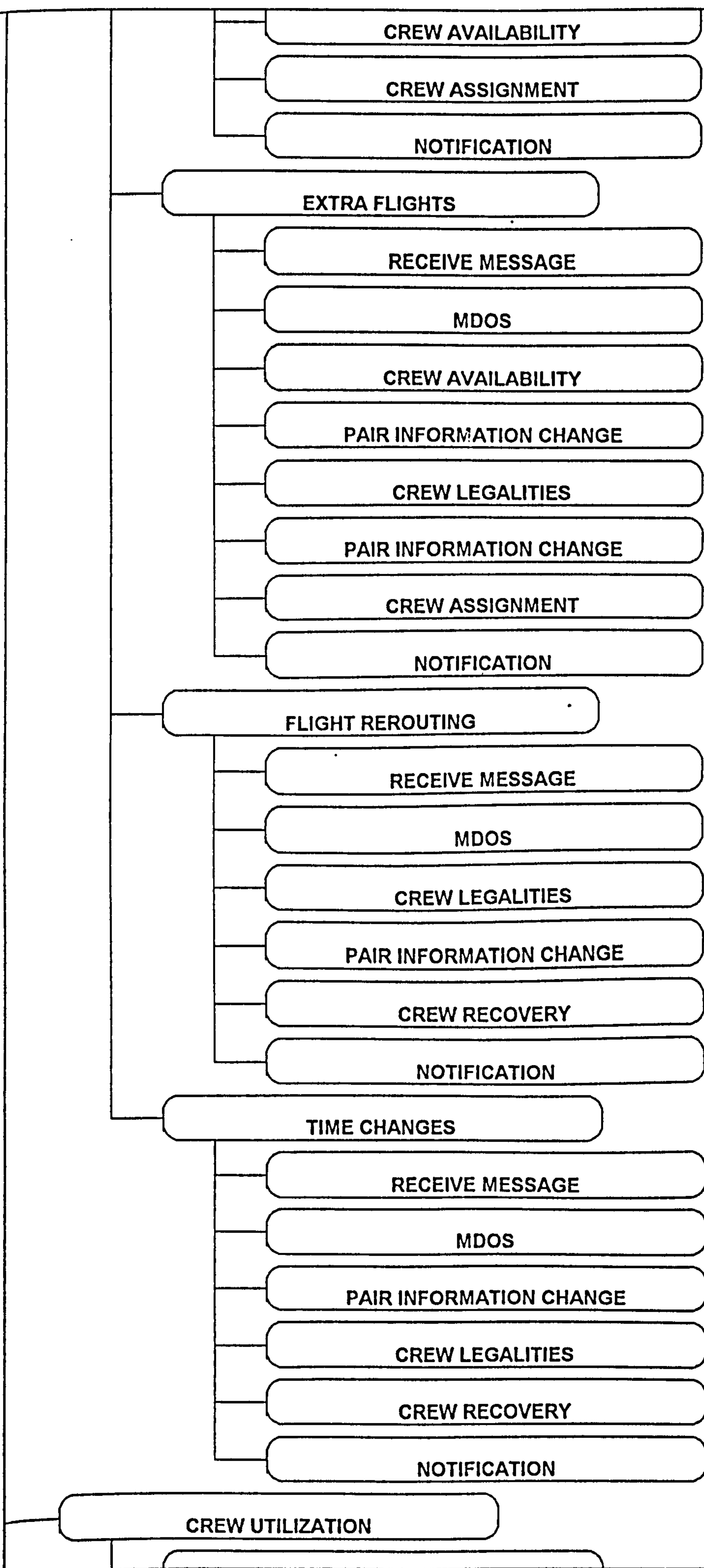
RECEIVE MESSAGE

MDOS

PAIR INFORMATION CHANGE

CREW LEGALITIES

CALL



PAIRING OPTIMIZATION

DEADHEAD ANALYSIS

ACTIVITY REPORTING

CREW ACTIVITY

LINE EQUIPMENT BLOCK HOURS

DAILY CREW SCHEDULE RPT

HIGH TIME RPT

LAYOVER AVAILABILITY

MASTER SCHEDULE

STATION ACTIVITY

ADDITIONAL FLIGHT

FLIGHT LOCATOR

OPEN TIME

OPEN SEGMENT

EXCEPTIONS

CHECK PAIRING LEGALITIES

RECEIVE MESSAGE

MDOS

PAIR INFORMATION CHANGE

UNASSIGN CREW

CREW AVAILABILITY

PAIR INFORMATION CHANGE

CREW ASSIGNMENT

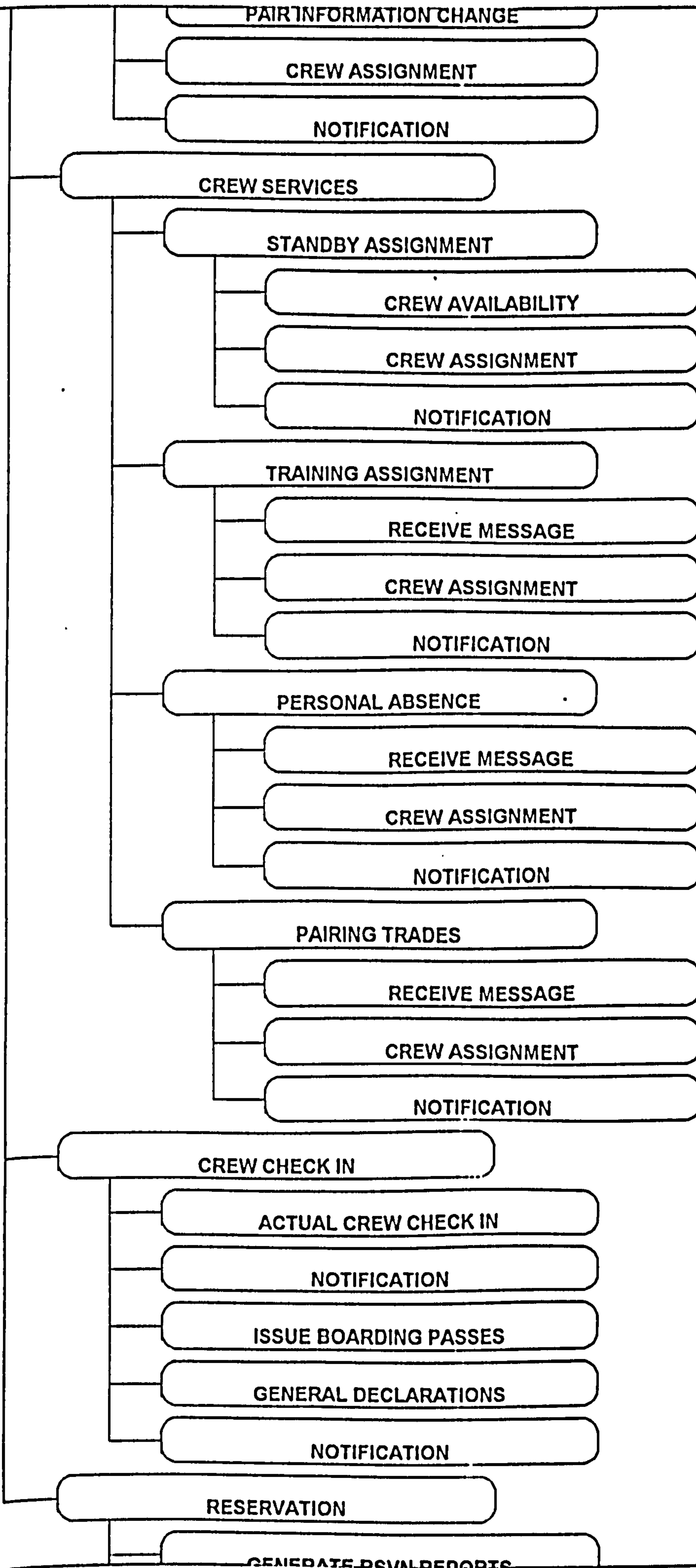
NOTIFICATION

CHECK CREW LEGALITY

RECEIVE MESSAGE

UNASSIGN CREW

ALL



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FUNCTION_AUTOMATION		ACTUAL CREW CHECK IN	
ACTIVITY REPORTING		9 ADDITIONAL FLIGHT	
CHECK CREW LEGALITY		BID ASSIGNMENT	
CHECK PAIRING LEGALITIES		BID AWARD	
CREW CHECK IN		BID CLOSE	
CREW PAIRING TRADES		9 CREW ACTIVITY	
CREW PERSONAL ABSENCE		9 CREW ASSIGNMENT	
CREW STANDBY ASSIGNMENT		9 CREW AVAILABILITY	
CREW TRAINING ASSIGNMENT		9 CREW LEGALITIES	
CREW UTILIZATION		9 CREW QUALIFICATION CABI>	
EQUIPMENT SUBSTITUTION		9 CREW QUALIFICATION COC>	
EXTRA FLIGHTS		9 CREW RECOVERY	
FLIGHT CANCELLATION		9 DAILY CREW SCHEDULE RPT	
FLIGHT REROUTING		DEADHEAD ANALYSIS	
MONTHLY COVERAGE PLAN		9 EXCEPTIONS	
RESERVATION		8 FLIGHT LOCATOR	
TIME CHANGES		GENERAL DECLARATIONS	
		GENERATE RSVN REPORTS	
		9 HIGH TIME RPT	
		ISSUE BOARDING PASSES	
		9 LAYOVER AVAILABILITY	
		9 LINE EQUIPMENT BLOCK H>	
		9 MASTER SCHEDULE	
		MDOS	
		NOTIFICATION	
		9 OPEN SEGMENT	
		9 OPEN TIME	
		OPEN TIME COVERAGE	
		PAIRING OPTIMIZATION	
		PAIR INFORMATION CHANGE	
		RECEIVE LINES	
		RECEIVE MESSAGE	
		RECEIVE PAIRS	
		9 STATION ACTIVITY	
		UNASSIGN CREW	

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1	2	3
4	5	6
7	8	9

FUNC_INTEGRATION

CHECK CREW LEGALITY

CREW CHECK IN

CREW PAIRING TRADES

CREW PERSONAL ABSENCE

CREW STANDBY ASSIGNMENT

CREW UTILIZATION

EQUIPMENT SUBSTITUTION

EXTRA FLIGHTS

FLIGHT CANCELLATION

FLIGHT REROUTING

MONTHLY COVERAGE PLAN

RESERVATION

TIME CHANGES

UNASSIGN CREW

es: referenced de 2 5 8 3 6 9	TRANSACTION	FOXX	KMBA	KMBR	KMBR2	KMBR4	KMBR5	KMCP	KMFL	KMGD	KMLA	KMMP	KMMR	KMNP	KMOR	KMOR1	KMOR2	KMRR	KMSK	KMTC	KPFR	OPRP3	OPRP6	SBS
CREW CHECK IN																								
INAL FLIGHT																							X	
IGNMENT			X																					
RD											X													
SE																								
CTIVITY																					X			
SSIGNMENT																			X					
AVAILABILITY															X									
EGALITIES												X		X					X	X				
UALIFICATION CABIN			X									X							X					
UALIFICATION COCKPIT			X									X							X					
ECOVERY																								
REW SCHEDULE RPT					X																X			
AD ANALYSIS																								
IONS												X		X	X				X	X				
LOCATOR									X															
L DECLARATIONS										X														
TE RSVN REPORTS													X											
IE RPT				X																				
BOARDING PASSES																								
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OPTIMIZATION																								
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PAIRING LEGALITIES

CHECK IN

PAIRING TRADES

PERSONAL ABSENCE

STANDBY ASSIGNMENT

TRAINING ASSIGNMENT

UTILIZATION

AGENT SUBSTITUTION

FLIGHTS

CANCELLATION

REROUTING

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KMCP

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KMGD

KMLA

KMMP

KMMR

KMNP

KMOR

KMOR1

KMOR2

KMRR

KMSK

KMTC

KPFR

OPRP3

OPRP6

SBS

NOTATION

NOTES ON NOTATION USED IN THE MATRICES

- X** symbolizes that the process is currently performed manually and is envisaged to remain a manual process in the future
- 1** symbolizes that the process is currently performed manually and should be automated in the future
- 2-9** symbolizes the current degree of automation or integration as perceived by users, each number carrying an approximate value of 12 percentage points

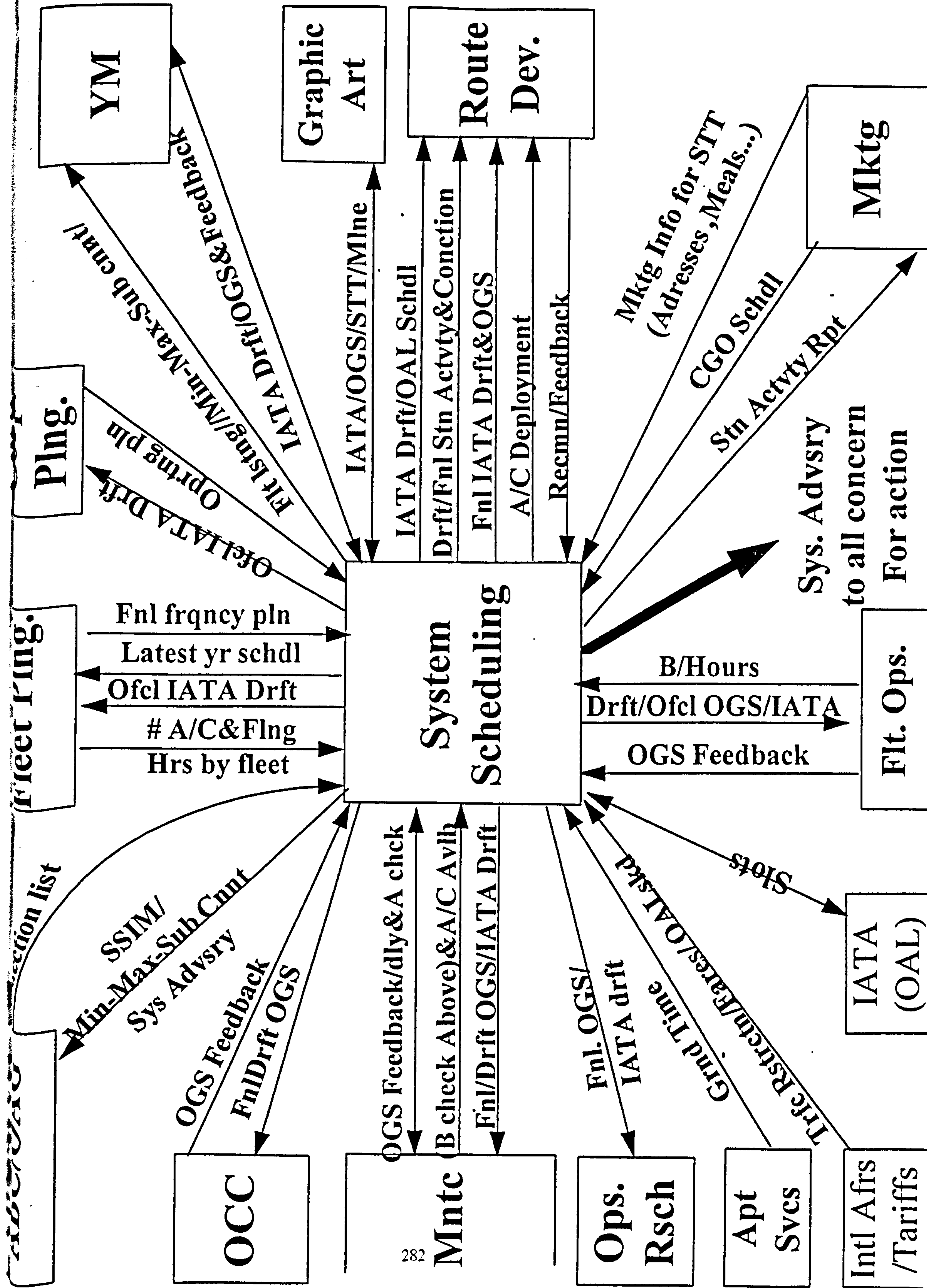
APPENDIX - 7

A Sample of a Process Map

Using ABC Software

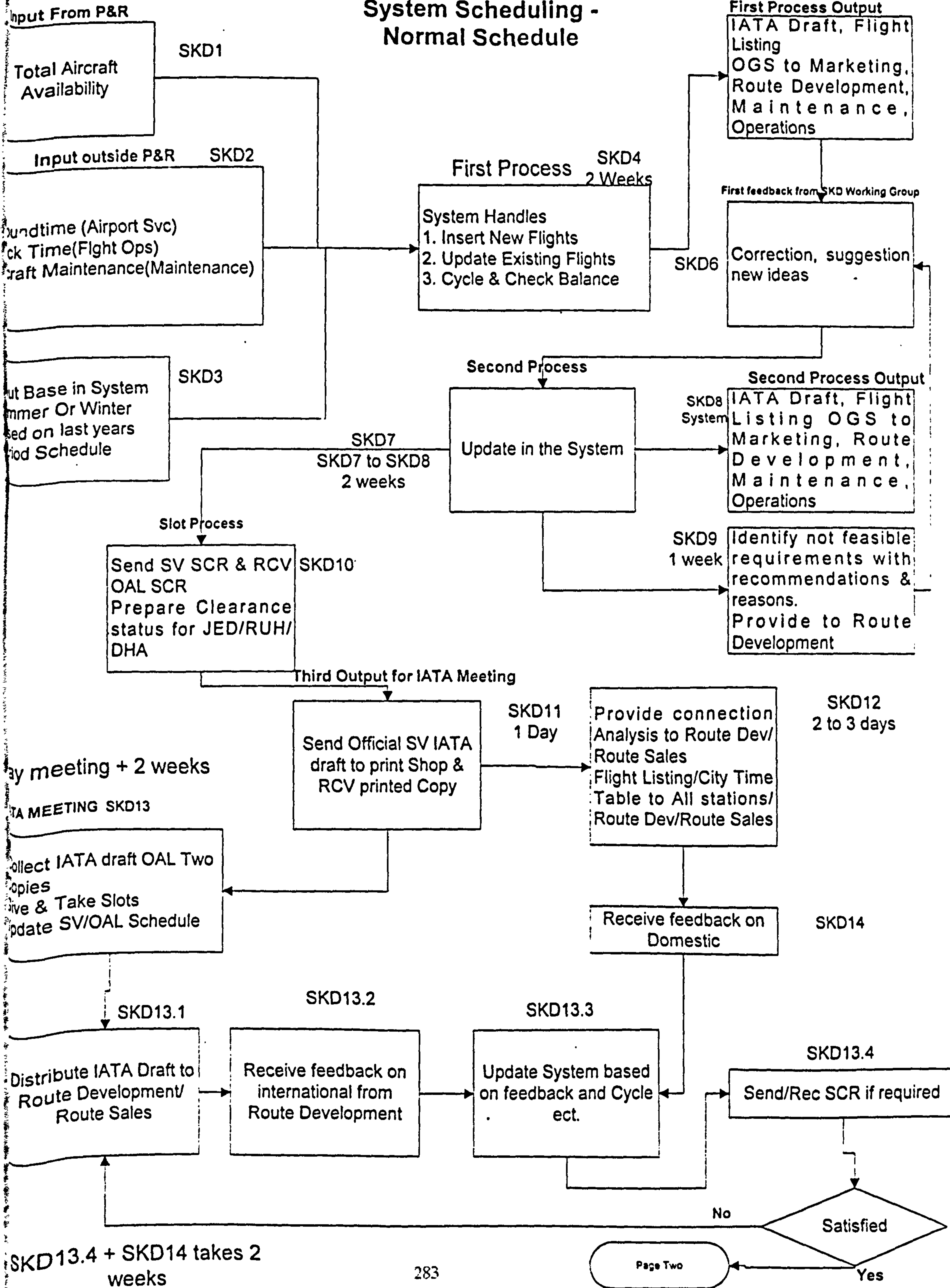
(Flight Scheduling Process Re-engineering Project)

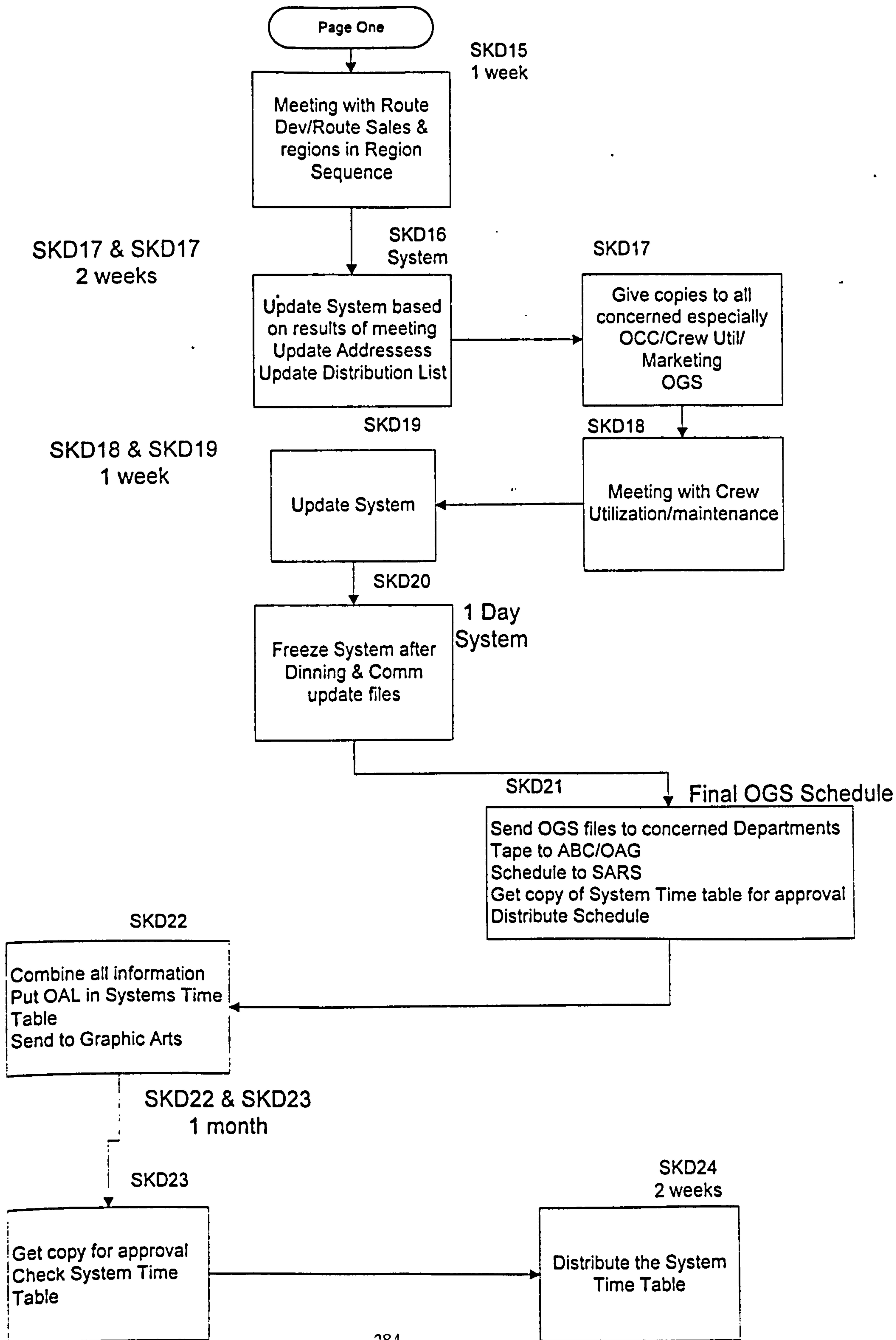
Saudi Airlines



SKD1 to SKD3 3 Days

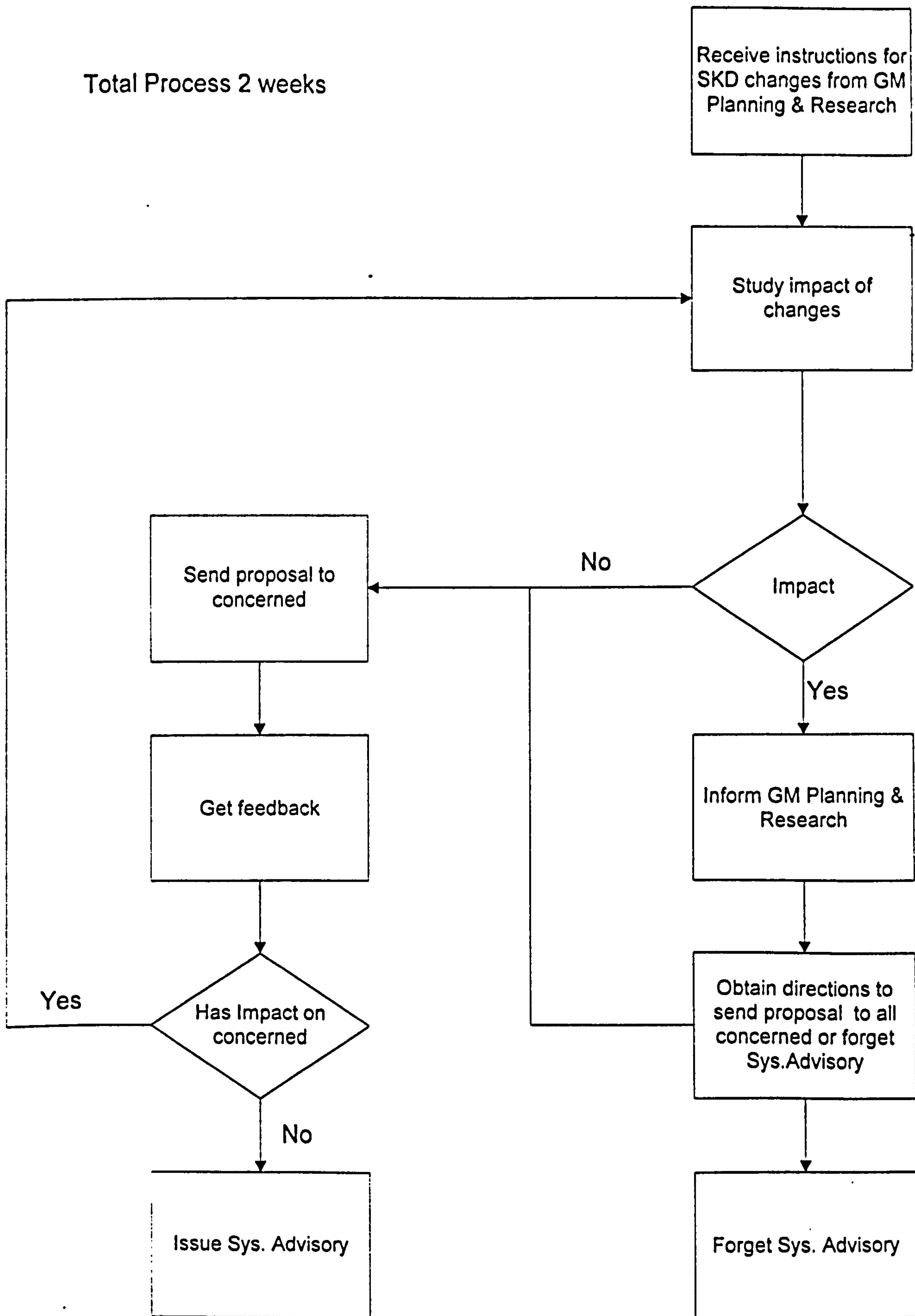
System Scheduling - Normal Schedule



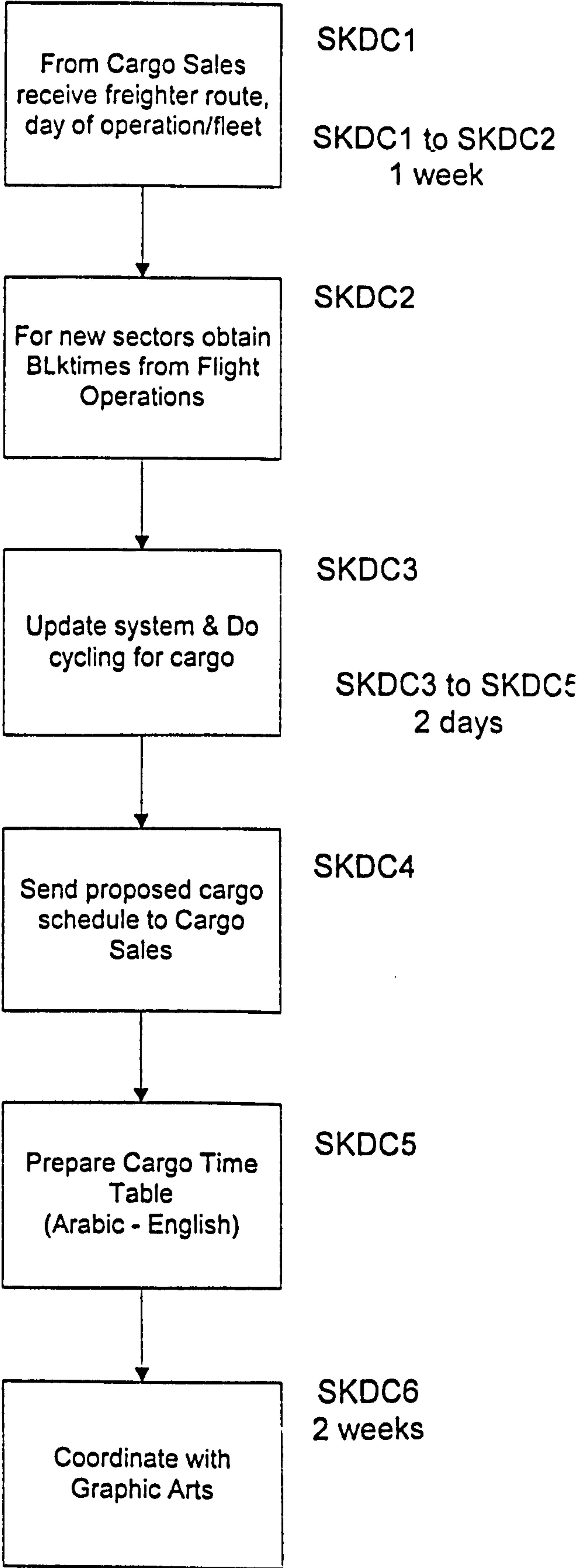


System Scheduling
System Advisory

Total Process 2 weeks

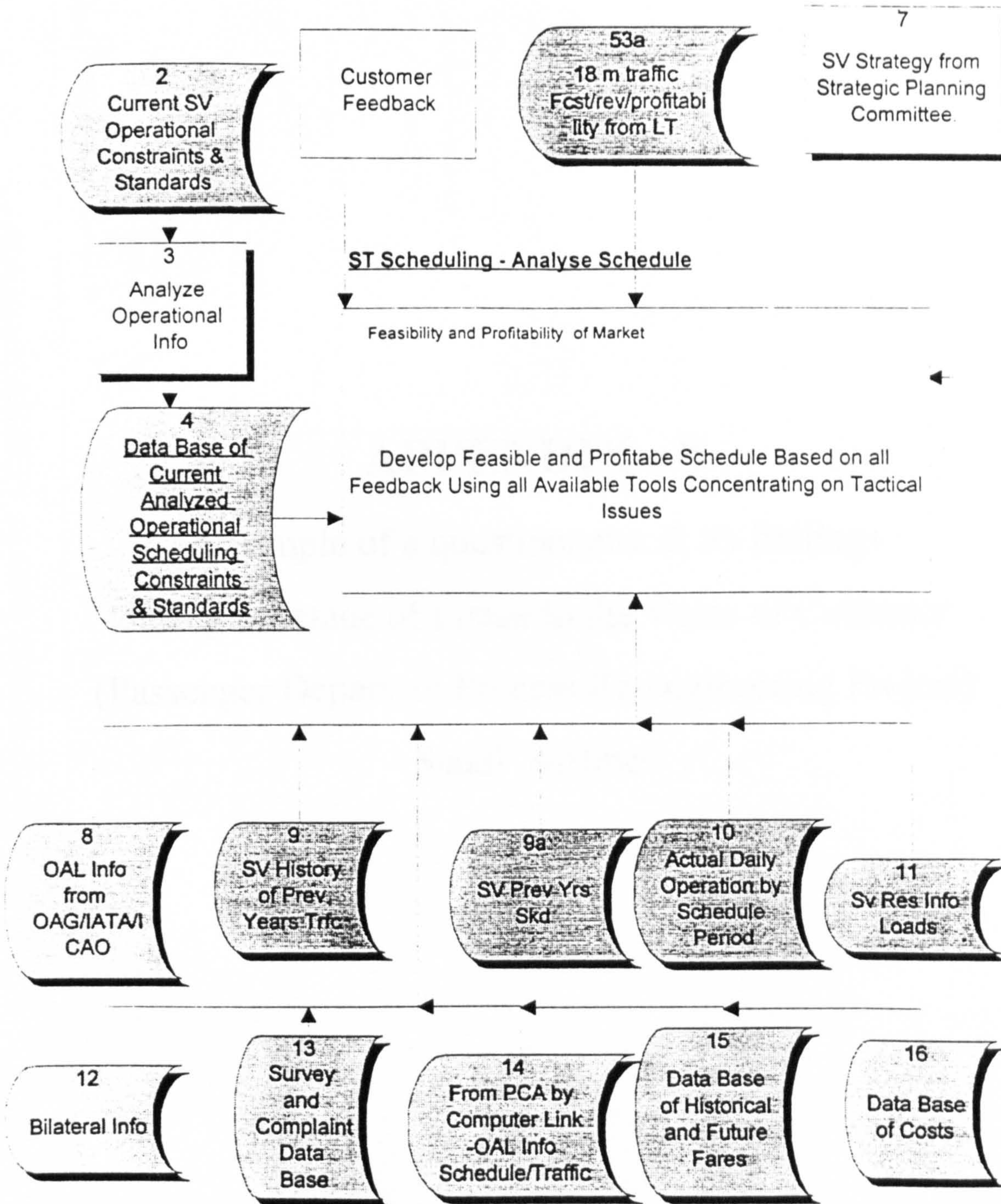


System Scheduling
Cargo



32a

Analysis of Schedule by Short Term



APPENDIX - 8

A Sample of a questionnaire & its findings
during the stage of Listen to the Voice of Customer
(Passenger Departure Process Re-engineering Project)
Saudi Airlines

TEXT BOUND INTO

THE SPINE

إستبيان آراء العملاء عن مستوى الخدمات المقدمة في مجال مغادرة الركاب بمحطة جدة
PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

Sex	الجنس	Nationality	الجنسية	Travel Class	درجة السفر	Arriving Station	محطة الوصول
Male <input type="checkbox"/>	ذكر <input type="checkbox"/>			First <input type="checkbox"/>	أولى <input type="checkbox"/>		
Female <input type="checkbox"/>	أنثى <input type="checkbox"/>			Horizon <input type="checkbox"/>	أفق <input type="checkbox"/>		
				Guest <input type="checkbox"/>	ضيافة <input type="checkbox"/>		

DEPARTURES TERMINAL SERVICES AT JEDDAH STATION	لم أستخدم / لم ألاحظ DIDN'T USE / NOTICE	لا أوافق DISAGREE	أوافق AGREE	خدمات صالة المغادرة
1. Luggage trolley are available at curbside.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١. عربات تحميل العفش متوفرة خارج الصالة
2. Directory signs locations & information are clear and helpful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٢. مواقع ومعلومات اللوحات الإرشادية واضحة ومفيدة
3. Information desk provides the required services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٣. مكتب الإستعلامات في صالة المغادرة يوفر الخدمات المطلوبة
4. Correct check-in counter are easily identified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٤. تعرفت على الموقع الصحيح لإنهاء إجراءات السفر بسهولة
5. Passenger queue at check-in counters are organized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٥. صفوف الركاب أمام موظف إنهاء إجراءات السفر منتظمة
6. Waiting time in queue is reasonable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٦. فترة الإنتظار في الصف مناسبة
7. Check-in agent asked me about seat selections.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٧. تم سؤالي عن المقعد المرغوب
8. Boarding pass are easily obtained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٨. الحصول على بطاقة صعود الطائرة تم بسهولة
9. Check-in agent demonstrate a positive behavior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	٩. سلوك ومعاملة موظف إنهاء إجراءات السفر إيجابية
10. Management are available when needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١٠. الموظف المسئول كان متواجداً عند الحاجة
11. Flight announcement are clear & understandable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١١. الإعلان عن الرحلات كان واضحاً
12. Boarding procedures at gates are organized & easy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١٢. عملية تصعيد الركاب من بوابات المغادرة سهلة ومنظمة
13. Stand-by procedures are efficient.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١٣. إجراءات قبول ركاب الإنتظار فعالة
14. Stand-by counter location are suitable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١٤. موقع قبول ركاب الإنتظار مناسب
15. Information and services are provided in case of flight delay.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	١٥. في حالة تأخر الرحلة قدمت المعلومات والخدمات المطلوبة

Comments

ملاحظات

TEROFFICE

المراسلات الداخلية

To : Proj.Mgr - Business Process Reengineering

From : Sec.Mgr - Economic Research

Date : 22 Rabi'II, 1418H / 26 JULY 1997

Ref. : 222 / 130 / 37 /97

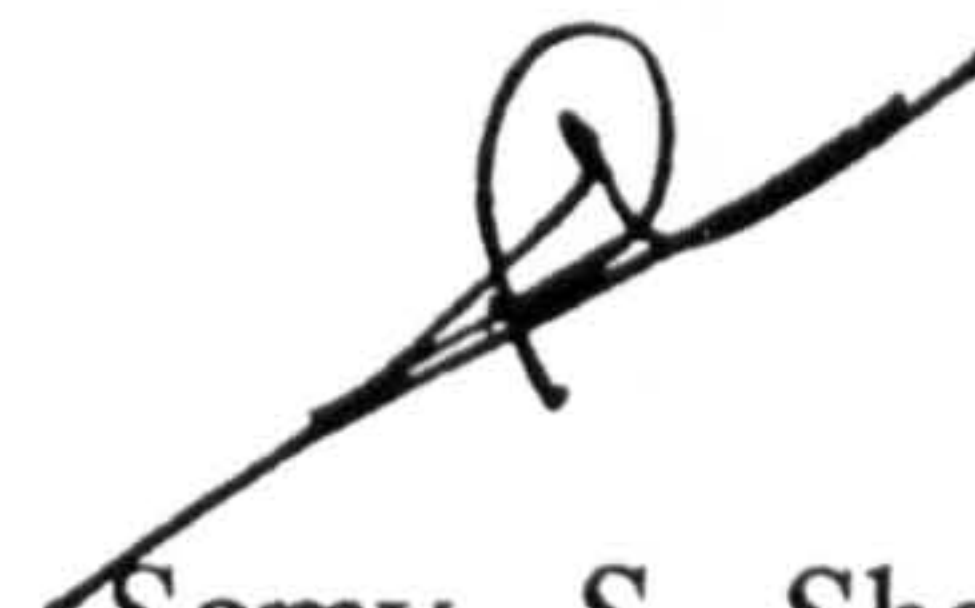
Subj : KAIA PASSENGER DEPARTURE SURVEY RESULTS 1997

Reference to your request for processing and analyzing the above subject, please find attached a summary report with graphic illustrations.

The report based on 540 answered questionnaires .The respondents manifested certain dissatisfaction in the following areas :

- Seat allocation.
- Check-in processing(queueing & waiting time at front desk).
- Clarity of announcement.
- Signs of counter locations.

Best regards


Samy S. Shawely

VP - Marketing Planning .
GM - Planning & Scheduling

PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

INTRODUCTION

ate of survey . FEB-MAR 97
otal number of answered questionnaires 539

-1 Participants as regions :-

1-	Asia	23%
2-	Europe	29%
1-	USA	9%
2-	Africa	22%
1-	Gulf	7%
1-	Middle East	3%
2-	Domestic	10%

-2 Sex :-

1-	Male	91%
2-	Female	9%

-3 Nationality :-

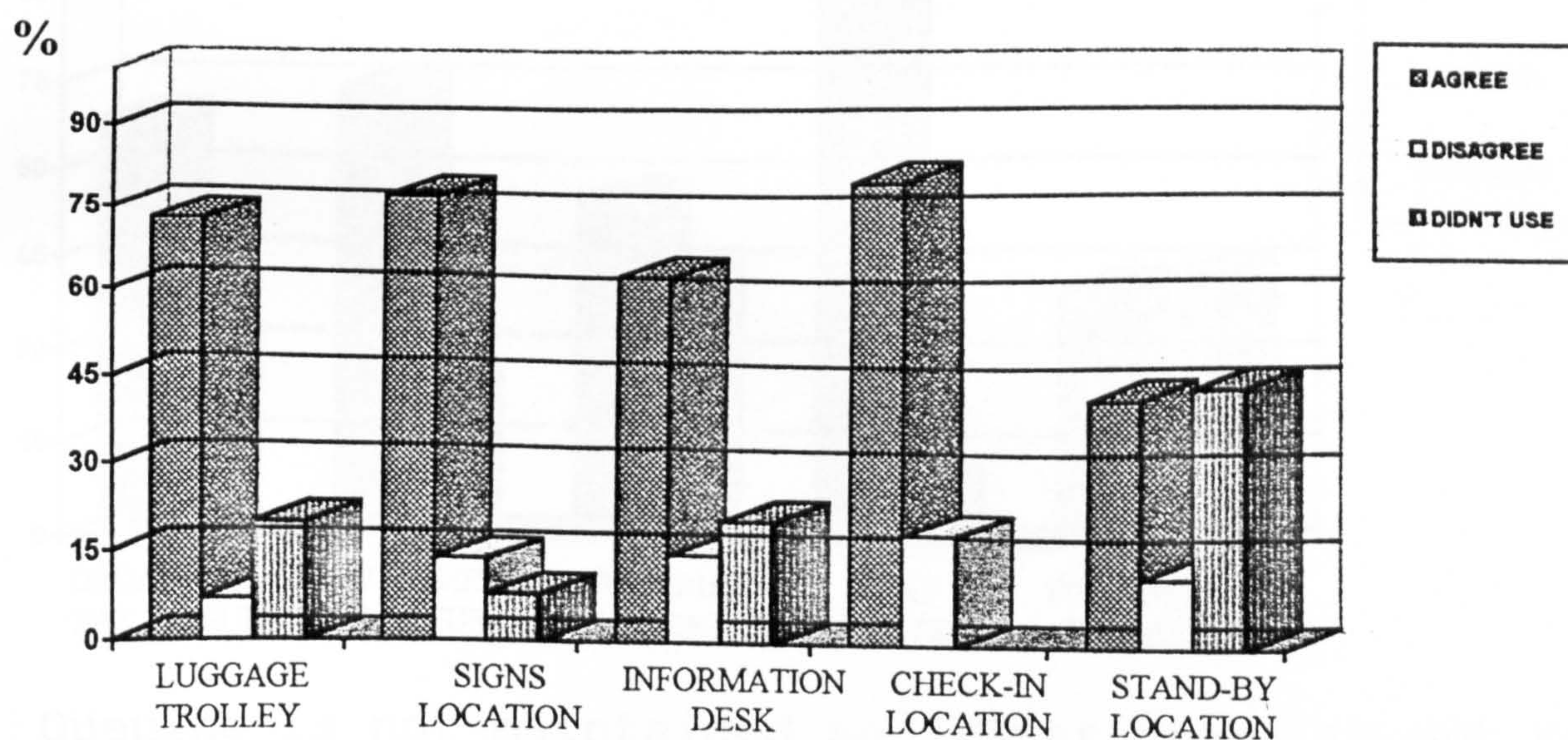
1-	Saudi	38%
2-	Arabs	11%
3-	Europe	10%
4-	Asian	7%
5-	USA	5%
6-	Africa	5%
7-	other	5%

-4 Travel Class :-

1-	First class	21%
2-	Horizon Class	17%
3-	Guest Class	62%

PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

	<u>AGREE</u>	<u>DIS- AGREE</u>	<u>DIDN' T USE/NOTICE</u>
<u>PRE CHECK-IN INQUIRY</u>			
LUGGAGE TROLLEY AVAILABLE	73%	7%	20%
SIGNS LOCATION & INFORMATION	78%	14%	8%
INFORMATION DESK PROVIDES SVC	64%	15%	21%
CHECK-IN COUNTER LOCATION	81%	19%	---
STAND-BY COUNTER LOCATION	43%	12%	45%



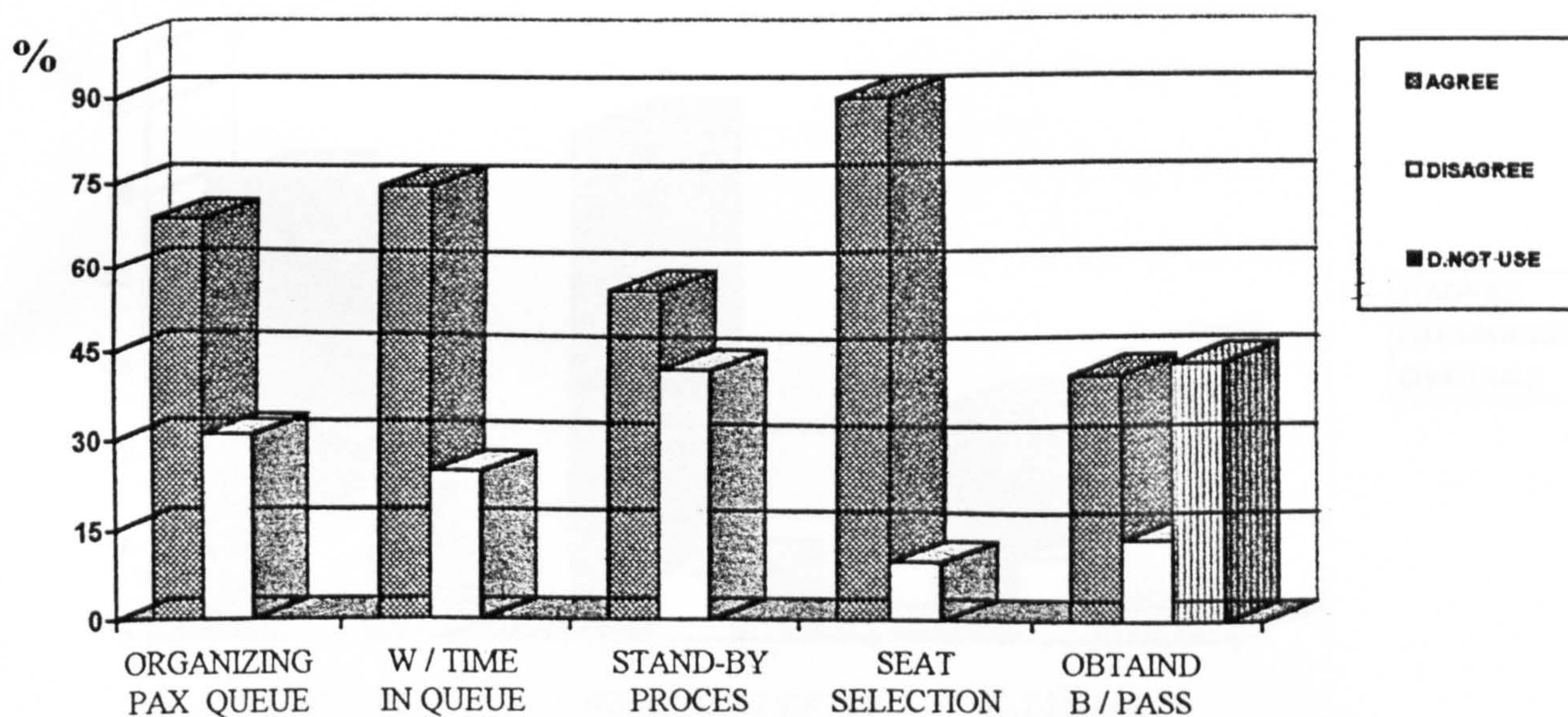
- No shortage of trolleys in departure terminal .
- Indicators for location are clearly visible .
- Information desk adequately replies to the passenger inquiry
- Prior to check-in passengers have difficult to locate the stand by counter desk.

PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

	<u>DIS -</u> <u>AGREE</u>	<u>DIDN' T</u> <u>USE/NOTICE</u>
--	------------------------------	-------------------------------------

ACTIVITIES CHECK-IN COUNTER

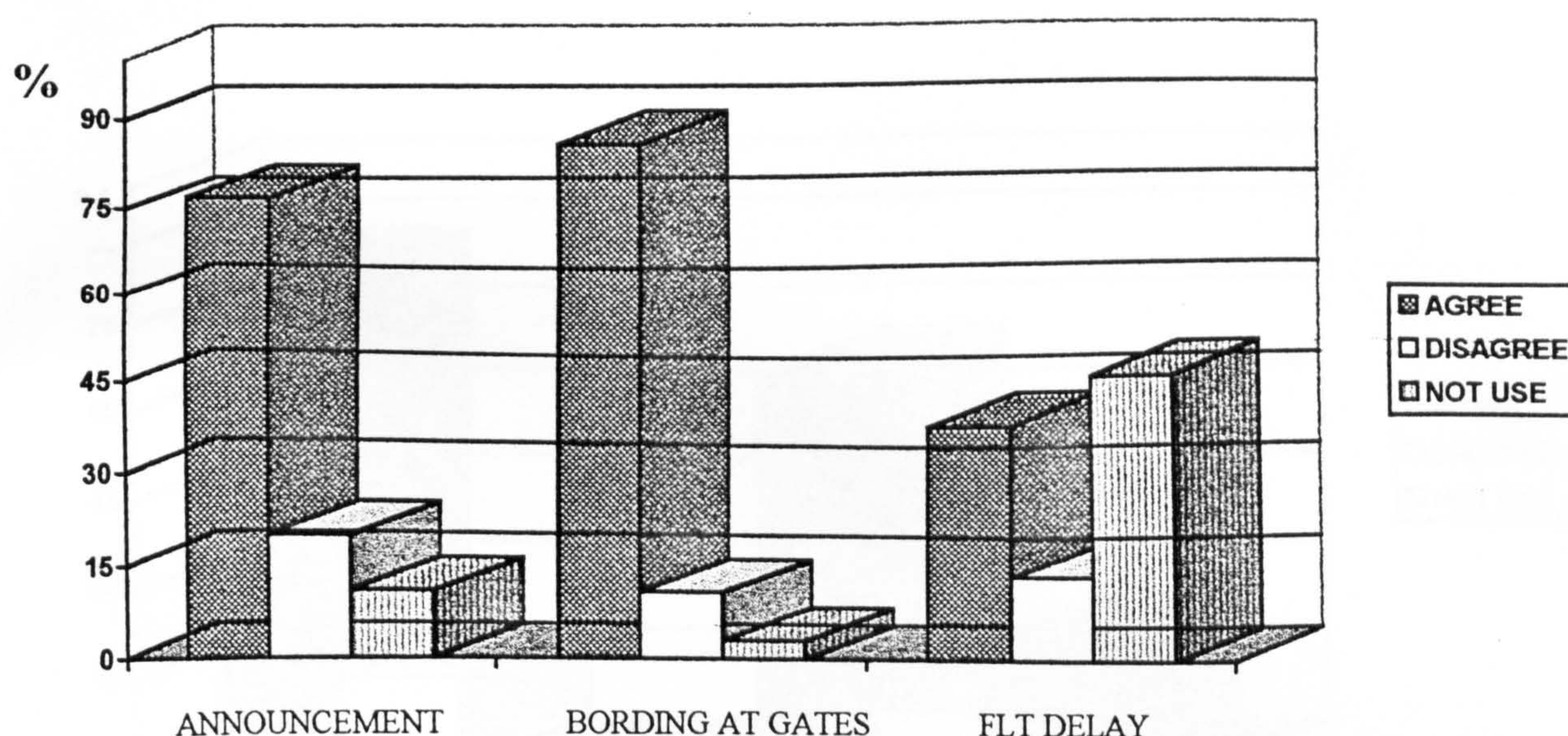
ORGANIZING PASSENGER QUEUE	69%	31%	---
WAITING TIME IN QUEUE	75%	25%	---
STAND-BY PROCEDURES	42%	14%	44%
SEAT SELECTION	57%	43%	---
OBTAINED BOARDING PASS	90%	10%	---



- Queuing is not maintained and first comes is not served first.
- One quarter of respondents considered that they spent too much time before served by counter agent.
- Seat selection and stand-by procedures are not handled properly.
- Boarding passes issued promptly but few respondents were not satisfied.

PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

	<u>AGREE</u>	<u>DIS AGREE</u>	<u>DIDN' T USE USE/NOTICE</u>
<u>DEPARTURE & BOARDING</u>			
FLIGHT ANNOUNCEMENT	77%	20%	3%
B/ PROCEDURES AT GATES	86%	11%	3%
FLT DELAY INFORMATION	39%	14%	47%



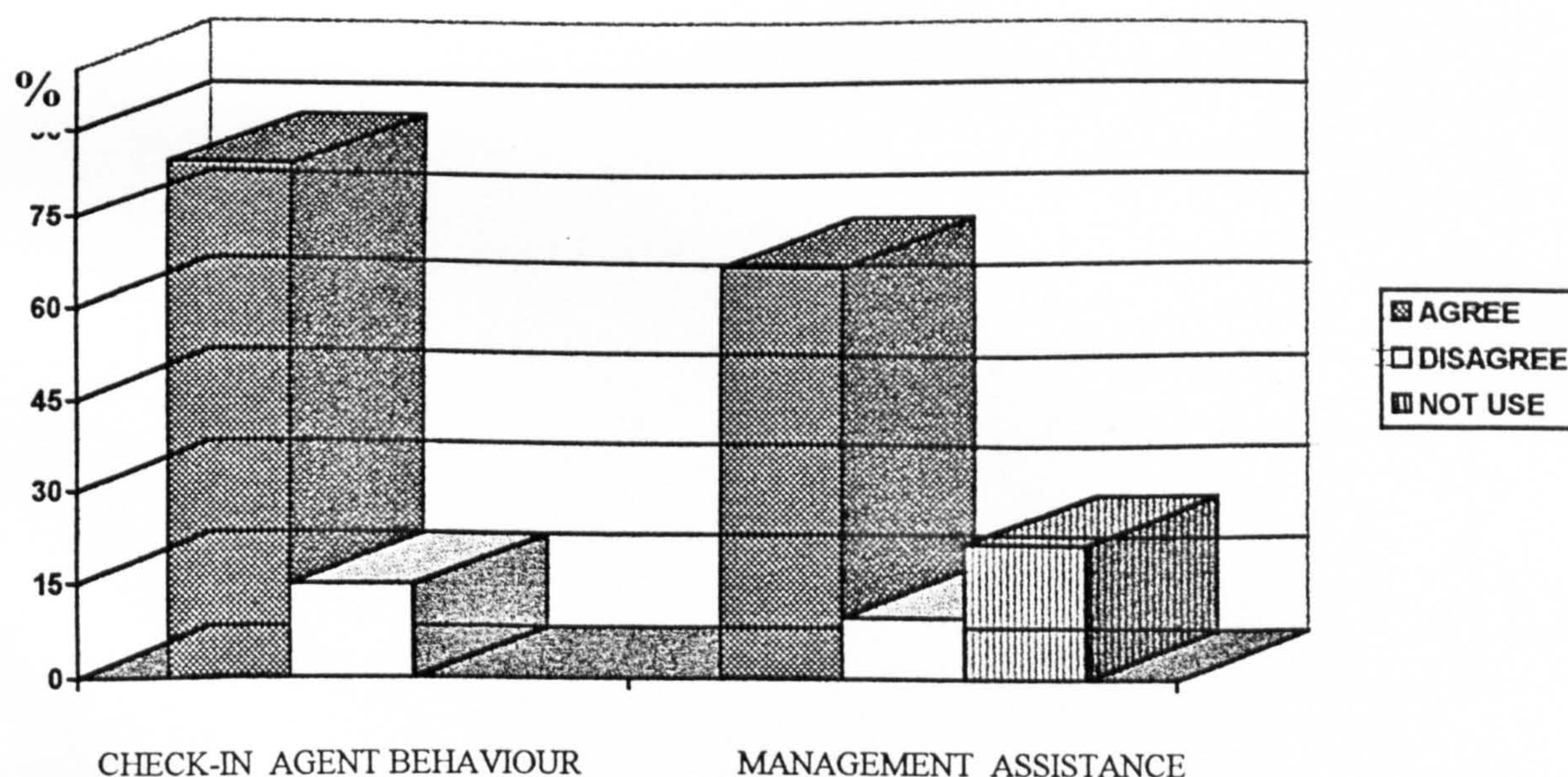
- Information given through broadcasting system is clear. But less than one quarter of respondents considered the voice is not clear as it should be.
- For 86% respondents considered the embarkation steps go smoothly without hassle.
- Passenger right for information regarding flight delay is ignored frequently.

PASSENGER DEPARTURE SURVEY AT JEDDAH STATION

	<u>AGREE</u>	<u>DIS AGREE</u>	<u>DIDN' T USE USE/NOTICE</u>
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STAFF & BEHAVIOUR

CHECK-IN AGENT BEHAVIOUR	85%	15%	- -
MANAGEMENT ASSISTANCE	68%	10%	22%



15% of respondents discontented with agent manner, also 10% of respondents were unable to meet the management for solving their flight problem.