

**STRATEGY MANAGEMENT:
A BUSINESS PROCESS APPROACH**

by

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**To my mother, father,
sister and niece**

For their invaluable support.

ABSTRACT

Whatever uncertainties and complexities the future might hold, companies will be faced with a dynamic environment and will have to cope with the resulting challenges through strategy management. The objective of work presented in this thesis is to *develop a better understanding of the effect of a business process based approach to strategy management*. This understanding adopts a business process perspective and extends the design view to integrate financial and operational performance measures by embracing the organisation as the unit of analysis.

The work presented in this research, following an in-depth review of literature, developed a set of requirements for a Dynamic Strategy Management Process. These requirements suggest that strategy management is viewed as a business process. The research continued by critically evaluating the existing strategy management frameworks, models, methodologies, tools and techniques, which have been classified according to their scope. This review concluded that although approaches reviewed collectively met all the requirements, individually none of the approaches fulfilled all of these requirements. Hence, to fulfil these requirements, PROPHESY (Process Oriented Performance Headed Strategy) was developed which is documented in detail in a workbook format. PROPHESY process was tested using two alternative approaches: The broad approach was conducted using a structured and close-ended questionnaire as well as holding workshops with a total of forty managers. Narrow approach was conducted through implementation of the PROPHESY in case studies with four manufacturing companies. All feedback from these participants was used as a basis for improving the process.

The research concludes with interesting observations on the positive impact of business process based strategy management approach. It also concludes that operations strategy should focus on creating value that is independent for each business unit. This means

developing horizontal strategies that have objectives of coordinating business processes and developing objectives that encourage the sharing of resources and skills.

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Chapter 1 - Introduction

1.1. Background

The manufacturing environment has changed rapidly since the 1950s. Today's globally competitive environment is complex, dynamic and unpredictable. To deal with this level of change, many strategy formulation processes have been developed, which has been one of the key tasks for managers and researchers throughout the 1980s and 1990s.

The future might hold many uncertainties and complexities in this dynamic world, which the companies should withstand. Therefore, companies need to develop and review their strategies almost continuously to stay ahead of the competition (Feurer et al, 1995; Mintzberg). Strategy management requires considerable resources and effort in terms of managerial time, with increasing pressures for innovation, knowledge sharing and co-operation.

The successful operation of manufacturing organisation involves the co-ordination of a number of individual tasks / actions to meet both the stakeholders' requirements and the organisation's objectives. The need for a strategy management process has been recognised by some researchers, e.g. Kaplan and Norton (2001), Feuerer et al (1995). The existing strategy management frameworks, models, methodologies, tools and techniques, have been classified according to their scope as follows:

- Business wide
- Functional / operational focused
- Business Processes focused

There have been comparatively few attempts to strategy management formulation process at the business wide level model, most of which are highly conceptual. They have a number of distinctive stages with limited feedback between them. Furthermore,

most models at business wide level offer only general guidelines into the practical process of strategy formulation. On the other hand, functionally based models place greater emphasis on the practical process of operation / manufacturing strategy formulation, lack of adoption of manufacturing concept within the corporate strategy (within the framework of organisation strategy, manufacturing and operation strategy is traditionally viewed as a functional level strategy). Business processes focused models attempt to combine the rigour of the business wide models with the perspective on strategy formulation in which business processes are central. Moreover, judgment of the resulting strategy, although seen to be important, is largely neglected by all scope of the models.

Although all different strategy management process approaches within different scope serve adequately as a general solution and insight, they have particular weaknesses and uses. There are many similarities among the tools and techniques for many of the approaches. The parallelism and similarities between these vary and tools within each approach help to regard them as a single strategy management approach.

1.2. Objectives

The main objective of the work presented in this thesis has been to study 'strategy management' concepts, frameworks, methods, tools and techniques. This was to *develop a better understanding of the effect of a business process based approach to strategy management.* In conducting this study a number of development gaps (strategy management process requirements) were identified and appropriate tools and techniques were developed to address these gaps. This gap led the researcher to believe that understanding the feasibility, use and effect of business process based approach to strategy management is an important and under-researched subject.

The background to this research is further elaborated on an introduction to chapter 2 (i.e. literature review). The process-based approach was developed to address these gaps. The

validity of the new strategy management process has been accomplished through its application in the workshop (subjective test-management perspective) and case study organisation (objective test by design and case studies).

In the context of this thesis the term 'strategy management' is used to describe strategy management as a process where an organisation defines its objective, formulates actions and reaches its desired destination in a proper timescale, then implements those chosen actions and evaluates the results.

1.3. Thesis Structure

The starting point of this research is based on the previous works by the following propositions:

- Strategy management / performance measurement should be viewed as a Business Process (Pearce and Robinson, 1988; Ansof, 1990; Wheelen and Hunger, 1992; Bititci et al 2001)
- Strategy management process needs to include the performance measurement process as inputs as well as outputs (Bititci et al, 1997; Owen, 1982)
- The strategic objectives need to be systematically deployed down to business processes, rather than functions because these are the processes that generate value for the business (Feurer, 1995; Flood and Jackson, 1981; Bititci et al 1997, 1999).

This research is structured into major four parts, namely:

- *Part 1: Identification of what is exactly required.*

Chapter 2 begins by reviewing strategy management in general, performance measurement, strategy performance, operations strategy and includes business processes literature, in particular. Following an in-depth review of literature, a set of requirements for a Dynamic Strategy Management Process was developed. These requirements

suggest that strategy management should be viewed as a business process. In this context Strategy Management is defined as “the business process by which a business develops, deploys, implements, monitors, reviews and re-develops its Operations Strategy”.

Chapter 3 carries on critically evaluating the existing strategy management frameworks, models, methodologies, tools and techniques against the requirements established in Chapter 2. This evaluation concluded that although the approaches reviewed collectively met all the requirements, individually none of the approaches fulfilled all of these requirements.

Chapter 4 describes the research methodologies used in this research. The choice of research methodology is discussed together with the methodological implications of case study approach.

- *Part 2: Development of how it is going to be done*

Chapter 5 outlines how a new operations strategy management process, namely PROPHECY process has been developed by the researcher to fulfil the requirements stated in the previous section. The reasons for adopting the particular strategy and operations management tools and techniques are presented.

- *Part 3: Validation of the methodology through objective (experiments) and subjective (workshops) test*

The PROPHECY process was tested using two alternative approaches: 1. broad and shallow, 2. deep and narrow. Chapter 6 summarises the broad and shallow approach. . The narrow and deep approach was conducted through implementation of the PROPHECY process in various case studies with four manufacturing companies. Chapter 7,8,9 and 10 describe these four case studies.

- *Part 4: Synthesis*

Chapter 11 compares findings from the four case studies. Chapter 12 discusses the strengths and limitations of the research methodology and key lessons from each case. Finally chapter 13 summarises the conclusions from this research and their implications for management practice. The contributions to the current knowledge of the research are highlighted in chapter 12 and some suggestions are made for future research in chapter 13.

Chapter 2 - Literature Review

2.1.Introduction

Manufacturing systems are complex and dynamic environments are composed of a broad range of inter-related technological, organisational, cultural, social, political and commercial factors. The changing environment demands new capabilities. The ability of manufacturing companies to adjust quickly and accurately to changing conditions will be an important issue for success in the future.

As a response to environmental changes, new strategic paradigms have appeared each offering a solution as to how a company should be managed and organised to be competitive. The list includes concepts like Performance Measurement, Business Process Engineering, Total Quality Management and so on. Therefore, especially over recent years, there has been considerable emphasis on performance measurement in all industrial and manufacturing companies as a means to:

- Focus and align executive teams, business units, human resources, information, technology, and financial resources to the organisational *strategy* (Kaplan and Norton, 2001)
- Control the *strategic* direction of the business and its constituent parts (Bititci et al 1998, Maskell 1991, Cross and Lynch 1988-1989, Kaplan 1983,1984, Neely, 1995)
- Drive improvement programmes in line with the *strategic direction* of the business (Bititci et al 1998, 2000, Neely et al 1995, 1997, 2000, Kaplan and Norton 1996, Glaberson 1985, Maskell 1991)
- Assess the implementation of *strategy* (Kaplan and Norton, 1996, Bourne et al, 2000)
- Test the validity of the strategy (Bourne et al, 2000, Kaplan and Norton 1996, Feurer and Chaharbaghi, 1995)

- To enhance the role of manufacturing managers in *strategic* decision-making resulting in better performance (Swamidass and Newell; 1987; Richardson et al, 1985; Ward et al. 1995).

Point of Departure:

Research into the missing link between manufacturing strategy and corporate strategy has evolved since Skinner's (1969) work on what is now called operations strategy. The objective of this research is to make a contribution to better understand the process of using a dynamic strategy management process in manufacturing companies. Consequently, this research studied and used elements of various models and frameworks in Strategic Management and Operations Strategy, but it was initially influenced by the following strategic improvement oriented performance measurement system developments:

Results of Integrated Performance Measurement Systems (IPMS), which is developed by the Centre of Strategic Manufacturing (CSM) at the University of Strathclyde (Bititci et al 1995, 1998, 2000). This work built upon the Balanced Scorecard (Kaplan and Norton, 1996) and EFQM models using the Viable Systems Model (Beer, 1985). The structure of this reference model is based on:

- *Systems thinking* based on Viable Business Structure (Bititci and Turner, 1998), integrates the CIM-OSA Business Process architecture (AMICE-ESPRIT, 1989) with VSM thinking, which also demonstrates that Business Processes are cybernetic (Beer, 1985)
- *Process orientation*, which focuses on key business processes to manage business performance. This model used CIM-OSA Business Process Architecture (ESPRIT Consortium AMICE, 1989).
- *Policy deployment*, which deploys the revised objectives and priorities to business units, processes and activities using performance measures (Bititci et al, 2000)

- *Competitive criteria and benchmarking*, which defines key competitive factors and position of the business and the business units within its competitive criteria (Bititci et al 1997)
- *Internal and external Control Systems*, which uses performance measures to continuously, monitor critical parameters on the internal and external environment (Bititci et al 2000).

IPMS research program defines “*Performance Measurement as a key business process and states that a Performance Measurement System should be a dynamic system by having an internal-external monitoring system, a review and an internal deployment system*”

Since the 1980s, different models have been developed toward better-integrated performance measurement systems. Kaplan and Norton (1990, 1996) introduced the idea of the Balanced Scorecard when they realised that financial indicators could not drive organisational performance in competitive environment. The companies have been using the Balanced Scorecard to:

- state the results of the company’s operations and the operational measures
- provide a clear view of the causes of the results
- clarify and update strategy
- link strategic objective to long-term targets and annual budgets
- conduct periodic performance reviews to learn about and improve strategy

Cambridge University also developed a process for designing performance measurement system (Neely et al, 1995) and Manufacturing Strategy Process (Platts et al, 1996). These processes are explained in two separate workbooks.

In Cambridge University’s Performance Measurement Model (Neely et al, 1995) and Kaplan and Norton’s “Balanced Scorecard” (Kaplan 1990, 1996) the performance measurement system starts from the company’s strategy. In large, it was stated that

managers, whose organisations were dealing with strategy, must first determine whether they have the resources to succeed, i.e. monitor only internal performance. Both models focus on supporting the more effective application of internal resources instead of external ones.

The foundations of this research are based on the following propositions:

- 1. Strategy management process needs to include the performance measurement process both as inputs as well as outputs (Bititci et al 1997, Owen 1982)*
- 2. Strategic objectives need to be systematically deployed down to business processes, rather than functions, because it is the business processes that generate value for the business (Feurer, 1995; Flood and Jackson, 1981; Bititci 1997)*
- 3. Strategy management process should be viewed as a Business Process (Pearce and Robinson, 1988; Ansof, 1990; Wheelen and Hunger, 1992; Childe et al., 1994, 1995; Goodman and Lawless, 1994; Bititci et al., 2000)*

Therefore, the initial aim of the research was to review the literature to explore the validity of the above propositions and, if appropriate, extend these.

Later in this chapter (page 56) the supporting arguments behind these propositions are clarified and discussed in full. The literature review presented in this chapter will demonstrate the validity of these three initial propositions as well as extending them to twenty three individual requirements a 'strategy management process' should fulfil.

Scope of the literature:

To fulfil such objectives, it was decided to include the following fields in the scope of the literature review:

- *Strategic Management:* All strategic management frameworks offer assistance to managers helping them to understand their business and its particular situation, and

strengths, and the level of management involved. Although this research area contains to the operations discipline, the nature of the linkage between operations strategy and business strategy or strategic management has been issue, which has attracted considerable interest over a long period (Wheelwright, 1984, etc.). Hence, this research seeks to move the debate forward by clarifying further the nature of existing Operations Strategy contribution to the overall company strategy.

- *Business Process Management*: The business exists to generate value for the shareholders. This value can be generated by concerning management of processes, people, technology and other resources in the production of goods and services. Naturally, each business has business processes (e.g. they need to get an order, manufacture the product and later sell it and, if necessary, support it). Therefore, the success of strategy is dependent on the successful business processes of its critical activities and inputs. As a result, this research takes into account business-process management literature in terms of how business process can be applied to Strategy Management Process.
- *Performance Measurement*: Strategic management is not so much about formal planning at top-level management, but more of a commitment process, open to all levels of staff. Therefore, operational strategy should facilitate decision making through its framework of integrated performance measures.
- *Strategy Performance*: Strategic Management requires considerable resources and effort in terms of managerial time with increasing pressures for innovation, sharing of knowledge and co-operation. It seems that the only way to assess the success or failure of a particular strategy (i.e. strategy performance) is by examining its outcome, i.e. reactively after a period of time. However, practitioners would like to have greater confidence that their chosen strategy is going to lead to successful results. Therefore, the active assessment of the performance of a strategy literature was also considered.

The review of this chapter is structured as follows:

- *Strategic management*

- Strategy definition
- Strategic management frameworks
- Alternative approaches to strategy deployment: Functional versus Business *Process*
- *Operations strategy*
 - Operations strategy frameworks
 - Operations objectives
 - Operations strategy decision areas
- *Performance Measurement*
- *Strategy Performance*: Factors, which effect success/ failure of chosen strategy
- Analysis of literature
- Conclusions

2.2.Strategic Management

2.2.1. Strategy Definition

The definition of the topic under research will avoid conflicting interpretations of what should be considered strategy and, by extension, what should be understood by the term strategic management.

The concepts of strategy originated from Greek word ‘Strategia’ or ‘generalship’. The person making ‘Strategia’ was called as strategus or strategos, meaning the leader (general) of an army (Meyer, 1994).

Drucker (1964) was the first researcher to ask important question, ‘what is our business’ and defined strategy as “understanding the particular business situation”. Abell (1980) tried to answer Drucker’s (1964) question by considering the concept of a product-market to be inadequate for the purpose of business definition. He argued that ‘*business definition is the pivotal act in the setting of business strategy*’. Following Abell (1980),

Thomson and Strickland (1990) considered that business definition comes from three factors; customers' needs; customers group; the technology used, and what functions are performed.

To bring order out of conflicts of business definition and strategic thought, and put forward an internally consistent, understandable and practical approach to strategy has been endeavoured by some researchers, such as Digman, 1990; Hofer and Schendel, 1986; Pearce and Robinson, 1988 etc.

A series of articles from the mid-1980s to mid 1990s by Hamel and Prahalad widen to traditional conceptual strategy in terms of showing the importance of strategic intent and the importance of leveraging and stretching core competencies to provide competitive advantages. Wheelwright (1984) and Mintzberg (1999) plunge straight into the semantic minefield by showing in practice that, the word "strategy" has been used in many different ways and implicitly accepting any number of definitions, whilst tending to reserve just one for individual formal purposes. Therefore, different strategy definitions from different researchers can be shown against the Mintzberg (1987) strategy concept with five Ps as illustrated in Table 2.1.

An interesting point that comes out from the literature is the wide variety of words and phrases employed by different researchers on the strategy definition, who seem unable to agree upon a standard terminology.

<u>Mintzberg (1987)</u>	<u>Chandler (1962)</u>	<u>Ansoff (1990)</u>	<u>Andrews(1971)</u>	<u>Hofer and Schendel, (1986)</u>
Strategy as a....	Strategy is ...	Strategic management is a systematic approach for managing strategic change which...	Corporate strategy is ...	Strategy has four components:
Plan looking ahead- a direction, a guide or course of action into the future, a path to get from current situation to long-term result	determination of the basic long-term goals and objectives of an enterprise			Scope: which specifies the extent of present and planned organisation/ environment interactions in ways that are most pertinent to organisation
Pattern: looking at past behaviour			The pattern of major objectives, purposes or goals and essential policies for achieving these goals	
Position: locating of particular product in particular markets	an allocation of resources necessary for carrying out goals	Positioning of the firm through strategy and capability planning		Resource deployment which are 'past and present resource and skill deployment that will help achieve its goals and objectives
Ploy: competitive moves or manoeuvres aimed at reducing the probability of competitor retaliation or in some way changing competitive bargaining power	an adoption of courses of action	Real-time strategic response through issues management		Competitive advantages which are the unique competitive positions an organisation develops 'through its pattern of resources deployment and/or scope decisions
Perspective: organisational fundamental way of doing things that refers corporate personality, culture, ideology or driving force...so on.		Systematic management of resistance during strategic implementation	To define what business the company is in or is to be in and the kind of company it is or is to be	Synergy, which is the joint effects the organisation seeks by its resource deployment and/or scope decisions

Table 2.1. Strategy Definition Comparison

<u>Pearce and Robinson (1988)</u>	<u>Digman (1990)</u>	<u>Hamel and Prahalad (1980-1990)</u>	<u>Wheelwright (1984)</u>
<p><i>Strategic management</i> is the set of decisions and actions resulting in the formulation and implementation of strategies designed to achieve the objectives of organisation. Strategy ...</p> <p>Large scale, future oriented plans for interacting with the complete environment to optimise achievement of the organisation objectives</p>	<p><i>Strategy as..</i></p> <p>The scope or domain of action within which the organisation tries to achieve its objectives</p> <p>The skills and resources that the organisation will use to achieve its objectives</p> <p>Advantages the organisation expects to achieve over its competitors through its skills and resource deployments</p> <p>Synergies that will result from the way the organisation deploys its skills and resources</p>	<p>Strategy is...</p> <p>Consistency of direction over the long term and point of view about industry evolution and how to shape it</p> <p>Resource leverage Competition as encirclement</p> <p>Stretching the business beyond its apparent capacity</p> <p>Risk taking- a stretching aspiration that is de-risked through the resource leverage Big bugs- and intellectual and emotional commitment that ensures consistency and constancy</p>	<p>Strategy is...</p> <p>Describe lengthen horizon to accomplish such activities and observing their impact in the time being</p> <p>Provide a pattern of decisions across a variety of sub areas</p> <p>Comprise of not only resource allocation processes but also day to day operations at all level organisations</p> <p>Provide a discipline managers to take careful look impact ahead periodically instead of time has elapsed</p>

Table 2.1. Strategy Definition Comparison

Heracleous (1998) summarised Strategic Management as the process of integrating strategic thinking and strategic planning, as illustrated in Figure 2.1.

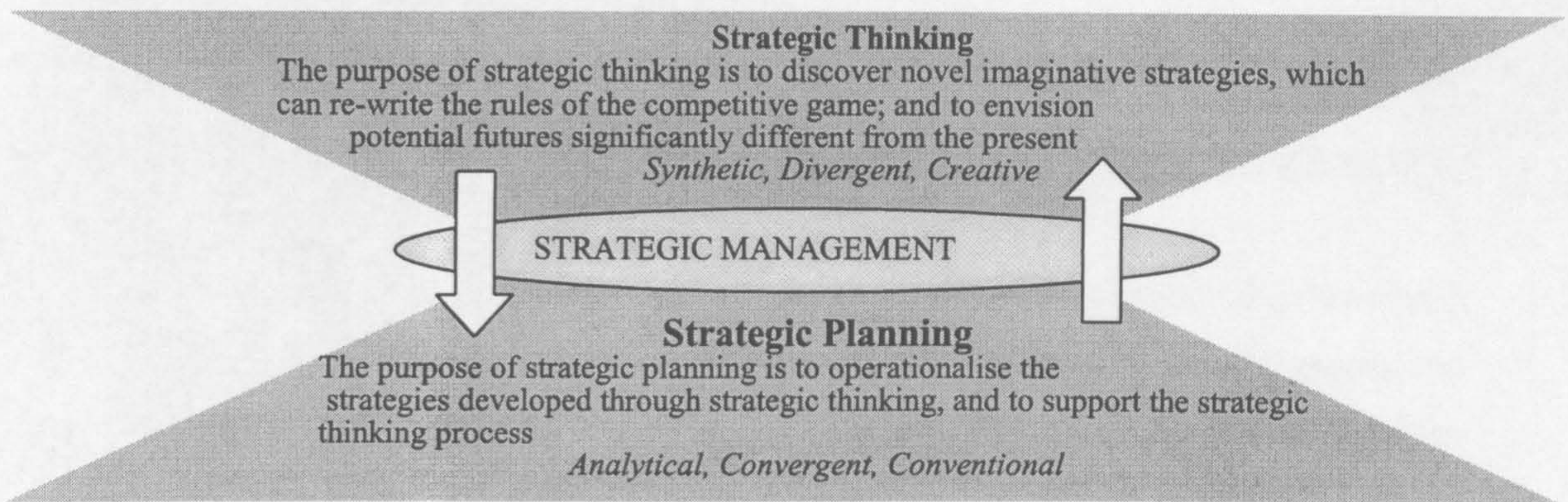


Figure 2.1. Strategic Thinking and Strategic Planning (adapted from Heracleous, 1998)

According to the above literature on strategic management and strategy definition, it can be concluded that:

Strategy is a management discipline and strategy can

- *be a unique positioning of a company for different markets*
- *enable key decision makers at all levels of an organisation resulting in the formulation and implementation by considering of own practical experience, business, market and environmental requirements*
- *be long and short term*
- *provide the basis for trading-off and selecting options (e.g. equipment, people, resource allocation, etc.)*

This following section underlines the development of classification to aid strategic management.

2.2.2. Classifications

Strategy has been the basis of many empirical studies and has led to the development of models in order to describe and understand the phenomenon. Researchers proposed

different generic strategies, which are mostly based on previous work (e.g. Porter (1980) generic strategies). These generic strategies offered companies' fixed strategies or organisation classification according to their competitive advantages rather than taking them through a process to create a bespoke strategy (e.g. Hayes and Wheelwright (1984); Sweeney (1991, 1993); Richardson et al (1985). The main studies (Table 2.2.) include:

1. Miles and Snow (1978) have classified firms on the basis of their behaviour with respect to competitors (e.g. reactors, analyser, defenders) or new opportunities (prospectors vs. reactors) to show relationships between strategy, structure, technology and process.
2. Stobaugh and Telesio (1983) used the manufacturing task to define their strategic group. They offered their international manufacturing strategies - cost based, technology based and market-driven through using 100 multinational case studies.
3. Hayes and Wheelwright (1984) developed a four-stage framework indicating the evolution of the manufacturing function as a strategic entity. The framework is used in the analysis of the initial case study data to provide a scale for the view of manufacturing and its role within each organisation in terms of internally neutral, externally neutral, internally supportive and externally supportive.
4. Richardson et al (1985) developed a classification of business units according to six mission statements and four manufacturing tasks which are new product centre, custom innovators, cost minimising job shops and cost minimisers.
5. Miller and Roth (1994) defined three groups of generic manufacturing strategies- Caretaker, Innovator and Marketer by examining 164 large American manufacturing companies
6. De Meyer (1990) used results from the European Manufacturing Futures survey to identify three groups - high performance product groups, manufacturing innovators and marketing oriented.
7. Sweeney (1991, 1993) proposed a strategic manufacturing framework to link customer service strategies to four types of strategies: marketer, innovator, caretaker, and re-organiser.

8. Treacy & Wiersema (1993) focused on three value disciplines in order to redefine customer value in the light of success of industry leaders, as follows: operational excellence, product leadership and customer intimacy.
9. Ward et al (1996) identified four strategic configurations: Niche differentiators, broad differentiators, cost leaders and lean competitors. The configurations are traced conceptually through competitive strategy, organisational structure, environment and a strategic framework of manufacturing capabilities and decisions.

These different generic strategy and organisation classifications can be summarised against Sweeney's generic strategy classification with caretaker, marketer, reorganiser, and innovator, as illustrated in Table 2.2.

To conclude, in general terms generic strategies or organisation classifications are very useful if the company has only one product or market group. If each business unit within the company tried to compete in different ways, then the generic strategies (e.g. Porter's generic strategies, Sweney) application will meet with some difficulties in terms of maintaining different skills and resources as well as different structures and technology within the same organisation. Even if the company competes in the same way in a different business unit, which exists to produce different products for customer requirements, there is a danger of the company being stuck in the middle.

Sweeney (1991)	Stobaugh & Telesio (1983)	Roth & Miller (1994)	De Meyer (1990)	Edmaston and Wheelwright (1993)	Sweeney (1993)	Hayes and Wheelwright (1984)	Miles & Snow's Company types (1978)	Richardson's Manufacturing tasks	Treacy & Wiersema (1996)
Caretaker	Cost-driven strategy	Caretaker		The quick relief of mode of response to manufacturing challenge (1 st mode)	Quick fix	Internally neutral	Defenders	Cost minimisers	Operational Excellence
Marketer	Market-driven strategy	Marketer	Marketing oriented group		Stretch	Externally neutral	Marketer		Customer intimacy/Product leadership
Reorganiser			High performance product group	The use of organisational tools mode of response (2 nd mode)	Catch up	Internally supportive	Reorganiser	Custom innovators	Operational excellence
Innovator	Technology-driven strategy	Innovator	Manufacturing innovators	To develop a competitive edge through manufacturing (3 rd mode response)	Break-through	Externally supportive	"Reactors" (can be)	New product centre	Product leaderships

Table 2.2. Strategy Classification

PAGE

NUMBERING

AS ORIGINAL

2.2.3. Strategic Management Frameworks

The following paragraphs provide a brief overview of the more significant developments.

2.2.3.1. Basic Financial Frameworks

Where companies concentrate on projecting their financial indicators into the future rather than formalising their strategy (Gluck et al 1980). Many companies still define their long-range plans in accounting terms and use financial models to make their projections. This may help to define the subsidiary / parent relationship but would offer little help in defining the strategic direction of the business, or in achieving concentration or consistency (Pearson, 1999).

2.2.3.2. Forecast Based Planning

This framework is about more effective planning for growth through environmental analysis, and static analysis of resources (Gluck et al., 1980). Strengths and weaknesses, opportunities and threats form the basis of many forecast - based budget planning. With this method, companies taking that step undoubtedly understood more, about their own business than they did before (Pearson, 1999).

2.2.3.3. Externally Oriented Planning

This framework is about managing increased responses to markets and competition through situation analysis and competitive assessment, evaluating of strategic alternatives and dynamic allocation of resources (Gluck et al., 1980).

Different from the forecast based planning which is external to the firm, this planning lies primarily within the firm in terms of diversifying the company into business units.

While externally oriented planning advantage derives from offering a number of alternatives to the managers, each choice is usually characterised by a different profile or gives priority to different objectives. A firm could gain advantages if it is able to effectively be aware of and use their resources for business development. Besides, the weakness of this approach can affect the firm's long-term competitive strength and well being if the explicit choices are made by the middle managers without top-level participation.

2.2.3.4. Evolutionary Frameworks

These are based on a systems approach, in terms of the evolution of products, industries and businesses. One point of view is that "*in searching for the best strategy, it is best to let the environment do the selecting, not the managers* (Whittington, 1993)". It can be argued that the environment must be a key input to strategy development but managers must focus the organisation's direction to effectively compete in the chosen market. For the researcher's view, companies do have the power to influence the environment, and, therefore, product lifecycle frameworks (Pearson, 1999) and experience curve (BCG, 1968) types of approaches are considered to provide more appropriate frameworks for Strategy Management.

2.2.3.5. Portfolio Frameworks

The most commonly used derivative of this approach is the Boston Box (BCG, 1969), which positions an organisation's product portfolio in a Growth-Share matrix. Other examples in this category include the directional policy matrix (Hax and Majlax, 1983a) and the business strength / market attractiveness matrix (Hax and Majlax, 1983b). In general, these approaches offer to analyse a company's product portfolio from an economic and/or market perspective but they do not offer any significant strategic direction.

2.1.3.6. Competitive Strategy

This approach emphasises the analysis of the competitive forces within the economic environment to steer an organisation towards adopting a strategic posture to differentiate it from its competitors (Porter 1979,1980).

These forces act on companies and set off three generic business strategies: overall cost leadership, differentiation and focus. In core principle, the first two dimensions of competitive strategy were considered as shown in Figure 2.3. (Porter, 1988):

1. Strategic target- market scope: An idea for describing the firms' competitive strategy according to their market scope (focus or broad) and their origin of competitive advantages (cost or differentiation)
2. Strategic Advantages: A supposed proposition about the sustainable competitive advantages: A firm must concentrate on one of the generic strategies through making clear choices about the type of advantages and also such advantages scope in order to avoid being "stuck in the middle".

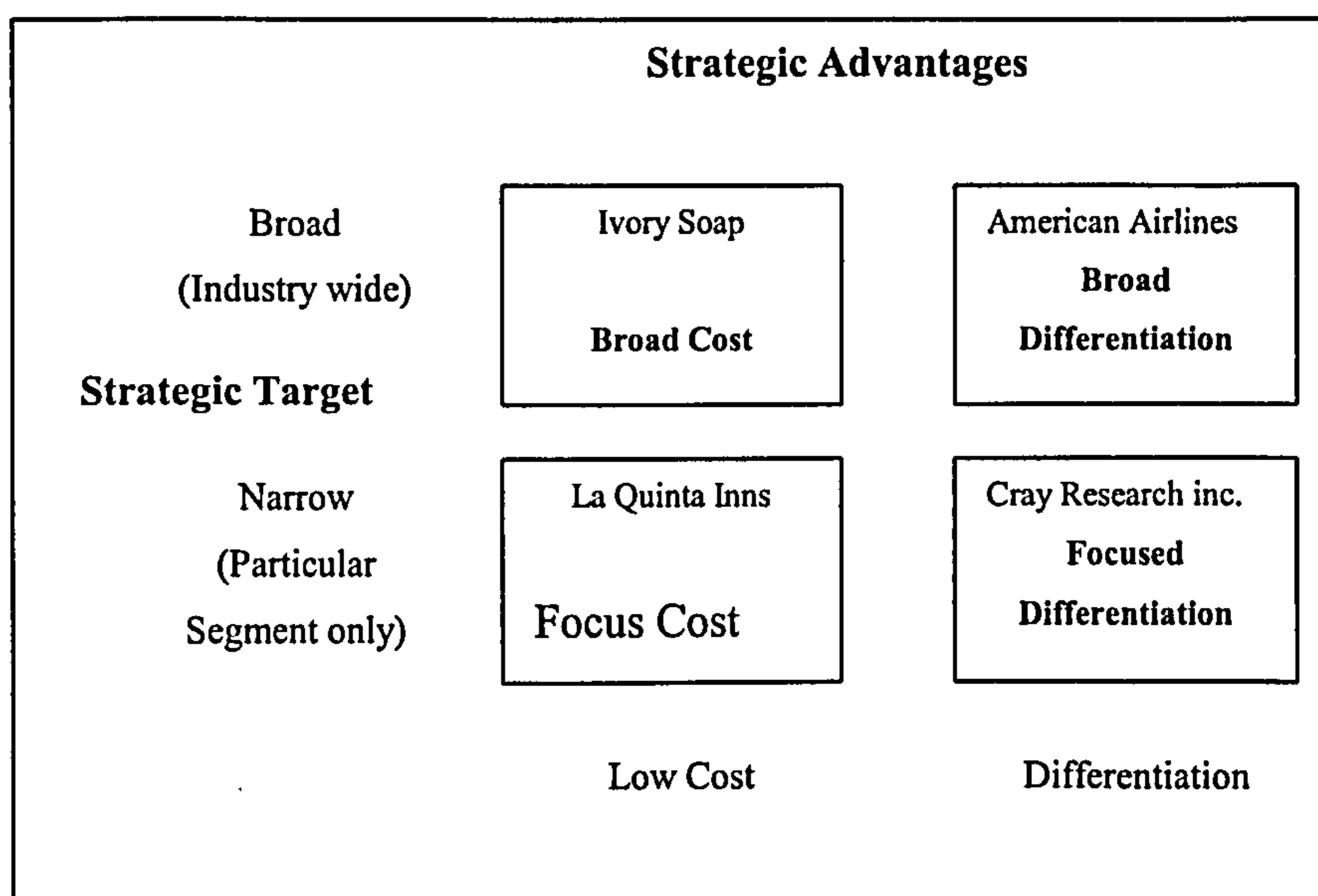


Figure 2.3. Porter's Generic Strategies (Porter, 1988)

Although the generic strategies have been lead to new competitive strategy development and are also popular with the industry because of their simplicity, they have been subject

to some criticism. Murray (1988) and Hendry (1990) highlighted the difficulty of linking generic strategies to external constraints. Hendry (1990) also illustrated that the strategy types were not clear as to how such strategies can be implemented in different business units within the company.

2.2.3.7. Transformational Frameworks

These frameworks aim to focus and concentrate, over time, on organisational energy to maximise value (Grundy, 1993; Day and Fahey, 1990) through market based value propositions (Treacy and Wiersema, 1993) or the development of core competencies (Prahalad and Hamel, 1990; Snyder and Ebeling 1992; Doz, 1994; Campbell and Lunch, 1997).

Unlike many of the previous perspectives, the concept of core competencies considers some dilemmas in terms of balancing competence leverage opportunities (Doz, 1994, pp.52-74). Each dilemma (e.g. emergent vs. programmatic) comprises a process of organisational learning as shown in Table 2.3.

Key Processes	Natural Path		Managed effort
1. Competence development	Emergent.	vs	Programmatic
2. Competence diffusion	Apprenticeships	vs	Explication
3. Competence integration	Specificity.	vs	Aggregation
4. Competence leverage	Exploitation	vs	Exploration
5. Competence renewal	Incrementalism	vs.	Discontinuity

Table 2.3. Dilemmas in core competence management (From Doz, 1994)

Some researchers have used different terminology for core competence, particularly emphasises on 'collective learning in the corporation, or 'core capability' as better expressing the dynamic learning processes involved (Campbell& Lunch, 1997).

Snyder and Ebeling (1992) used the phrase 'key activity' for core competence. They demonstrated that *'gaining a strong relative share in key value-added activities is more*

relevant to competitive position than gaining share of the related product market'. They proposed three criteria to define key activities as follows;

1. It must offer significant added value
2. Represent a unique capability that provides enduring competitive advantages
3. Have a potential to support multiple end products and services.

They used activity-based benchmarking, employee and asset distribution and 'what if' scenarios to achieve a managerial consensus on the key activities for the company.

Summary:

Table 2.4. summarises the characteristics of the main strategy management approaches. This table showed that the earlier frameworks tended to be more limited than later ones, particularly focusing only on financial indicators.

These approaches to strategy management highlighted the need for ways to integrate strategic thinking and strategy management, which are both practical and focused on key strategic issues, e.g. financial information, competitive criteria, SWOT analysis, value propositions etc. Earlier frameworks have many similarities but they suggest that they offer a different strategy management approach. However, it would be more usefully to emerge or combine these into a single strategy management process.

Strategy management approaches	Internal Analysis	External Analysis	External-Internal Relations	Review mechanism (Action to change)	
				Internal	External
Basic financial frameworks	5 year budget inc. P&L, balance sheet, cash flow	-	-	-	-
Forecast based planning	As above + strengths, weaknesses	Threats and opportunities	?	-	-
Externally oriented planning	As above + business units, priority of different objectives	Threats and opportunities	Yes	Yes	
Evolutionary frameworks	Inputs and outputs	Outputs and inputs	Yes	Yes	-
Portfolio frameworks	Relative market share, competitive capacity, strengths factors	Market growth, industry attractiveness (prospects)	Yes	Yes	-
Competitive strategy	Business positioning	Five forces shaping industry profitability	Yes	Yes	Yes
Transformational frameworks	Core competencies, product characteristics	Value propositions, competitors, customer perceptions and needs	Yes	Yes	Yes

Table 2.4. Characteristics of strategy management approaches (Adopted from Pearson, 1999)

2.2.4. Alternative approaches to strategy deployment

The purpose of this section is to demonstrate how the word “strategy” in the business is commonly used in terms of organisational levels and how it is deployed or propagated throughout these levels.

Strategy Management is frequently described in terms of a hierarchy of strategies, even if some academics and practitioners, e.g. Hayes and Upton (1998), Hayes and Pisano (1994) and Porter do not agree on Strategic Management hierarchy. They described Strategy Management Process as “the strategy for the whole company and not the strategy of its parts”. Other researchers, such as Skinner, Hill, Platts and Wheelwright

illustrate Strategy according to its organisational level in terms of two alternatives approaches: functional and process

2.2.4.1. Functional Approach

Traditionally, business models have depicted companies as being made up of a set-of functions. Successive models have tended to add to this depiction by linking together competitive criteria, decision areas such as manufacturing decisions areas and performance measurement with only minor modifications to this basic theme. In this field, models have been developed at a conceptual level instead of as a Strategy Management Process, such as Skinner (1978) and Hill (1993).

Traditional Strategy Management Processes look at strategy at three levels (Hofer and Schendel 1978; Wheelwright 1984). These are:

1. Corporate What set of business should we be in?
Strategy: Selecting the business in which the firm will (and will not) participate
 Acquiring and allocating resources among the selected business to create value for the firm's public (constituencies)
2. Business How should we compete in XYZ business?
Strategy: Clarifying the boundaries of the business to be served
 Selecting the desired competitive advantage to be pursued
3. Functional How can this function contribute to the competitive advantages of the business?
Strategy:
 1. Determining the base on which the function will support the desired competitive advantage
 2. Integrating and co-ordinating the function with other functions to which it interfaces

Traditional functional techniques for formulating strategies normally first concentrate on identifying potential attractive markets and then looking at whether it is feasible and possible to enter them (Hammer and Champy, 1995). This approach and the above emergent stakeholder requirements necessitate a compatible company structure. The

structure alluded to by the above requirements call for a systems way of thinking about support and value-adding activities.

In short, corporate level strategies address what business an organisation plans to participate in and how to allocate resources amongst those businesses. Business level strategies deal with how the organisation plans to compete in its specific businesses. Functional level strategies are included with the principle functions within a business including marketing, finance, human resources, research and development and manufacturing (Caron John, 1986). Within this strategy of hierarchy, corporate strategy drives business strategy, which then drives functional strategy.

Within this hierarchy, Operations Strategy can be seen in three places,

1. At the Corporate Strategy level taking a broad view a set of single businesses (Hayes (1985), Hayes and Pisona (1994), Hayes and Upton (1998)).
2. At business or business unit level (Focus (2000))
3. One of the Functional Strategy at the business level (Hill, Wheelwright, Platts et al and so on).

2.2.4.2.Limitation of Functional Approaches

Many authors discussed the limitations functional approaches (Talwar 1997, Gianesi 1998, etc.) while others identified a need for process approaches (Hammer and Champy, 1995 and Hall et al, 1993). The disadvantages of a functional approach can be categorised into four headings. These are illustrated in Table 2.5.

Structure

- Functional hierarchies generate their own self-serving tasks and complexities as managers seek to expand their influence and power (Talwar, 1997)
 - Staff are relocated along the needs of a hierarchy to satisfy the targets against which the hierarchy is measured (Talwar 1997)
 - Functional Strategies aim to ensure 'high vertical' agreement. With this approach some proposals are difficult to realise without 'extremely diligent management.' (Gianesi, 1998)
-

Process

- A Company that automates its production process without understanding the impact upon other functions is laying the groundwork for a potentially acrimonious future relationship. This situation impairs its ability to compete as effectively as companies that have co-ordinated and matched more closely the changes in their product and process structure (Hayes et al., 1979)
 - An indication of how a function is performing cannot always indicate its impact upon the overall performance of a complete process (Wheelwright). Functionally based accounting and control systems, therefore, do not ensure a 'balanced set of measures' (Talwar, 1997)
-

Customers

- Customer satisfaction and service delivery is often not a functional priority (Talwar, 1997)
 - Functional orientation may not correspond with doing what is best for the customer or shareholder (Talwar, 1997)
-

Co-ordination

- Priorities between functions may differ causing possible delays as work waits for processing (Gianesi, 1998)
 - Functional structures often not only cultivate unhealthy competition but also foster conflict and barriers between parts of an organisation. (Talwar, 1997)
 - Decisions at different levels within functions often have their own personal objectives and agendas. Decisions and actions are typically made within the scope of individual functions (Talwar, 1997)
 - Hierarchical and bureaucratic functional organisations tend to favour 'non-synergetic functional objectives'. Individual functional decisions tend not to be coherent but rather may conflict and may not contribute at all to wider business and corporate objectives (Gianesi, 1998)
 - A functional approach cannot co-ordinate effectively the essential elements of strategy development, such as its resources, skills, market situation, competitive pressures, and general business philosophy (Hayes et al., 1979)
-

Table 2. 5. Disadvantages of Functional Approach

The functional based approach, however, views an organisation as a set of individual departments. Each department has a tendency to regard themselves not as a part of a whole but rather as the whole. Feurer, 1995 illustrated the disadvantages of functional approach and pointed towards the need for a process view to strategic management, which is discussed in greater detail in the next section.

2.2.4.3. Business Process View

Since Hammer and Champy (1995) introduced the concept of Business Processes, there has been considerable research into the field ranging from Business Process definition, Business Process architecture, Business Process Models to Business Process improvement method, Business Process Re-engineering and so on. Today there is still considerable confusion, particularly amongst researchers, as to exactly what comprises

BPR and how it is different from other changes initiatives, such as the open system theory. Therefore, it is necessary to classify business process perspectives.

There are three streams of business process perspectives (Tinnila 1995).

1. The first stream sees IT as an enabler of business processes improving operative efficiency as shown in Figure 2.4.

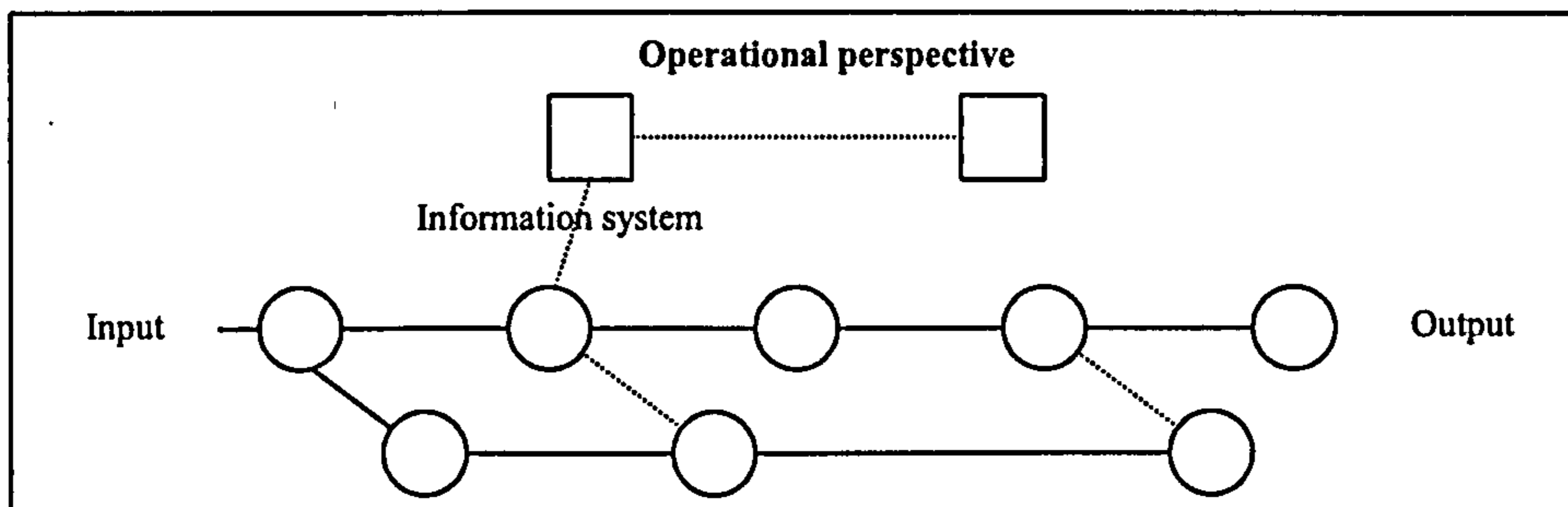


Figure 2.4. Operational perspective

2. The second observes the potential of business process in redesign in organisations as shown in Figure 2.5.

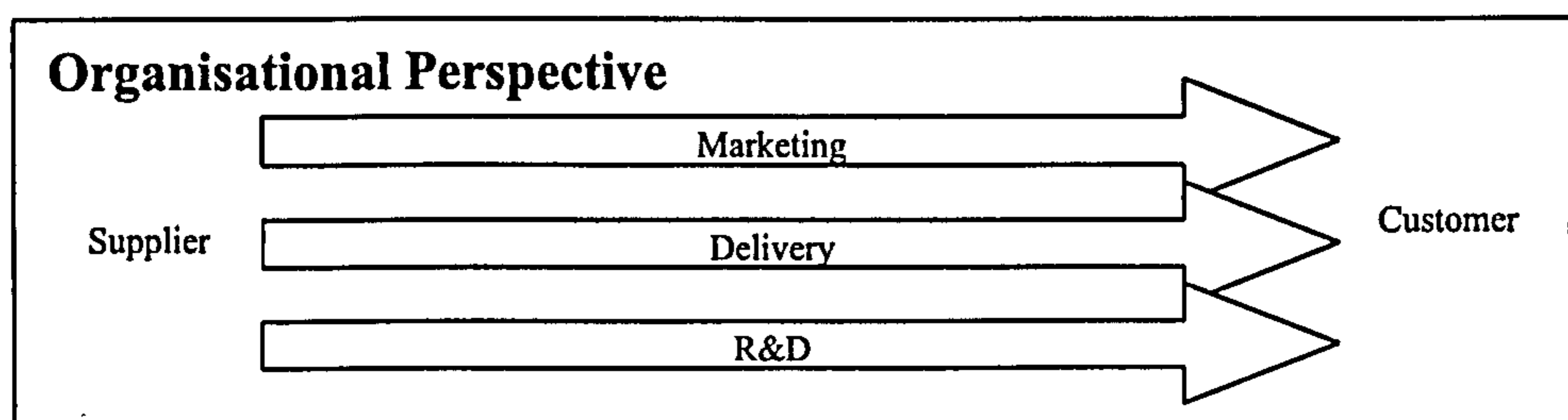


Figure 2.5. Organisational perspective

3. It recognises business processes as units of strategic planning and, therefore, acknowledges the need to connect them more closely to business strategies (Figure 2.6).

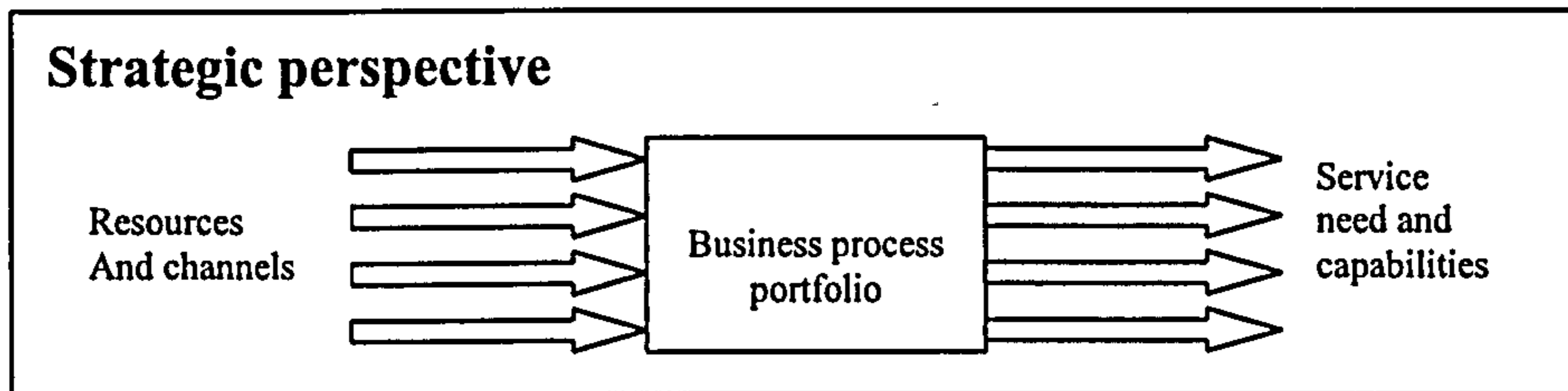


Figure 2.6. Strategic perspective

In cybernetics, the term organisation has a specific meaning, being concerned with the relations between the processes that define a system as a unity. Virgin (1998) shows a degree of compatibility between business process and cybernetic concepts as both share:

- a central concern with viability, i.e. the survival of the enterprise as an autonomous entity through a focus on core business process
- a recognition that enterprises must have a clearly defined purpose if they are to maintain their identity
- an awareness that radical structural change may be needed in response to perturbations generated by the enterprise's environment
- an acceptance that, at breakpoints, an enterprise may have to undergo business transformation if it is not to atrophy (in cybernetic terms this would, by definition, involve the death of the enterprise and a rebirth with a new pattern of organisation)

The work conducted through the ESPRIT CIM-OSA project developed a generic Business Process architecture (AMICE-ESPRIT, 1989), The CIM-OSA standard (AMICE-ESPRIT, 1989) has sub-divided processes into three main categories "Manage, Operate and Support".

- The Manage Processes relate specifically to business direction and strategy as well as business planning and control (Childe et al, 1994,1995)
- The Operate Processes directly produce value for customers
- The Support Processes exist to support the Operate and Manage Processes, therefore, Operate and Manage Processes are customers of the Support Processes (Bititci et al, 1999). They include the Financial Management, Human Resources

Management, and Information Systems Provision (Childe et al. 1994, 1995; Bititci 1999; AMICE, 1989).

Bititci (1999) identified that the Viable Systems Model (VSM) (Beer, 1985) provides a powerful application of systems theory for strategic analysis and planning of a business. Bititci went on to develop the Viable Business Structure, which integrates the CIM-OSA Business Process architecture (AMICE-ESPRIT, 1989) with VSM thinking, which also demonstrates that Business Processes are cybernetic. This view is strongly supported by Virgin (1998) who concluded that VSM was developed as a guide to the organisation of Business Processes according to cybernetic principles.

Figure 2.7. shows how the VSM and CIM-OSA Business Process Architecture were combined to provide an integrated framework. It provides a structure for planning and managing in today's dynamic environment (Bititci, 1995, 1999)

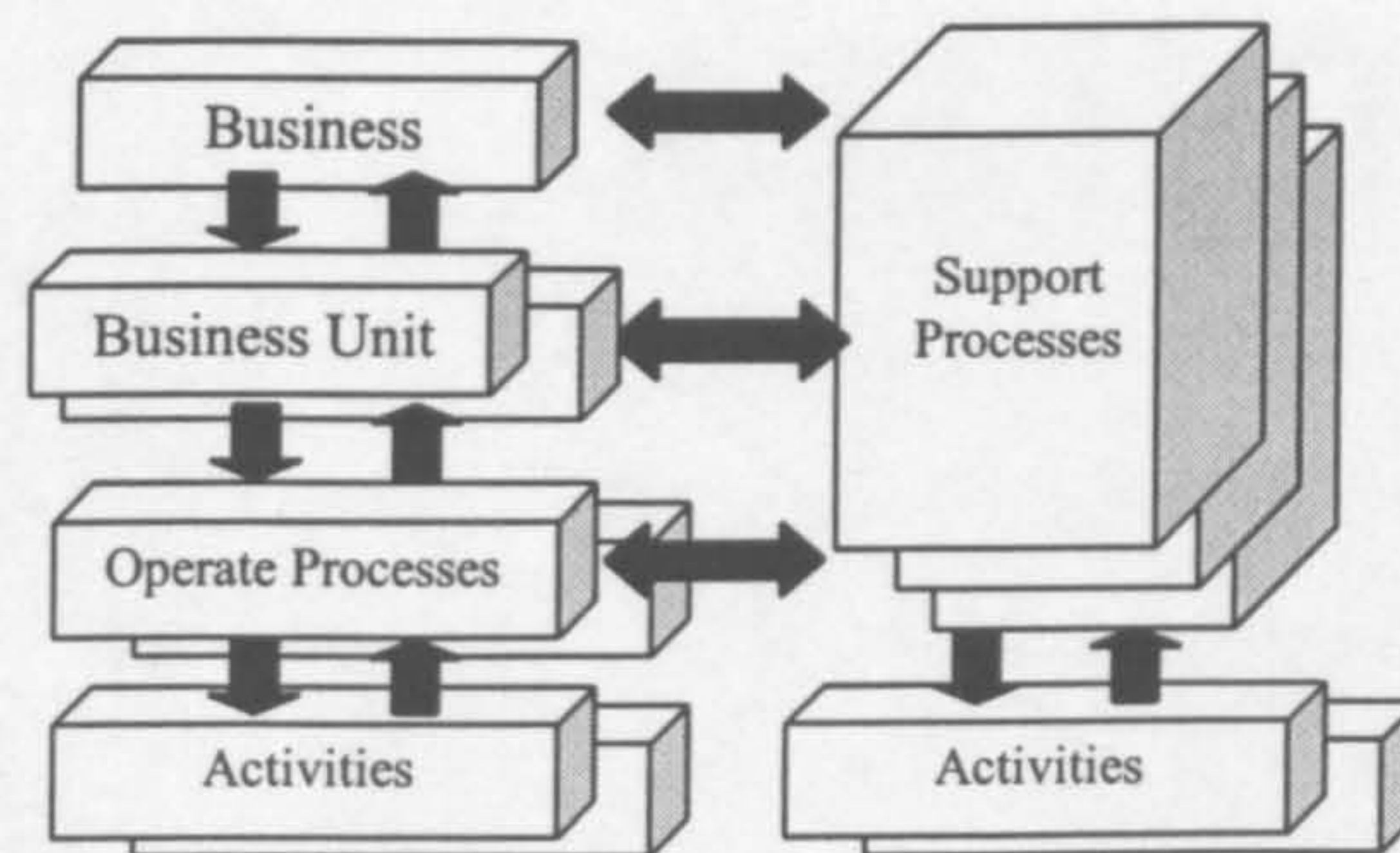


Figure 2.7. An overview of the Viable Business Model (Bititci, 1995)

As a result, the Viable business structure can be examined at five different levels (Bititci, 1999):

- The Business: The business level represents the entire business, which consists of a number of logical or physical business units
- Business Unit: A business unit is defined as the portion (physical or logical) of the organisation, which serves a particular competitive market segment with particular

competitive requirements. In a business, business units are distinguished from one another by the differing market requirements.

- **The Operate Processes:** Each business unit, in turn, consists of a number of business processes, which represent the operations of each business unit. These processes are the processes that generate value for the business unit
- **The Support Processes:** Support Processes exist to support the Operate and Manage Processes
- **The Activities:** Each business process, in turn, consist of a number of activities which may be sequential and / or parallel within the process

Bititci et al (1999) concluded that the function of manage processes is to ensure that the Operate Processes and Support Processes function efficiently and effectively so that the overall business fulfils its stakeholders requirements.

2.2.4.4. Comparison Between Functional and Process Based Strategic Management Process

The viable business structure in this section has one significant difference to the traditional model for Strategy Management. This difference is that it requires Business (Corporate) and Business Unit (Business) strategies to be integrated within strategies for core Business Processes and Support Business Processes rather than functions (see Figure 2.8.)

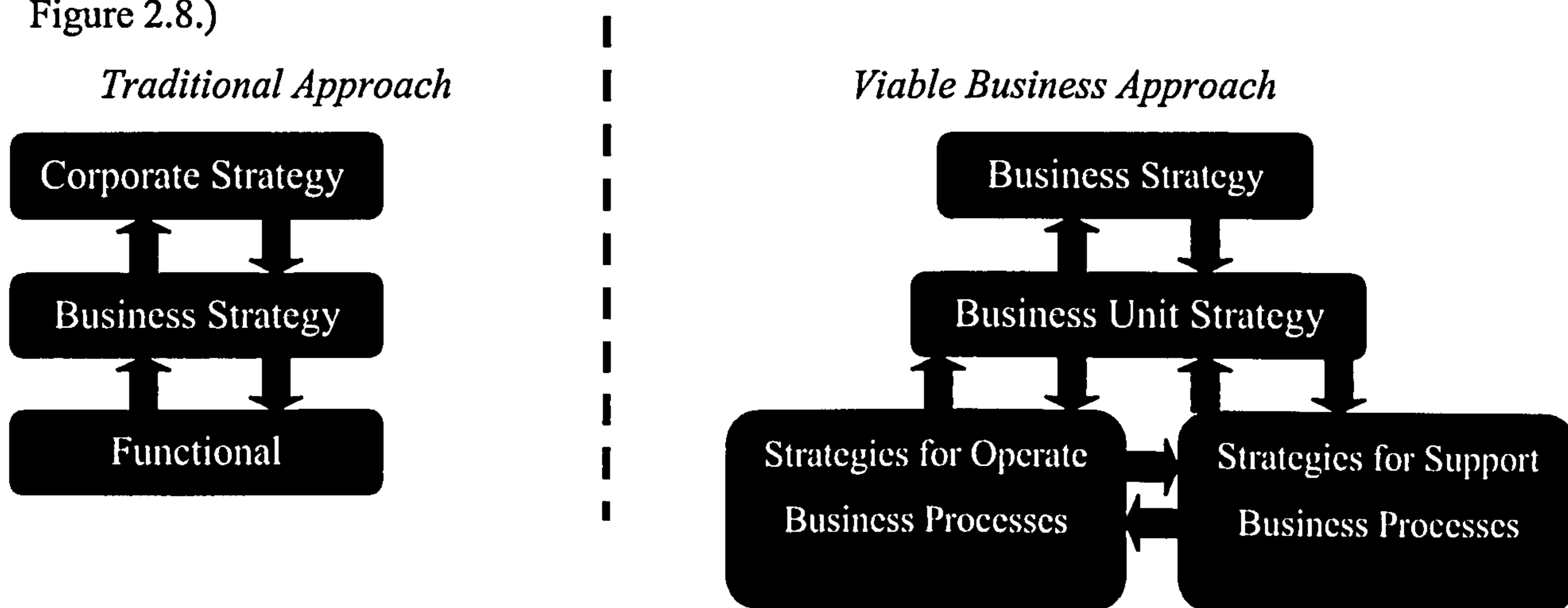


Figure 2.8. Comparison between Strategy Management Hierarchies

In general, a business process-based approach adopts a top down perspective that views a whole organisation as a single proactive, purposeful system (Flood and Jackson, 1981). The functional approach, however, views the organisation as a set of individual departments. Each department has a tendency to regard themselves not as a part of a whole but rather as the whole (Feurer, 1995).

A process perspective adopts a long-term perspective toward strategy development, problem solving and learning. This approach tends to provide optimal solutions across functions (Feurer, 1995). A functional perspective focuses on shorter-term solutions that are optimised for individual functions only. This approach tends to provide few opportunities for strategic, learning and improvement (Talwar, 1997)

In Table 2.6. Slevin and Colvin (1990) compare functional and process based management roles. Table 2.6. illustrates the benefits of process orientation approach, which provides opportunities for more idea sharing, innovation, and co-operation. It makes possible improvements to the performance of the whole organisation because of a shift from localised specialist knowledge to shared and integrated knowledge across the whole system.

<i>Element</i>	<i>Functional Approach</i>	<i>Process Approach</i>
Channels of Communication	Highly structured information flows	Open free-flow of information
Operations	Uniform and restricted	Vary from business unit to business unit
Authority for Decisions	Taken within formal line management positions	Taken by empowered individuals with relevant expertise
Adaptability	Slow and reluctant even when business circumstances warrant change	Changes as needed in-line with relevant continuous improvement
Work emphasis	Formal procedures handed down	Devise own effective processes
Control	Tight though strict, formal systems	Devise own measurements in-line with fulfilling process roles
Behaviour	Contained by need to follow job descriptions	Roles and responsibilities evolved to meet needs of processes
Participation	Little information is handed up, decisions, flow down	Team working with co-operation between teams
Management	Command and control	Empowers, enables and motivates

Table 2.6. Comparison of functional and process based management roles

(Adopted from Slevin and Colvin, 1990)

While the exact methodologies to be used are the subject of some discussion, it can be seen that Business Processes are strategic, cross-functional activities that should be integrated with other aspects of management the business to succeed.

2.3. Operations Strategy

2.3.1. Operations Strategy Definition

An interesting point that emerges from analysis of the extensive literature is the wide variety of words and phrases used by different researchers on the operations strategy concept, who seem unable to agree upon a standard terminology.

Although there is no generally accepted definition of operations strategy, several definitions have appeared which uses a single term to describe the broad concept of operations strategy. Skinner (1978) used the concept of manufacturing task, whilst Richardson et al (1985) used the concept of manufacturing mission and manufacturing task.

Mayer and Moore (1983), Fine and Hax (1985) and Kotha and Orne (1989) all present approaches for developing manufacturing strategies, which address the need for operations focus.

It is generally agreed upon that strategy refers to the long term for the whole company and not the strategy of its parts (Pisano and Upton, 1998; Hayes and Pisano, 1994; Porter, 1997). Beyond this level of definition strategy can be seen as “the unique positioning a company in the market” (Hill, 1985; Wheelwright, 1984).

Porter (1997) tries to find a way to associate a whole set of functions to create value for different customers within the same market. Business strategy should focus on creating

value that is independent of each business unit value. This means developing horizontal strategies that coordinate business processes and developing objectives to encourage resource and skill sharing. Therefore, this research sees strategy as the unique position a company adopts for different markets by *enabling key decision makers at all levels of an organisation in a manufacturing business to develop company strategies by considering, from their own practical experience, business, environmental and market requirements'* in terms of the deployment of resources and processes in the long or short term.

2.3.2. The Operations Strategy Process

This section considers the content and process framework to the Operations Strategy. It consists of four components,

1. Operations strategy frameworks
2. Operations objectives (called task or competencies)
3. Operations strategy decisions areas
4. Operations strategy process

These components are explained below under each title, except operations strategy process, which will be explained in the following chapter.

2.3.2.1. Operations Strategy Frameworks

Since Skinner's seminal work on Manufacturing Strategy (1969), this field has now developed to include all types of operational areas, including manufacturing. An area that attracted particular interest is the relationship between Operational Strategy and Business Strategy (Buffa 1984; Fine and Hax 1985; Tunalv 1990; Hayes and Wheelwright 1979; Wheelwright 1984). Greswell et al (1998) adopted and modified Whittle's classification to Operations Strategy as follows:

2.3.2.1.1. Market Led / Customer Focused Approach

This is in line with Skinner's focused factory approach and considers forces both inside and outside a company. Market led / customer focused approach is achieved by means of identifying relevant product groups, order winners and order qualifiers for each product group, and aligning the operations, as necessary, to satisfy the customers (Voss, 1995; Greswell et al., 1998).

This approach is linked to business strategy in terms of customers and markets. Other researchers used Skinner's work as a starting point by adding competitive dimensions, such as cost, quality, dependability and flexibility (Hayes and Wheelwright, 1984; Wheelwright, 1984; De Meyer and Ferdows, 1987; Hill 1993). Hayes and Wheelwright (1984) in their systematic four-stage approach to Operations Strategy attempt to align capabilities to fulfil customer requirements within the market. This framework is considered to be similar to Treacey and Wiersema's (1995) customer intimacy value proposition (Greswell et al, 1998).

2.3.2.1.2. Best Practice Approach

The basic principle of the best practice approach is that operation philosophies and techniques should be driven by competitive benchmarks and business excellence models to improve an organisation's competitiveness through the development of people, processes and technology (Greswell et al, 1998; Voss, 1995).

The essence of this approach is that continuous identification of 'best practice' in all areas in the organisation will lead to superior performance and capability resulting in increased competitiveness. However, the distinguishing characteristics of the archetype are based on what is working best within the industry at any one time. The decision areas will, therefore, be in a state of flux depending on what is considered as 'best practice'. The main methods for achieving best practice are based on benchmarking

other organisations and learning from their experiences in similar areas. It is important to note that trade-offs are not considered in this archetype due to the philosophy of continuous improvement (CI). These approaches may cross functions and include the whole organisation, which is a wider view than the previous archetype (Greswell et al, 1998). This framework is considered to be similar to Treacey and Wiersema's (1995) operational excellence value proposition (Greswell et al, 1998).

2.3.2.1.3. Knowledge Based Operations Strategy

This approach is based on technology, process and human competencies within the operational systems in terms of developing learning systems (Greswell et al, 1998). Knowledge based strategies aim to identify and develop core competencies for each Business Unit (Campbell and Luchs, 1997). On the other hand, other researchers, who focus on Operations Strategy, see the application of the knowledge-based framework across the organisation as a whole rather than in a hierarchical fashion (Long and Vickers-Kock, 1996; Hayes, 1985; Hayes and Upton 1998, Hayes and Pisano 1994). This framework is considered to be similar to Treacey and Wiersema's (1995) product leadership value proposition (Greswell et al, 1998).

Hayes (1985), Hayes and Pisano (1994) and Hayes and Upton (1998) used a knowledge-based framework in Operations Strategy development. Their view is that operations take a core role in competitive strategy and makes an important contribution to the competitive success of such an organisation.

2.3.2.2. Operations Objectives (Called task, capabilities or competencies)

Skinner (1969) defined an operation's objectives as cost, quality, delivery and flexibility and specified trade-offs between them. Many researchers have carried on these objectives as summarised in Table 2.7.

Some researchers used implementation of different terminology to support operations objectives, with particular emphasis on 'operations capability', 'collective learning in the corporation', or 'core capability' as a better way expressing the dynamic learning processes involved. All these different terminology are aiming to define unique capabilities and knowledge, which are important for the organisation to create competitive advantage (Campbell & Luch, 1997, Schroeder 1983, Hayes and Wheelwright 1979, Prahalad and Hamel 1990).

Distinctive competencies or well-defined operations objectives are becoming important issues in operations strategy. Therefore, it is necessary to understand distinctive competencies and objectives for core operations (value adding processes, e.g. getting order, developing product) and integrate these objectives with support processes (e.g. finance, IT, HRM).

2.3.2.3. Operations Decision Areas

Operation strategy was explained as consisting of a pattern of decisions that have an effect on the ability of the company to meet its objectives (Skinner 1969; Hayes and Wheelwright (1984), Fine and Hax (1985)).

In literature, researchers who adopted a functional view of operations strategy (see Table 2.8) have seen decision areas in two different perspectives:

1. Structural – hard aspects of strategy, e.g. size, manufacturing process choice,
2. Infrastructure- soft aspects of strategy, e.g. management style, organisation.

Although there is research based on functional view decision areas to operations strategy, there are few approaches based on the process-based view to operations strategy.

The business process framework of Operations Strategy content was first described by Rhodes (1988, 1991) and shown in Figure 2.9. Rhodes' (1988, 1991) aim was to cover

all manufacturing industries and understand the function in the business by defining nine business processes instead of a list of decision areas.

<i>Categories</i>	<i>Ward et al (1996)</i>	<i>Garvin (1993)</i>	<i>De Meyer (1990)</i>	<i>Hill (1989)</i>	<i>Fine and Hax (1985)</i>
Cost	<ul style="list-style-type: none"> • Cost 	<ul style="list-style-type: none"> • Initial cost • Operating cost • Maintenance cost 	<ul style="list-style-type: none"> • Price 	<ul style="list-style-type: none"> • Price 	<ul style="list-style-type: none"> • Cost
Delivery	<ul style="list-style-type: none"> • Delivery time performance 	<ul style="list-style-type: none"> • Accuracy • Completeness • Dependability • Availability • Speed • Information accessibility • Quality • Ordering flexibility • Shipment flexibility 	<ul style="list-style-type: none"> • Delivery speed • Delivery reliability 	<ul style="list-style-type: none"> • Delivery speed • Delivery reliability 	<ul style="list-style-type: none"> • Delivery
Quality	<ul style="list-style-type: none"> • Conformance • Inter-functional coordination 	<ul style="list-style-type: none"> • Performance • Features • Reliability • Conformance • Durability • Serviceability • Aesthetics • Perceived quality 	<ul style="list-style-type: none"> • Conformance 	<ul style="list-style-type: none"> • Quality reliability 	<ul style="list-style-type: none"> • Quality
Flexibility	<ul style="list-style-type: none"> • Product mix, volume and changeover flexibility • Speed of production changes 	<ul style="list-style-type: none"> • Product flexibility • Volume flexibility • Process flexibility 	<ul style="list-style-type: none"> • Volume flexibility • Production changes 	<ul style="list-style-type: none"> • Demand increases 	<ul style="list-style-type: none"> • Flexibility
Product and service		<ul style="list-style-type: none"> • Ease of ordering • Ease of return 	<ul style="list-style-type: none"> • New product development speed • Broad product range 		

Table 2.7. Operations Strategy Objectives

	Skinner (1978)	Hayes and Wheelwright (1984)	Buffa	Fine and Hax (1985)	Ward et al (1996)
Structural	Plant and equipment	Capacity Facilities Technology Vertical integration	Capacity/ location Product process technology Strategy w/ suppliers vertical integration	Capacity Facilities Processes and technologies	Process technology Capacity, facilities and vertical integrations
Infrastructure	Production planning and control Organisation and management Labour and staffing Product design/ engineering	Production planning and control Quality Organisation Workforce New product development Performance measurement systems	Strategic implications of operations decisions Workforce and job design Potion of production system	Product quality Human resources Scope of new products	Production & inventory control systems Workforce management Manufacturing organisation

Table 2.8. Operations Strategy Decision Areas

PAGE

NUMBERING

AS ORIGINAL

Business Processes (a) to (e) Achieving (f) to (i) Enabling		Marketing	Selling	Purchasing	Producing	Designing	Financing
(a)	Customer Order Progress						
(b)	Supply chain						
(c)	Production Processes						
(d)	Product Definition and Development						
(e)	Process and plant Development						
(f)	Motivation and Culture						
(g)	Finance and Accounts						
(h)	Organisation						
(i)	Information and IT						

Figure 2.9. Functional departments and Business Processes (Rhodes, 1991)

Although Rhodes' (1988, 1999) approach may be an alternative to other Operations Strategy decision areas, this approach does not explain how to design an Operations Strategy based on business processes.

2.4. Performance Measurement

As described in previous sections, strategy formulation requires the availability of knowledge for defining objectives and determining cause-effect relationships between objectives and actions. (Feurer and Chaharbaghi, 1995). Because of the dynamic environment, defined objectives are changing constantly. Subsequently, there is a need to have feedback mechanisms. In this context performance measurement systems play an important role as they can provide feedback on the effect of actions before they are fully implemented (Feurer and Chaharbaghi, 1995). Therefore, this section reviews recent emphasis upon performance measurement.

Performance measures, performance measurement and performance measurement system definitions are related to strategy in terms of actions or objectives as follows:

Performance Measures

- *Performance measures are the numerical or quantitative indicators that show how well each objective is being met (Pritchard et al, 1991)*
- *Performance measures are the vital signs of the organisation, which quantify how well the activities within a process, or the outputs of a process achieve a specified goal (Hronec, 1993)*
- *Performance indicators are quantified data, which measure the efficiency of an activity or a set of activities of a function in the process to reach the objectives (Doumeingts, 1995)*
- *A performance measure is a metric used to quantify the efficiency and/or effectiveness of an action (Neely et al, 1995).*

Performance Measurement

- *Performance measurement is the process of determining how successful organisations or individuals have been in attaining their objectives (Evangelidis, 1992)*
- *Performance measurement is the systematic assignment of numbers to entities (Zairi, 1994)*
- *A performance measurement is the process of quantifying the efficiency and effectiveness of an action (Neely et al, 1995)*

Performance Measurement System

- *A performance measurement system is a set of structured metrics and procedures to quantify in both effectiveness and efficiency of activities (Suwignjo, 2000)*
- *A performance measurement system is the set of metrics used to quantify both efficiency and effectiveness of actions (Neely et al, 1995)*

As the above definitions supported that many current approaches to performance measurement identification is started from vision and business strategy, such as the Balanced Scorecard (Kaplan and Norton, 1996, 2001); SMART System (Lynch and Cross, 1993). Nowadays the Balanced Scorecard is the most popular model of a new performance measurement system (Neely et al, 1995). The structure of the Balanced Scorecard is given in Figure 2. 10.

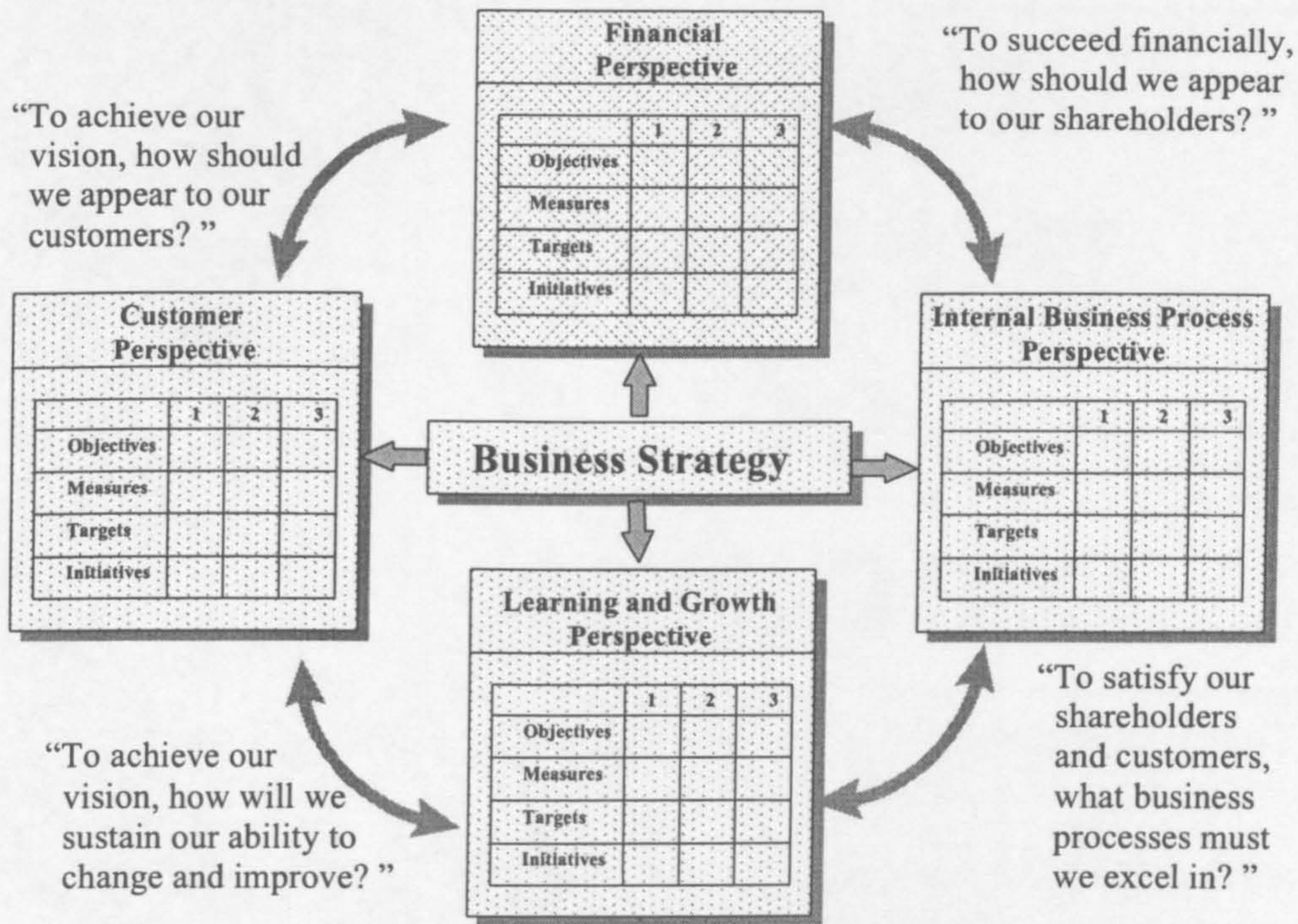


Figure 2. 10. The framework of Balanced Scorecard (Kaplan and Norton, 1996)

In the Balanced Scorecard, business strategy is translated into four objectives and measures perspectives: financial, customers, internal business process, and learning and growth. The financial objectives serve as a focus for the objectives and measures in all the other scorecard perspectives. Every measure selected should link with the other to improve financial performance. The final perspective of the Balanced Scorecard develops objectives and measures to drive learning and growth of the organisations. This final perspective will sustain the long-term survival of the company.

The SMART (Strategic Measurement Analysis and Reporting Technique) System was developed by Cross and Lynch (1993) as illustrated in Figure 2.11. They used the Balanced Scorecard with both customer driven and financial measures to have flexible system for operational feedback. The SMART system's main objective is continually self-adjusted to the future business requirements in terms of learning organisation.

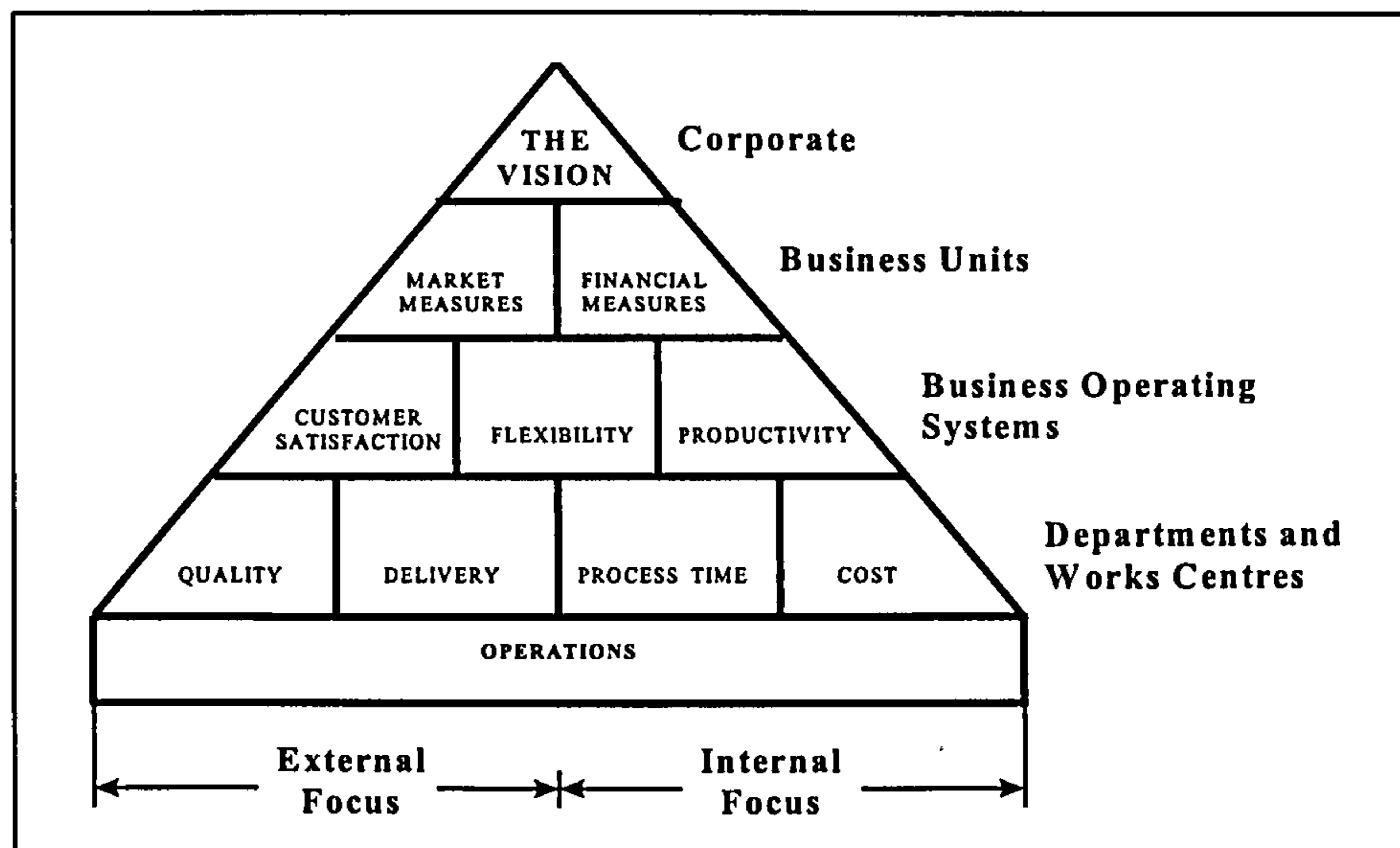


Figure 2. 11. The framework of the SMART system (Cross and Lynch, 1993)

Changes in the environment affected three interconnected areas - strategy, actions and measures. Dixon et al (1990) argued that in the current context, strategy, actions and measures are interconnected. Actions are required to support strategy. Traditionally, strategy is always assumed to come first, followed by the required actions. Dixon et al (1990) considered that actions

- lead to changes in strategy
- improvement programme place a business in a better position to gain new competitive advantage
- results will be reflected in performance measurement data and these may lead to changes in strategy

As a result, strategy can be changed to optimally exploit this new competitive advantage. The interconnected relations between strategy, actions and measures are indicated by Figure 2.12.

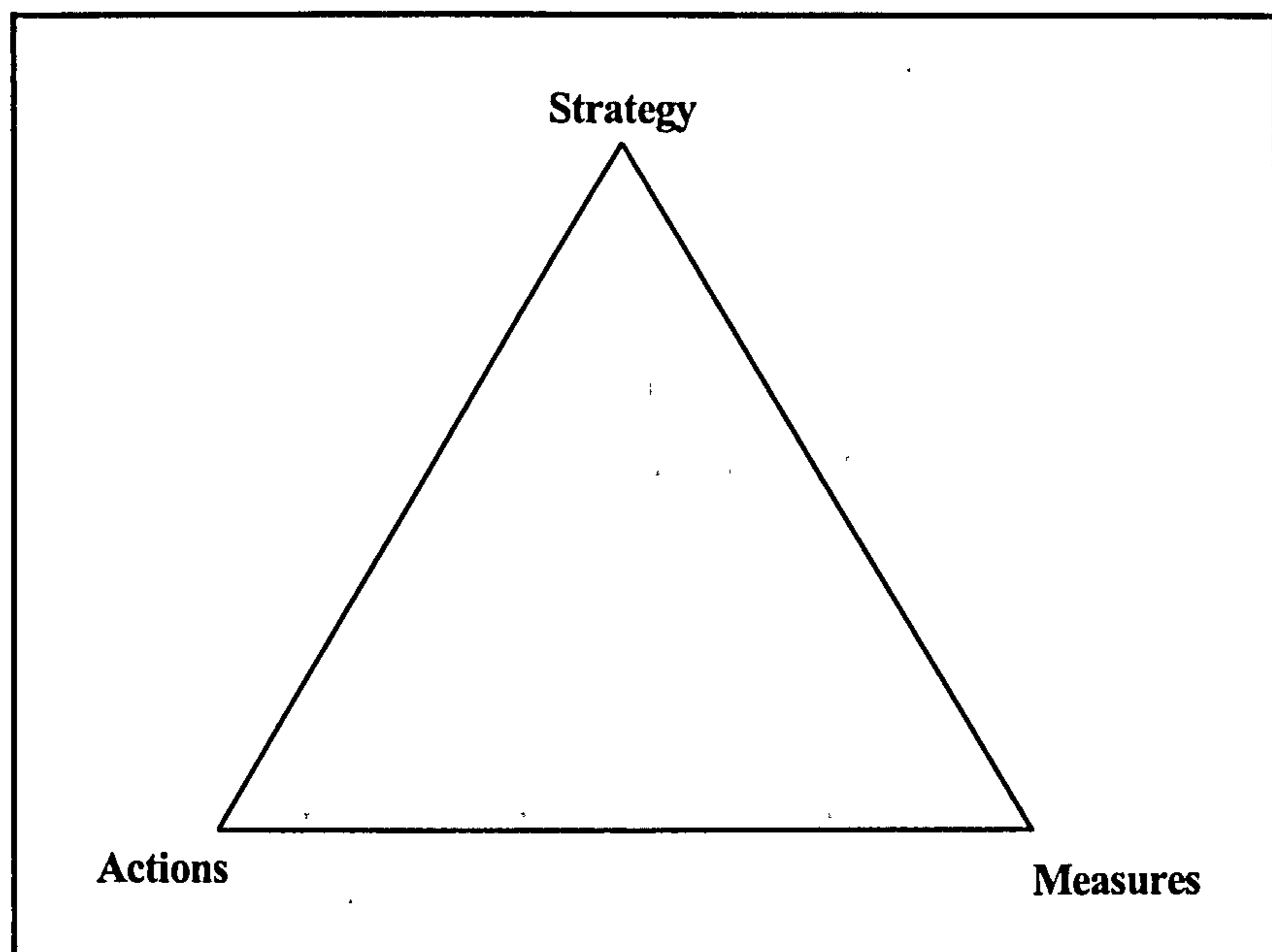


Figure 2.12. The interconnection of strategy, actions and measures (Dixon et al, 1990)

From the above approaches, it can be concluded that performance measures are derived from

- strategy (e.g. Mizberg, 1982, Dixon et al 1990, Lynch and Cross, 1991, Bourne et al 2000) and
- the literature is dominated by companies needing measures of progress of their strategies for building into their control system (Gungay and Gool, 1991).

In performance literature, Bourne et al (2000) explained the performance measurement system requirements in terms of developing and reviewing at a number of different levels as the situation changes. One of the requirements is:

“The performance measurement system should include a process for periodically reviewing the complete set of measures in use. This should be

done to coincide with changes in either the competitive environment or strategic direction”.

In strategy literature, Platts (1994) proposed four aspects of the strategy process - 4 Ps (point of entry, project management, procedure and participation). He specially mentioned review and competitive profiling to provide a quick, easily completed task under the point of entry title. He defined that

“It is necessary to:

- *provide a method of entry into the company or business unit*
- *provide a platform to achieve the understanding and agreement of the managing people (Platts 1994)”*

The conclusion reached here is that the use of the performance measurement systems are useful. First, they allow transferring customer and stakeholder needs into objectives. Second, within the dynamic environment, they assign the relationships between strategy formulation, implementation and different control point within the strategy hierarchy.

The original concept of strategic management or strategy was that managers have in their minds a set of beliefs about how the business operates and how performances in different parts of the business interact within each other. Therefore, the following section will answer the question ‘how is the actual or proposed strategy to be judged?’

2.5. Factors Which Affect Success / Failure of Chosen Strategy

As the performance measurement section confirmed, whatever uncertainties and complexities the future might hold, companies will be faced with the dynamic environment and will have to cope with these challenges through strategic management. Strategic management requires considerable resources and effort in terms of managerial time, with increasing pressures for innovation, sharing of knowledge and co-operation.

However, judging from the resulting strategy, although seen to be important, it is largely neglected.

It seems that the only way to assess the success or failure of a particular strategy (i.e. strategy performance) is by examining its outcome, i.e. reactively after a period of time. However, practitioners would like to have greater confidence that their chosen strategy is going to lead to successful results. Therefore, in light of the impact of managers' beliefs on strategic choices and actions, it is important to understand the factors and processes influencing the organisation-related beliefs of managers (Chattopadhyay et al, 1999, Walsh 1995).

Although a range of studies illustrates that companies assess strategy performance (Ragnurathan 1994; Micheal 1993; Platts et al 1996; Segars et al 1998, 1999; Shaver 1998; Simitiah 1998; Ragnunatham et al 1994; Ramanujam 1986), the majority of these cases refer to assessment of the information systems strategy within the organisation rather than performance of the overall strategy.

A number of the above studies provide complete reviews and critique of this literature (Ramanujam 1986; Ragnuatham 1994 Segars et al 1998, 1999). The general conclusion of these studies allocates the assessment of strategic planning into four approaches, which are:

- goal centred approach
- comparative approach
- normative approach
- improvement approach

Table 2.9 provides a critical comparison of the four different approaches to the assessment of strategy.

Many of the researchers have focused on only one approach. Ramanujam et al (1986) used a combination of Goal Centred and Improvement approaches to develop a planning

system success model. Their research was based on the premise that planning is a multi-dimensional and indistinguishable feature of overall management process and, hence, they pursue the question, "What dimensions of planning are associated with effectiveness as approached from multiple perspectives?" This work plays an important role in the further development of the work presented in this research.

	Goal-centred Approach	Comparative Approach	Normative Approach	Improvement Approach
Aim	Assess the degree of attainment in relation to targets	Compares the effectiveness of a particular IT system with other "similar systems"	Compares with "standards of the field" rather than the unique planning goals of the organisation	Assess how the planning system has evolved or adapted over time
Answers	What extent are the multiple objectives of planning fulfilled?	How does our system's performance compare against similar systems	How does our system's performance compare against that of a theoretically ideal system?	How has the planning system adapted to changing circumstances?
Primary Strength	Provides objectives validity, intuitiveness and captures	Provides strategic balance by synthesising the differentiation and conformity perspectives	Provides the suggestion reasons for the existence (and non existence) of planning success	Adaptive to changing organisational needs
Primary Weakness	Objectives may not be easily re-concealed through the organisational hierarchy	Implementation may not be easy. Gathering accurate and timely information regarding comparable systems can be difficult if not impossible.	May require significant research to find strategy for different approaches' strengths and weakness	Changing circumstances may not be easily conceptualised
Assessment Mode	Reactive	Active	Active	Active

Table 2.9. Planning Assessing Tools

(Compiled from Raghunathan and Raghunathan 1994, Seager et al 1999)

Strategic management is a popular research area but most researchers use available methods to compare the strengths and weaknesses of different methods. (Huber et al 1985). There are a few approaches to understand how the performance of the strategic planning activity is measured (Platts et al 1996; Ramnujam 1986; Segars 1998, 1999).

Although Rumelt (1980), Andrews (1987), and Accenture (formally called Anderson Consulting) (1994) have proposed criteria for evaluating strategy in general. Hayes and Wheelwright (1984) and Slack (1991) suggest more specific criteria for evaluating operations strategy.

Rumelt (1980)- the principles for strategy evaluation

- “Consistency: The strategy must not present mutually inconsistent goals and policies.
- Consonance: The strategy must represent an adaptive response to the external environment to the critical changes occurring within it.
- Advantage: The strategy must provide for the creation and / or maintenance of a competitive advantage in the selected area of activity.
- Feasibility: The strategy must neither overtax resources nor create unsolvable sub problems.”

Andrews (1987)- Criteria for evaluation

- *Is the strategy identifiable and has it been made clear either in words or in practice? The degree to which attention has been given to the strategic alternative available to a company is likely to be basic to the soundness of its strategic decision.*
- *Does the strategy exploit fully domestic and international environmental opportunity? The relation between market opportunity and organisational development is a critical one in the design of future plans.*
- *Is the strategy consistent with corporate competence and resources, both present and projected? Although additional resources, both financial and managerial, are available to companies with a genuine opportunity, the availability of each must be finally determined and programmed along a practicable time scale.*
- *Are the major provisions of the strategy and program of major policies of which it is comprised internally consistent? One advantage of making as specific a statement of strategy as is practicable is the resultant availability of a careful check on fit, unity, coherence, compatibility, and synergy.*
- *Is the chosen level of risk feasible in economic and personal terms? The riskiness of any future plan should be compatible with the economic resources of the organisation and the temperament of the managers concerned.*
- *Is the strategy appropriate to the personal values and aspirations of the key managers? Conflict between personal preferences, aspirations, and goals of the key members of an organisation and the plan for its future is a sign of danger and a harbinger of mediocre performance or failure.*

- *Is the strategy appropriate to the desired level of contribution to society? To the extent that the chosen economic opportunity of the firm has social costs, such as air or water pollution, a statement of intention to deal with these is desirable and prudent.*
- *Does the strategy constitute a clear stimulus to organisational effort and commitment? Generally speaking, the bolder the choice of goals and wider range of human needs they reflect, the more successfully they will appeal to the capable membership of a healthy and energetic organisation.*
- *Are there early indications of the responsiveness of market and market segments to the strategy? A strategy may pass with flying colours all the tests so far proposed, and may be in internal consistency and uniqueness an admirable work of art.*

Anderson Consulting (1994)- description of quality of the strategy:

“The strategy could be judged a success...

- if the business more successful as a result.
- If it has resulted in a good document
- If a suitable process was followed.

The strategy had to be understandable, flexible, credible, challenging, useful, efficient and through”.

Hayes and Wheelwright (1984) Criteria for evaluating a operations strategy

1. Consistency
 - Between the operations strategy and the overall business strategy
 - Among operations strategy and other functional strategies
 - Among decision areas that make up the operations strategy
 - Between manufacturing strategy and the business environment (regulation, capital availability, etc.)
2. Emphasis on competitive success factors
 - Making trade-offs explicit
 - Directing attention to opportunities that fit the business strategy
 - Promoting clarity of the operations strategy throughout the business unit

Slack (1991) Description of an effective operation strategy

- *Appropriate: Operations strategy should direct change in the direction which, on balance, is most likely to provide a manufacturing performance which best supports the company's competitive strategy.*
- *Coherent: The policies recommended for each part of the (manufacturing) function must all point roughly in the same direction.*
- *Consistent over time: The lead-time of manufacturing improvement means that consistency must be maintained over a reasonable period of time*
- *Comprehensive: The strategy should cover all of the functions of manufacturing*
- *Credible: The strategy should be regarded as achievable.*

Different approaches to strategy performance highlighted three paradoxes

- Consistency versus feasibility
- Defined strategy communication versus creditability and ambiguity
- Consonance versus commitment

in order to retain adaptability within the dynamic environment.

Therefore, strategy requires more than just the right approach; it also needs a team, which is prepared, committed and motivated to do the job (Godet 1998). People involvement is the key prerequisite to achieve commitment.

If managers wish to improve the way they set about developing strategies, then they need to develop ways of critically assessing their current strategy formulation process (Platts et al 1996). Therefore, essential contingency can be acknowledged in order to accept that there are combinations of understandable, applicable, adaptable, well-defined, flexible strategy formulation process, which are effective in one strategy development process.

To achieve acceptance and commitment it is critical that the resultant strategy document is clear, unambiguous with detailed plans and responsibilities for action. Furthermore,

the strategy management process should ensure that previous experiences are captured and used to formulate future strategies.

A successful organisation requires an environment in which new ideas are sustained rather than suppressed, and in which there are few rewards for suspicion and other forms of negative thinking. It also requires acceptance that ultimately creativity and innovation are the key strategies for creating stakeholder value. Consequently, strategy planning requires significant input from strategic thinking.

A Strategy Management process, in order to succeed, should maintain the strategy making tools and frameworks to ensure balance between 'efficiency' (doing things right), 'effectiveness' (doing the right things) and 'evolution' (the ability to adopt to change and sustain a competitive position).

In summary:

If managers have real confidence that their chosen strategy will succeed then the risk of business failure can be reduced and it can be that a successful strategy process should ensure that (Acur and Bititci, 2000):

- people at all levels are involved (Huber et al 1985; Ramnujam, 1986; Godet, 1998; Segars, 1998, 1999)
- potential results and outcome of strategy is clearly understood and communicated (Pearson and Robinson, 1988; Ramanujam et al., 1986; Goodman and Lawless, 1994; Kaplan and Norton, 2001)
- the external environment is monitored and the impact of changes is understood (Kaplan and Norton, 1990, 1996, 2001; Markides, 2000; Bititci et al. , 2000; Mills et al., 1998; Pearson and Robinson, 1988)
- the process is formal, well defined, understandable, adaptable and flexible (Andrews, 1987; Digman, 1990; Pearson and Robinson, 1988; Platts et al, 1996; Kaplan and Norton, 2001)

- the process critically reviews the company objectives and deploys top level objectives through all levels (Flood and Jackson, 1981; Fahey, 1998; Feurer, 1995; Bititci et al., 1999; Simon, 2000)
- the process should result in a good document with a clear and detailed plan, including clear responsibility for actions (Andrews, 1987; Pearson and Robinson, 1988; Feurer et al., 1995; Babich, 1999)
- the process should facilitate learning from experience (Mills et al., 1998; Babich, 1999; Kaplan and Norton, 2001)
- the process encourages creativity and innovation (Rumelt, 1980; Porter, 1996; Heracleous, 1998; Mintzberg, 1999)

2.6. Analysis of the Literature

The literature review demonstrates that strategic management is a discipline. Strategy Management is a part of Strategic Management. This research defines strategy management as a process by which business develops, deploys, implements, monitors, reviews and re-develops its operations strategy.

This review shows the many-sides of the operations strategy management process without looking at available processes. The review raised an important set of findings and requirements to operation strategy within the strategic management issue. These are explained as follows:

To aid the reader each section of the literature review has a requirements definition to conclude that section.

Business Processes:

Each department has a tendency to regard themselves not as a part of a whole but rather as the whole. Therefore, there is a requirement to move from a functional based view to process based view within the strategy management process. The popularity of process based approach to operations strategy or business strategy is very high, the framework is actively used in many companies (IBM, Hewlett Packard, Rank Xerox, etc.), as a means of strategy formulation toward implementation.

To further explain process, we can analyse the CIM-OSA standard (AMICE-ESPRIT, 1989), which sub-divides process into three main categories: manage, operate and support processes. The standard considers strategy management under the manage processes category. Childe et al. (1994,1995) stated that 'Manage Processes relate specifically to business direction and strategy as well as business planning and control'. Goodman and Lawless (1994) also attempted to place the tools of strategy management within an overall process model for whole company. In their model, the firm's strategy

acts so to maintain an acceptable performance in the constantly changing environmental conditions. Although in work carried out by Pearce and Robinson (1988), Ansof (1990), and Wheelen and Hunger (1992) offered a perspective on strategy management in which manage process is central without stating explicitly, their work remained at a conceptual level rather than development of practical firm –level tools and models to manage to relate specifically to business direction and strategy as well as business planning and control. Bititci et al (2000), supported this argument by seeing manage processes as an enabling factor to ‘maintain and develop a winning business formula’ or ‘identify and change to a new business formula’.

Therefore, the analysis highlights that manage processes sustain competitive advantages for the business by providing business direction in line with performance measures and review and learning mechanism (like Goodman and Lawless model) to create long terms sustainability.

This can be further examines when a change in the operational environment of the firm may require re-definition or revision of its strategy. Thus, changes will need to deploy through to the lower levels, i.e. changes may have to be made to business and process strategies. All these approaches take us through a process of analysing the business and creating a strategy.

Requirement 1: Strategy management should be viewed as a key business process (Pearce and Robinson, 1988; Ansof, 1990; Wheelen and Hunger, 1992; Childe et al., 1994, 1995; Goodman and Lawless, 1994; Bititci et al.,, 2000)

Dynamic Environment:

Strategy management demands effective continuous improvement in terms of action learning within an increasing uncertain and volatile business environment (Thomson, 1995; Babich, 1999; Pearson and Robinson, 19888; Feurer et al., 1995; Kaplan and Norton, 2001). Managers’ face varying unexpected pressures as a result of new

innovations, economic crisis, production losses, political events and so on (Beach et al, 2000). The suddenness of such unexpected events can sometimes catch management unaware with significant impact on business results and embarrassment to the managers (Balogun et al, 1999).

One reason behind this problem is that, traditionally, the review and redevelopment of company strategy tends to be calendar driven. However, the events that cause distractions and pain are not necessarily calendar driven. Therefore, there is a need to ensure that a strategy management review and redevelopment process is continuous, which, as soon as a significant change or event in the operational environment of the company is detected, its consequences are analysed and acted upon.

Requirement 2: Strategy management process should be continuous (Thomson, 1995; Babich, 1999; Pearson and Robinson, 19888; Feurer et al., 1995; Balogun et al, 1999; Kaplan and Norton, 2001)

Control Loop Mechanism:

The extension to this line of argument is that the nature of organisations and organisational change is so complex that it is impossible to manage change without considering the need for a “closed loop” control system. A sound and dynamic strategy management process is an opportunity the management of an organisation should exploit to achieve dramatic improvements (Cowley and Domb, 1997).

The concept of “closed loop” strategy management process is based on a further development of Deming’s PDCA (Plan-Do-Check-Act) cycle as illustrated in Figure 2.13 (Babich, 1995). The key skill is the ability to apply effectively and efficiently Deming’s PDCA (Plan-Do-Check-Act) closed-loop cycle at all levels of strategy.

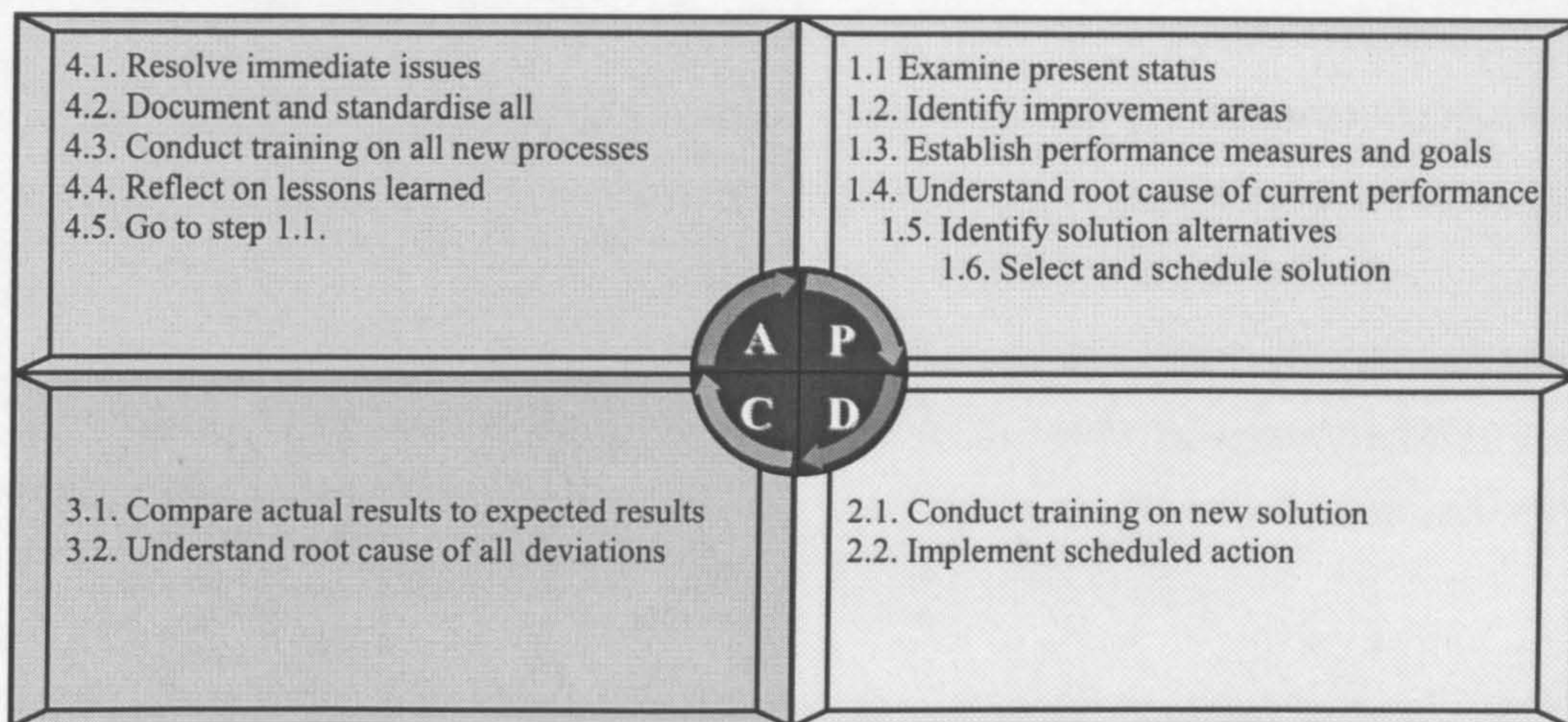


Figure 2.13. Plan- Do – Check – Act (Babich, 1995)

Goodman and Lawless (1994), Edward and Pepard (1994) and Feurer (1995) approached strategy management in a similar way, which the basic stage of strategy-making are linked together in a control system involving feedback and adjustment.

Therefore, the key skill for a continuous cycle is being able to recognise what is critical in the particular change context within the strategy management process as a whole.

Requirement 3: *Strategy management process should provide a closed loop control system (Goodman and Lawless ,1994; Edward and Pepard ,1994; Babich, 1995; Feurer et al., 1995; Cowley and Domb, 1997Kaplan and Norton, 2001)*

Event Driven Mechanism:

A number of unavoidable difficulties occur as a result of creating a closed loop control system. These include aligning strategy management issues with the wider business development and its sustainability, as well as the demands of changing environment. Relatively few studies (e.g. Feurer et al, 1995; Goodman and Lawless, 1994; Kaplan and Norton , 2001) have attempted to devise the firm's strategy acts so as to maintain an

acceptable performance and objectives in the context of constantly changing environmental conditions. Those that do, although varying in detail (and terminology) share a number of common features which are basic to any effective event driven strategy management. These features include mechanism to integrate a number of areas e.g. the competitive environment of the firm, its internal capabilities.

Requirement 4: Strategy management process should have an event driven trigger mechanism, i.e. external monitor (Feurer et al, 1995; Goodman and Lawless, 1994; Kaplan and Norton , 2001)

Business unit:

However, in a hyper-competitive environment, where sources of both product-based and process-based competitive advantages are quickly imitated by competitors (Lapierre, 2000), this means that to create superior strategy, the company must think beyond markets, products and customers. There is no right or wrong way to define a company's strategy based on one generic strategy or business classification for the whole business.

Moreover, generic strategies or business classification might be very painful to fit into a company's overall objectives for its different markets, and may cause a reduction in customers within the company's market. In addition, each of the following perspectives; *"financial, quality, customers, capabilities, processes, people and systems is important and can play a role in creating value in organisations. But each represents only one component in the network of management activities and processes that must be performed to generate superior, sustainable performance"*(Kaplan and Norton, 2001). Platts and Gregory (1996), Lynch (1997), Hull and Wu (1997), FOCUS (2000) presents that competitiveness of the company depends on its ability to make appropriate choices of corporate and operate objectives based on its market. Therefore, companies should focus in narrow and specific strategy with a comprehensive view in which strategy is at the heart of the company's specific market.

When the environment is dynamic, it becomes necessary to segment the company's distinctive areas of threats, weaknesses, and opportunities in terms of its products or customers' requirements (business units). Although current approaches consider business unit strategies to drive functional strategies (e.g. manufacturing, finance), they do not explicitly provide a clear picture of how business units can be defined.

Requirement 5: Strategy management process should focus on business units (Platts and Gregory, 1996; Lynch, 1997; Hull and Wu, 1997; FOCUS ,2000; Lapierre, 2000; Kaplan and Norton, 2001)

Every company has at least three constituencies or more: customers, employees and shareholders. Because all three are subject to competition within the whole company as well as each business unit, every company should create value for each one to make money. If all stakeholders received insufficient value, they would attempt to move on elsewhere, e.g. customers would go to the competitors, employees would go to work for other companies. Therefore, a company should create value for all its stakeholders for each business unit, as a result of that it can successfully maintain a competitive position.

In the literature, although some approaches stated the necessity of identification of customer value (Kaplan and Norton, 2001) as well as stakeholder value (Donovan et al 1997), they did not show that value proposition should be defined for each business unit. Furthermore, Walter and Lancaster (2000) added that value opportunities are distinguished by understanding customers' priorities and producing, communicating and delivering the identified value.

Briefly, there is a need to first identify stakeholder values and combine those value propositions for each business unit in such a way that they would support and reinforce one another while supporting the company's chosen objectives and strategy (Lynch, 1997, Kaplan and Norton, 2001, FOCUS 2000).

Requirement 6: Strategy management process should focus on its customer value proposition for each business unit (e.g. operational excellence, product leadership and customer intimacy) (Donovan et al., 1997; Lynch, 1997; Walter and Lancaster, 2000; Kaplan and Norton, 2001, FOCUS 2000)

Trade-offs:

The extension of this argument is that a firm's competitiveness in any particular business unit depends on its ability to meet market markets' requirements, so any measure of competitiveness should, by definition, be market or customer oriented (e.g. defining customer value proposition). Corbett and Wassenhove's (1993) study found that as environmental dynamism increased, successful firms engaged in focusing on fewer dimensions of competence and competitiveness for its business units. Writers on strategy (e.g. Mills et al, 1998; Feurer et al., 1995; Digman, 1990) have revolved around these trade-offs between these various dimensions without realizing that some classical elements are either gradually disappearing or substantially changing their nature, depending on market requirements. As the firm might use the same employees, resources and capabilities for its different business units, it is necessary to identify and eliminate (if possible) conflicts between the different business unit's objectives/strategies to sustain its competitive advantages.

Requirement 7: Strategy management process should consolidate various business unit strategies taking into account various conflicts and trade-offs (Digman, 1990; Corbett and Wassenhove, 1993; Mills et al, 1998; Feurer et al., 1995)

Strategy Levels:

Traditional strategy management processes look at strategy at three levels: corporate, business/ business units and functional strategies (e.g. Hofer and Schendel, 1979; Wheelwright, 1984). Digman (1990), Pearson and Robinson (1988), and FOCUS (2000) showed that as the competitive environment becomes more turbulent, firms might be expected to evolve from reliance one an one level strategy (e.g. corporate strategy) to a

multi-level strategy in terms of considering their different markets (business units) and resources/ capabilities (operations or functional strategies). Such integration may be required for success in turbulent environments and fulfill different market requirements whereas more resource based capabilities might allow firms to utilize simpler strategy making process and still be successful.

Requirement 8: *Strategy management process should integrate multiple levels with hierarchy (Hofer and Schendel, 1979; Wheelwright, 1984; Digman, 1990; Pearson and Robinson, 1988; and FOCUS, 2000)*

Review mechanism:

In another case, the change in the operational environment of the firm may only require re-definition or revision of the strategy of one of its business units without affecting the corporate strategy (Babich, 1999; Feurer et al., 1995; Kaplan and Norton, 2001). Again, in this case the necessary changes need to be deployed to strategies of those functions affected through the change at business unit strategy. Finally, the change in the business environment may only be relevant to one of the firms' business processes, thus requiring re-development or revision of the business process strategy without affecting the strategies of its corporate or business strategies. This multi-level closed loop continuous system is illustrated in Figure 2.14.

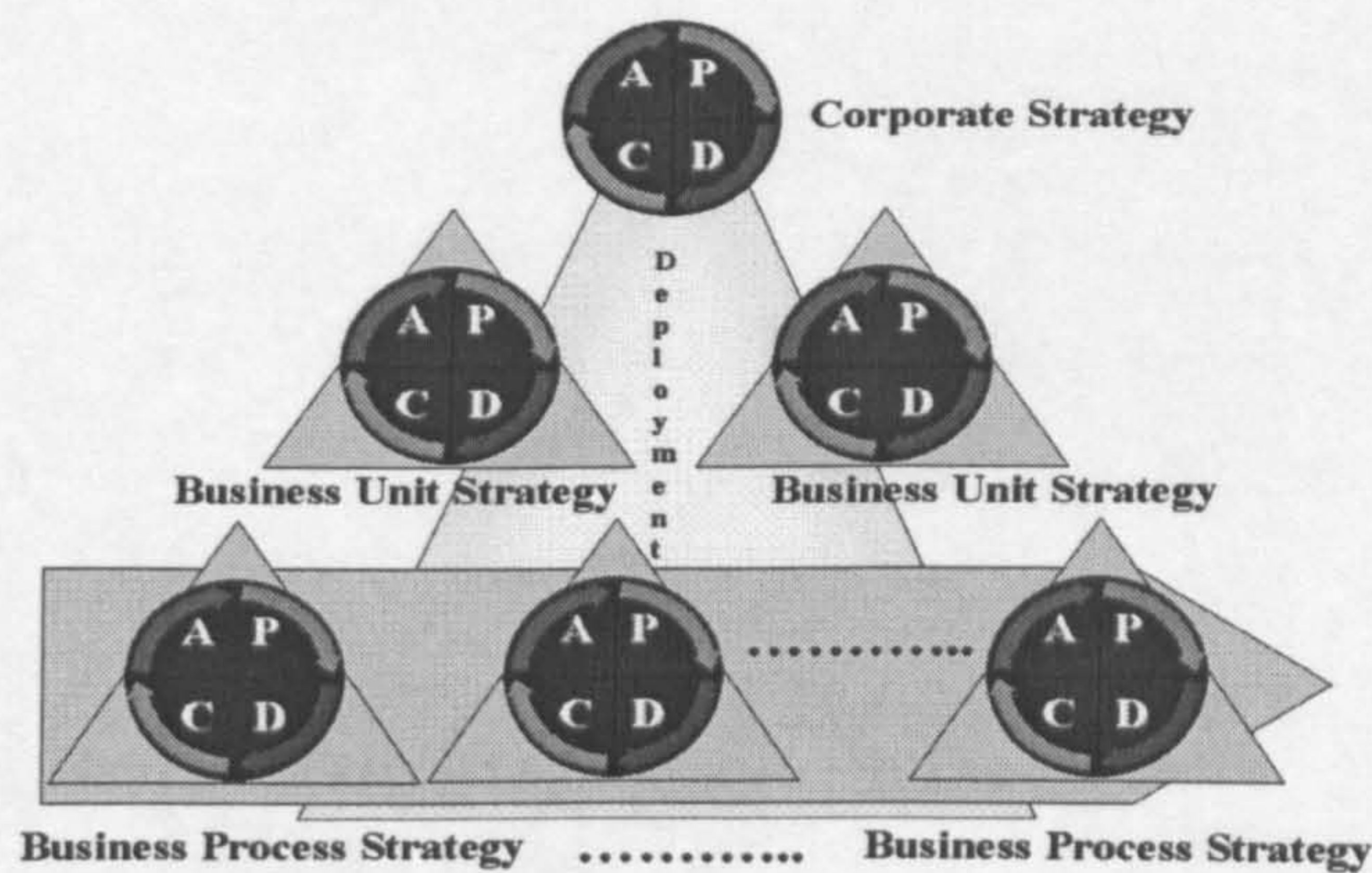


Figure 2.14. Multi-level Closed- Loop Control System

We have seen that the strategy management challenge lies in developing dynamic strategy management process to deal with dilemmas and uncertain environment in Figure 2.14.

Requirement 9: Strategy management process should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy (Babich, 1999; Feurer et al., 1995; Kaplan and Norton, 2001)

Business processes:

In literature, according to the market-led customer-focused approaches to operations strategy, market requirement is a key issue but an operation is a competitive weapon to respond to market requirements (Hill, 1993; DeMeyer and Ferdows, 1987). Similarly, knowledge-based approaches to operations strategy focus on technology, process and human competencies within the operational systems to develop a learning system that facilitates improved competitiveness (Long and Vickers-Kock, 1996; Hayes, 1985; Hayes and Upton, 1998; Hayes and Pisano 1994). Bititci, (1999a, 1999b) suggested that the Viable Systems Model (VSM) (Beer, 1985) provides a powerful application of systems theory for analysis and planning of businesses operations. Bititci went on to develop the Viable Business Structure, which integrates the CIM-OSA Business Process architecture (AMICE, 1989) with VSM thinking.

Based on this discussion in the literature, it can be argued that, as the operate and support process represents the operations of a business, therefore, they should also represent the unit of analysis from an Operations Strategy point of view.

Requirement 10: Operations Strategy for each business unit arises at business processes level (Hill, 1993; DeMeyer and Ferdows, 1987; Long and Vickers-Kock, 1996; Hayes, 1985; Hayes and Upton, 1998; Hayes and Pisano, 1994; Bititci, 1999a, 1999b)

Objective deployment:

Objective deployment is closely match visible business settings. It assists in planning company direction and developing real world strategies. In general, therefore, deployment (by using scenario planning) is used to translate a company's indicators, and transfer information into actions to create a set of logical hypotheses to connect all levels of a business. (Fahey, 1998; Simon, 2000)

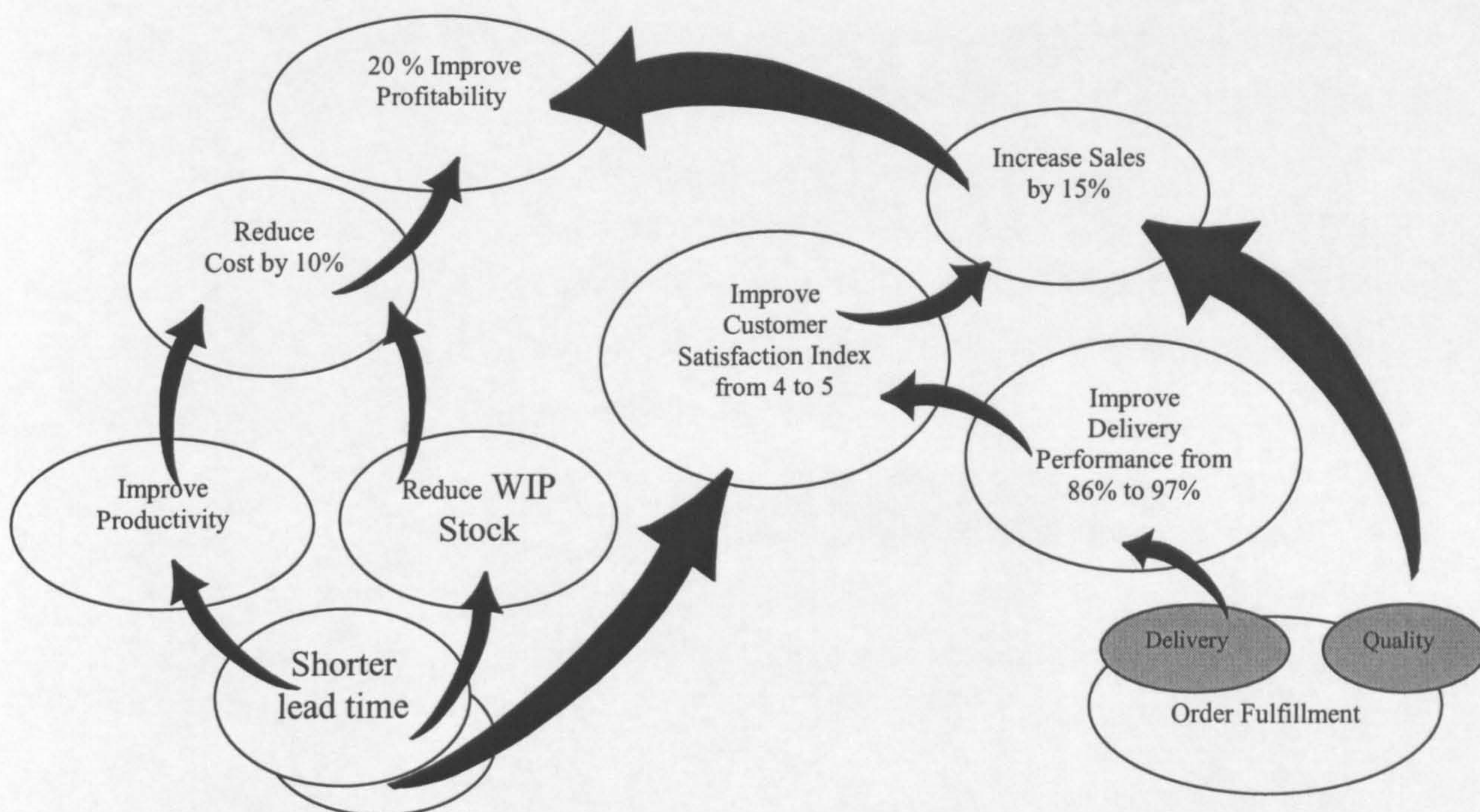


Figure 2.15. A sample of the Cause and Effect Relationships amongst Business, Market and Operational Objectives

An example is highlighted in Figure 2.15. which, depicts that the one of the company's business objectives is to improve profitability by 20%. It also shows that the company's first two important measures at the business level are sales and cost of sales. Shorter lead-times have been determined that would contribute to achieve profitability through reducing WIP stock and cost by 10%. Also identified is better service delivery from 87% to 97%. Improving quality would greatly contribute to achieving sales and cost targets. By improving customer satisfaction index from 4 to 5, this would also contribute to

increased sales. Therefore, Figure 2.15. shows how business performance can be linked to operations (business process) performance and how the potential impact of alternative operational strategies on business performance could be assessed.

By knowing relationships like these, managers can manipulate operate and market attributes to assess the impact on overall business. This gives a complete picture of the status and direction fix the company in terms of business objectives, profitability, growth, market and operational objectives and providing information for decision making appropriate to each level. The process also allows tracking of objectives development to assess progress and areas requiring improvement.

Therefore, in order to adapt a top down perspective that views a whole organisation as a single proactive system, the business objectives should be deployed through all levels (Feurer, 1995; Flood and Jackson, 1981; Bititci et al., 1999).

Requirement 11: The strategy management process should critically review the company objectives and deploy top-level objectives through all levels (Flood and Jackson, 1981; Fahey, 1998; Feuerer, 1995; Bititci et al., 1999; Simon, 2000)

Trade-offs business processes:

Taking into account of requirements 5, 7, 8 and t together with requirement 10 and 11, it could be further argued that an organisation's operations strategy should consist of consolidation of its operate and support process strategies after taking into account potential conflicts and trade-offs (Feurer et al.,1995; Platts et al. (1998). This concept is illustrated in Figure 2.16.

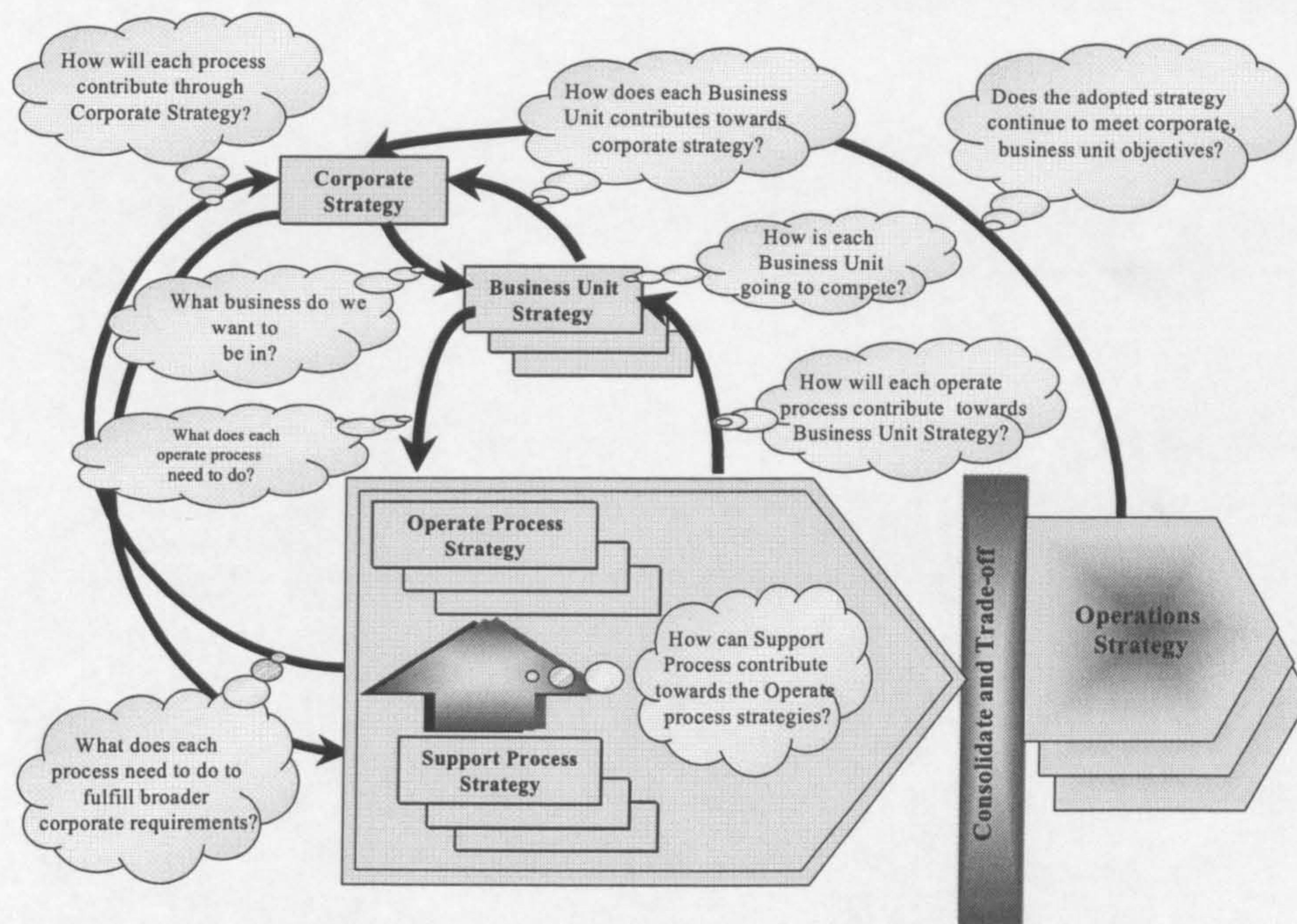


Figure 2.16. A business process focused view of strategy management process

Requirement 12: Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account various conflicts and trade-off for each business unit (Feurer et al., 1995; Platts et al. , 1998)

Decision areas:

The role of strategic decision areas has been changing in the light of dynamic environment as well as the company requirements. Traditionally, decision areas were employed for meeting the company's objectives. Recently, researchers (e.g. Talwar, 1997) have been recognising the importance of process decisions, particularly by using Hoshin planning tools within the different companies (Xerox, Hewlett Packard, etc.). They have argued that it is not merely a structure consideration, nor should infrastructure justification alone determine its use. Therefore, as Rhodes (1991) suggested companies need to cover all operations and understand all functions in the

business by considering operate and support processes instead of a list of decisions areas.

Requirement 13: Traditional strategic decision areas in operations strategy should be applied at business process level (Talwar, 1997; Rhodes ,1991)

Performance measurement:

Strategy management is about managing performance, so if we are going to manage performance then we must also measure it. The tradition within strategy literature is to present performance measurement systems as being central for directing actions towards achieving strategic objectives (Dixon et al, 1990). Performance measurement systems can be regarded as the key factor in ensuring the successful implementation of the company's strategy. The performance measures that a company chooses for gauging its performance reflect the company's mission, culture, philosophy, and practices (Nicholas, 1998). In addition, performance measures motivate behaviour.

Performance measurement systems commonly provide a systematic way of evaluating the inputs, outputs, transformation and productivity of an operation (Globerson, 1985). Current approaches to operations strategy process do not, however, provide a linkage between operational (i.e. business process) performance and business performance. In summary, existing approaches to operations strategy:

1. Fail to include any form of performance measurement, e.g. Schroeder et al, 1986; Leong at et al, 1990, or
2. Include financial measures, such as profit and loss account details, but fail to link these with operational (Process) performance measures, e.g. Hill 1993, Hull and Wu, 1997, or
3. Include operational (Process) performance measures but fail to link these to financial performance measures e.g. Anderson et al 1991, Platts and Gregory 1996.

To create the future for their businesses, the following two factors need to be considered:

- A system of *external monitoring* needs to be established to monitor critical factors in the operation environment.
- The sensitivity of the business and its current strategy to these changes needs to be established to ensure that only those changes / events, which have significant impact on the business and its strategy, are acted upon.

There is a need to establish an understanding of the external environment, such as industry trends, competitive position, changes in stakeholder requirements, etc. This is because managers can no longer create strategy by only focusing internally. Current strategy management frameworks do not explicitly state the need for two performance measurement systems, i.e. internal and external. Performance Measurement frameworks, such as the Balanced Scorecard (Kaplan and Norton, 1990, 1996), are all internally focused strategy development. On the other hand, Dixon et al (1990) suggested Performance Measurement should arise at two levels; internal and external.

Requirement 14: Performance measurement should arise at two levels: External and Internal (Globerson, 1985; Schroeder et al, 1986; Kaplan and Norton, 1990, 1996; Dixon et al., 1990; Leong et al, 1990; Anderson et al 1991; Hill, 1993; Platts and Gregory, 1996; Hull and Wu, 1997; Nicholas, 1998)

Available approaches (e.g. Kaplan and Norton, 1990, 1996, 2001) consider strategy as a driver of internal performance. In large, they state that managers whose organisations are confronting strategy must first determine that they have the resources (monitor internal performance) required to succeed. Besides, some other researchers, such as Markides (2000), explained “*in deciding how to play the game, a firm not only identify what activities it needs to perform but also combine these activities into a reinforcing system that creates the requisite fit between what the environment needs and what the company does*”. For that reason, in a very real sense, an organisation’s underlying environment is what creates its strategy. It is necessary to ensure that changes in the external environment are monitored and reflected in the strategy of the organization.

(Mills et al., 1998; Pearson and Robinson, 1988). Therefore, to obtain the desired successful strategy, the company should ensure that, first, its environment - external performance measures are conducive to the strategy which drives internal performance (Bititci et al., 2000).

Requirements 15: External performance measures should provide an input to strategy management process. For example, operations strategy should take into account:

- *competitive criteria within the organisation market as external performance measures*
 - *current and future financial as well as current operational performance as internal performance measures (Kaplan and Norton, 1990, 1996, 2001; Markides, 2000; Bititci et al. , 2000; Mills et al., 1998; Pearson and Robinson, 1988)*
-

Once the performance measurement system is in place, the measures are linked between internal to the external measures. An effective way of assessing strategic options is to link internal and external performance (Platts and Gregory, 1996; Babich, 1999; Kaplan and Norton, 2001). Therefore, the strategy management process should ensure that the financial, customer / market and operational performance measures are integrated and that the cause and effect relationships between business and operational performance measures are understood, and are used in making strategic decisions.

Requirement 16: The strategy management process should integrate internal (e.g. financial, operational) and external (e.g. Customers / market) performance measures (performance (Platts and Gregory, 1996; Babich, 1999; Kaplan and Norton, 2001)

People involvement:

A useful tool for assessing strategic alternatives and the degree to which they are tied to performance-related objectives is scenario planning (Fahey, 1998; Simon, 2000). Market led customer-focused approaches to operations strategy concentrate on organisational

performance without paying sufficient attention to scenario planning. Although knowledge-based approaches to operations strategy aim to develop a learning system to facilitate operations, they fail to use scenario planning to assess business / financial impacts of alternative operational strategies. It can be argued that integrated performance measurement systems would enable what-if analysis between operational strategies, operational performance measures and business performance measures.

Strategy management is a popular research area but most researchers use available methods to compare the strengths and weaknesses of different methods. (Huber et al 1985). There are a few approaches to understand how the performance of the strategic planning activity is measured (Platts et al, 1996; Ramnujam, 1986; Segars, 1998, 1999).

One could argue that the available approaches to assess strategy performance are solely descriptors of the strategy management process. Therefore, strategy requires more than just the right approach; it also needs a team that is prepared, committed and motivated to do the job (Godet, 1998). People involvement is the key prerequisite to achieve commitment.

Requirements 17: The Strategy management process should maximise feasibility of the strategy. Therefore, people involvement in strategy formulation and implementation is a key factor in determining strategy performance (Huber et al 1985; Ramnujam, 1986; Platts et al, 1996; Fahey, 1998; Godet, 1998; Segars, 1998, 1999; Simon, 2000).

Strategy assessment:

Pearson and Robinson (1988), Ramanujam et al. (1986), Goodman and Lawless (1994), Kaplan and Norton (2001) observed that people can only commit to a strategy if they believe in it. In order to believe in the strategy people must be convinced that, as a result of pursuing the strategy, they will achieve the business goals. It is therefore, essential that the cause and effect relationships between strategic actions and goals are clear.

Requirement 18: *The strategy management process should make the link between a chosen strategy and expected operational benefit explicit. Therefore, people can develop the strategy well if they can see what the potential result of the strategy is (Pearson and Robinson, 1988; Ramanujam et al., 1986; Goodman and Lawless, 1994; Kaplan and Norton, 2001)*

If managers wish to improve the way they set about developing strategies, then they need to develop ways of critically assessing their current strategy formulation process (Platts et al, 1996). Andrews (1987), Digman (1990), Pearson and Robinson (1988) and Kaplan and Norton (2001) supported this argument by stating, in order to accept that there are combinations of applicable, adaptable, well defined aspects within the strategy formulation process, which are in effective one strategy development process.

Requirement 19: *There is need for a formal, well define, understandable, adaptable and flexible process to facilitate strategy management (Andrews, 1987; Digman, 1990; Pearson and Robinson, 1988; Platts et al, 1996; Kaplan and Norton, 2001)*

Different approaches (e.g. Andrews, 1987; Pearson and Robinson, 1988; Feurer at al., 1995; Babich, 1999) to the creation of strategy performance highlighted that the degree to which attention is given to the clear direction documentation plan. For most organisation this is likely to be basic but those that are there should be sound and in line with the company's strategic decisions. Hence, to achieve acceptance and commitment it is critical that the resultant strategy document is clear, unambiguous with detailed plans and responsibilities for action.

Requirement 20: *The strategy management process should result in a good document with a clear and detailed plan, including clear responsibility for actions (Andrews, 1987; Pearson and Robinson, 1988; Feurer at al., 1995; Babich, 1999)*

Top management should use their experience as a learning loop throughout the organisation. To miximise the financial, changing competitive and operating scenarios that are essential for success in the future (Mills et al., 1998; Babich, 1999; Kaplan and Norton, 2001). Therefore, the strategy management process should ensure that previous experiences are captured and used to formulate future strategies.

Requirements 21: The strategy management process should facilitate learning from experience (Mills et al., 1998; Babich, 1999; Kaplan and Norton, 2001)

Schroeder et al (1986), Horte et al (1987), Digman (1990), Hull and Wu (1997) and Kaplan and Norton (2001) observed that organisations start with financial and forecast based planning. They later add strategic analysis skills, before discovering novel imaginative strategies before envisioning potential futures significantly different from the present, which requires a broad diffusion of strategic thinking throughout the organisation.

In addition, a successful organisation requires an environment in which new ideas are sustained rather than suppressed, and in which there are few rewards for suspicion and other forms of negative thinking. It also requires acceptance that ultimately creativity and innovation are the key strategies for creating stakeholder value. Consequently, strategy planning requires significant input from strategic thinking.

Requirement 22: The strategy management process requires significant integration between strategic thinking and strategic planning (Schroeder et al, 1986; Horte et al 1987;, Digman , 1990; Hull and Wu ,1997; Kaplan and Norton, 2001)

Extension to this argument, Herocleous (1998) dicussed that '*whereas Mintzberg's view of strategy is more process focused (how strategies are arrived at in organisational), Porter(1996)'s view of strategy is more positioning focused (what constitutes a*

sustainable strategic positioning in terms of particular organisational arrangements). These two different perspective suggest corresponding thinking modes for aspect of strategy focus on; Mintzberg (1999) emphasising the creative and synthetic, Porter emphasising the convergent and analytical. This argument makes one essential point that creative strategies emerging from strategic thinking still have to be discovered through convergent (e.g. strengths, weaknesses) and analytical thought (strategic planning). Therefore, the strategy management process should provide/ encourage for the creation/ innovation and/ or maintenance of a competitive advantage in the selected area of the activity (Rumelt, 1980).

Requirements 23: *The strategy management process should encourage innovation through presenting managers all business options, strengths and weaknesses, therefore making them creative (Rumelt, 1980; Porter, 1996; Herocleous ,1998; Mintzberg, 1999)*

2.7. Conclusions

The strategy management is fundamentally concerned with understanding:

- the nature of competitive advantages
- the environment
- the purposes of business and expectation of stakeholders
- the basis of strategic options and choices
- the strategy evaluation and selection
- the management of strategic change
- the allocation and control of resources
- the organisational structure and design
- the strategy performance

and the means by which business competitive position is acquired and sustained.

This chapter has explored the major approaches adopted by the strategist seeking to better understand the factors that underpin all the above concerned. The chapter's aim was to demonstrate the different approaches not as mutually exclusive, but rather as providing alternative methods for better understanding the means by which strategy is formulated and implemented.

The review has confirmed that three initial research propositions:

- 1. *Strategy management process needs to include the performance measurement process both as inputs as well as outputs (Bititci et al 1997, Owen 1982)***
- 2. *Strategic objectives need to be systematically deployed down to business processes, rather than functions, because it is the business processes that generate value for the business (Feurer, 1995; Flood and Jackson, 1981; Bititci 1997)***
- 3. *Strategy management process should be viewed as a Business Process (Pearce and Robinson, 1988; Ansof, 1990; Wheelen and Hunger, 1992; Childe et al., 1994, 1995; Goodman and Lawless, 1994; Bititci et al., 2000)***

are valid. Furthermore, this review established a more detailed set of requirements that could be used by anyone who wishes to develop a strategic model for their organisation, enabling them to invest in the very best aspects of the literature and frameworks currently available. A full list of requirements can be reviewed in Table 2.10.

Strategy Management Requirements

1. Strategy management should be viewed as a key business processes, i.e. Strategy Management Process (SMP)
2. SMP should be continuous
3. SMP should provide a closed loop control system
4. SMP should have an event driven trigger mechanism, i.e. external monitor.
5. SMP should focus on business units
6. SMP should focus on its competitive strategy and customer value proposition for each business unit
7. SMP should consolidate various business unit strategies taking into account of various conflicts and trade-offs to develop operations strategy
8. SMP should integrate a multiple levels of hierarchy
9. SMP should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy
10. Operations Strategy for each business unit arises at business processes level
11. SMP should critically review the company objectives and deploy top-level objectives through all levels
12. Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account of various conflicts and trade-off for each business unit
13. Traditional strategic decision areas in operations strategy should be applied at business process level
14. Performance measurement should arise at two levels: External and Internal
15. External performance measures should provide an input to strategy management process
16. SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers / market) performance measures
17. SMP should maximise feasibility of the strategy. Therefore, people involvement in strategy formulation and implementation is a key factor in determining strategy performance
18. SMP should make the link between a chosen strategy and expected operational benefit clear. Therefore, people can develop a good strategy well if they can see in advance what the potential
19. There is need for a formal, well define, understandable, adaptable and flexible process to facilitate strategy management
20. SMP should result in a good documentation with a clear and detailed plan, including clear responsibility for actions
21. SMP should facilitate learning from experience
22. SMP requires significant integration between strategic thinking and strategic planning
23. SMP should encourage innovation through providing managers with all business options, strengths and weaknesses, therefore, making them creative

Table 2.10. Dynamic Strategy Management Requirements

References Against Requirements

1. Pearce & Robinson, '88; Ansof, '90; Wheelen and Hunger, '92; Childe et al., '94, '95; Goodman and Lawless, '94; Bititci et al., '00
2. Thomson '95; Goodman & Lawless. '94; Edward & Pepard '94; Feurer et al., '95; Cowley & Domb, '97; Balogun et al '99; Babich '99; Kap. & Nor., '01
3. Goodman and Lawless, '94; Edward & Pepard '94; Feurer et al, '95; Babich, 1995; Cowley & Domb, '97; Kaplan and Norton, '01
4. Goodman and Lawless, '94; Feurer et al, '95; Kaplan and Norton, '01
5. Platts & Gregory '96; Lynch '97; Hull and Wu, '97; FOCUS, '20; Lapierre '20; Kap. & Nor., '01
6. Donovan et al. '97; Lynch '97; Walter & Lancaster 00; Kaplan & Norton., '01 FOCUS '00
7. Digman, '90; Corbett and Wassenhove, '93; Mills et al, '98; Feurer et al., '95
8. Hofer & Schendel, '79; Wheelwright, '84; Digman, '90; Pearson and Robinson, '88; and FOCUS, '00
9. Babich, '99; Feurer et al, '95; Kaplan and Norton '01
10. Hill '93; DeMeyer & Ferdows '87; Long & Vickers-Kock '96; Hayes '85; Hayes & Upton '98; Hayes & Pisano '94; Bititci '99
11. Flood and Jackson, '81; Fahey, '98; Feurer, '95; Bititci et al., '99; Simon, '00
12. Feurer et al., '95; Platts et al., '98
13. Talwar, '97; Rhodes, '91
14. Globerson, '85; Schroeder et al, '86; Kaplan and Norton, '90, '96; Dixon et al., '90; Leong et al, '90; Anderson et al '91; Hill, '93; Platts and Gregory, '96; Hull and Wu, '97; Nicholas, '98
15. Kaplan & Norton, '90, '96, '01; Markides, '00; Bititci et al., '00; Mills et al., '98; Pearson & Robinson., '88
16. Platts and Gregory, '96; Babich, '99; Kaplan and Norton, '01
17. Huber et al '85; Ramnujam, '86; Platts et al, '96; Fahey, '98; Godet, '98; Segars, '98, '99; Simon, '00
18. Pearson and Robinson, '88; Ramanujam et al., '86; Goodman and Lawless, '94; Kaplan and Norton, '01
20. Andrews, '87 Pearson and Robinson, '88; Feurer et al., '95; Babich, '99
21. Mills et al., '98; Babich, '99; Kaplan and Norton, '01
22. Schroeder et al, '86; Horte et al '87; Digman, '90; Hull and Wu, '97; Kaplan and Norton, '01
23. Rumelt, '80; Porter, '96; Heracleous, '98; Mintzberg, '99

Table 2.10. Dynamic Strategy Management Requirements

Having defined the requirements, the next objective is to look at the available Strategy Management Processes and compare it with the requirements in Table 2.10, to see their limitations and strengths.

However, in analysing these requirements a potential conflict was identified between two groups of these requirements. These are:

- Group 1: Requirements 10,12, 13 which all support the argument that strategy should be deployed to business processes rather than functions
- Group 2: Requirements 17, 18, 19, 20 suggest that strategy should be understandable by people at all level and people should be able to relate to the strategy and have ownership of strategy.

The potential problem found was that many businesses stick operate in functions and not in terms of business processes. In order to understand to potential effect of this confusion a questionnaire was prepared that objectively assessed whether operational managers would be able to relate to strategy, expressed business processes in terms. This questionnaire was circulated to 10 operational managers. The questionnaire is included in Appendix A.

In analysing the results of the questionnaire:

- 78 % of participants had a good knowledge of the main principles of a process approach
- 68 % predicted that the effectiveness of their company's strategy would be improved using a process based approach

It is apparent from the results that most managers would support business process based approach to strategy management (that companies would be willing to transform their strategy formulation methods from a functional to process approach).

Having established, the invalidity of the potential conflict, the research progressed by looking at available strategy management processes approaches and compared it with identified requirements, to see their limitations and strengths.

Chapter 3 – Strategy Management Models

3.1.Introduction

The literature review in chapter 2 presented a set of working definitions, frameworks and strategy management process requirements as a focal point for further discussion on strategy and sets the stage for discussion on:

- what is strategy, operations strategy and strategy management
- what are the general frameworks and deployment approaches to strategy management
- what are the requirements for new dynamic strategy management process

This discussion is carried on throughout subsequent chapters. The aim of this chapter is to provide insights into the key strategy management process approaches to identify how they differ and whether they fulfil the management process requirements.

Strategy management process is usually represented in broadly dichotomous terms: *rational versus incremental* (Goodman and Lawless, 1994). In each stage, there are critical differences. Goodman and Lawless (1994) describes that although the rational approach as a ‘structured, systematic view of potential problem areas’ in terms of monitoring, the incremental approach has no such ‘well-defined system but uses a combination of rational measures and intuition’. On the other hand, Chaffee (1985) recognised three main strategy processes, while Mintzberg et al. (1990, 1998) identified ten different schools of thought. These differences seem to show a lack of agreement on which major approaches exist. However, the researchers, who have identified their categories broadly, can explain these differences. If the categories are broadly drawn, the various schools of thought can be grouped into three fundamentally different approaches to strategy management and deployment.

This chapter, therefore, views the topic of strategy management process at three abstraction / scope levels. At the highest level of abstraction, different ways of thinking about strategy formation within the enterprise can be recognised. At lower levels of abstraction, differing paradigms translate into differing approaches to strategy deployment. Their applicability and main distinguishing features are shown in Table 3.1.

Scope	Strategy Levels	Focus
Business wide	Corporate	Mission, purpose, business
	Business or business unit	units, survival
Functional/ operational focused	Corporate	Functional and operational
	Business or business unit	business unit support
	Operations/ manufacturing	
Business Processes focused	Corporate	Processes and business unit
	Business or business unit	support
	Business Processes	

Table 3.1.Strategy Management Deployment Approaches

The structure of this chapter, therefore, closely follows these abstraction levels. First of all, we shall start by assessing each model within each abstraction level against dynamic strategy management process requirements, which were identified in Chapter 2, and then critically compare the models. To compare different models to strategy management processes, the researcher designed six attributes for describing the models. These attributes are:

1. **Starting Point:** highest level used as a basis for deriving appropriate strategies
2. **Intended Message:** the message are planning to achieve from the process
3. **Realised Message:** realised message can be recognised from the process by what has been applied or put into practice
4. **Enablers of Strategy:** the factors (e.g. strategy or operations management tools and techniques) assisting the model
5. **Model Hierarchy:** whether or not the model identifies different levels of strategy, such as business, business unit, operations strategy and business process
6. **Facilitation Method:** the methods used to facilitate the model

Different strategy management process models will be described in terms of the three-abstraction strategy levels, as follows:

3.2. Business Level Strategy Management Process

One of the difficulties of the literature to do with the strategy management process at a business wide level, is the range of terms researchers in this field use to describe their ideas. A review was carried out with models of general business strategy and corporate strategy formulation processes.

Andrews (1987) wrote that *'corporate strategy is an organisation process, in many ways inseparable from the structure, behaviour, culture of the company in which it takes place'*. He argues that strategy formulation should be viewed as a rational and explicit design issue, which led Mintzberg (1990) to identify the design school, as apposed to the planning school thought. In a similar vein, Ansoff (1965, 1990) distinguishes and ranks four basic types of decisions: *'operating procedure, programme, policies and strategies'*. He argued that the firm should be conceived as a *'resource - conversion process'* from a decision viewpoint.

Most literature employing the strategy formulation process, however, does not focus on the rational processes, but on the incremental – formal processes within the organisation. Some researchers such as Pearson and Robinson (1988), Thomson and Strickland (1990), Digman (1990) and Wheelen and Hunger (1992), have developed a clear 'cascade' model of the strategy management process, where decision of a higher order, such as mission and current strategy, are first taken. They submerge to lower levels, where they are translated into programmes, budgets, and actions. Among the most prescriptive and rational models analysed in this category were Lynch's (1997) model of prescriptive strategy development process and Andrews (1987), Goodman and Lewless' (1994) model of strategy making.

Different models and frameworks to business wide strategy formulation processes are compared by comparing the defined categories as shown in Table 3.2. This table shows that there have been comparatively few attempts to model the strategy management formulation process on a business wide level. Some of the models detailed in this area have been considered, most of which are highly conceptual. They have a number of distinctive stages with limited feedback between them.

In most models, however, it was found that insufficient details for practical firm-level use. Some researchers, such as Lynych (1997), Chahravarthy and Lorange (1991), Goodman and Lawless (1994), Wheelen and Hunger (1992), etc.,) explained their models by making little or no attempt to decompose the broad stages or elements of strategy formulation into specific action steps. In summary, they offer only general guidelines into the practical process of strategy formulation. A satisfactory combination of rational and incremental models is rigorous and their practicality still remains unclear.

There are some highly developed models (e.g. Lynch (1997), Digman (1990), Pearce and Robinson(1988), Goodman and Lawless (1994), Wheelen & Hunger (1992)), etc.,) Table 3.2 shows that there is a little consideration given to the particular role of operations within the general strategy making process.

To summarise, different models confirm that different formulation processes are reactive to corporate strategy, although involved in a part of business unit or business in corporate strategy through the identification of competitive strengths and weaknesses of the company.

Detail of the approaches within each level have been intentionally left because of the objectives of the research, which is to understand if the available approach managed to fulfil the stated requirements.

Although there have been a number of valuable contributions in strategy management formulation up until now, the above approaches could not manage to fulfil whole dynamic strategy management process requirements (identified in Chapter 2), as illustrated in Table 3.3.

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Andrews (1987)</p>	<ul style="list-style-type: none"> • Environmental opportunities • Structure, behaviour and culture of the company 	Fit	Think (strategy making as case study)	<ul style="list-style-type: none"> • market opportunities • corporate competence and resources • personal values and aspirations • acknowledged obligations to segments of society • risk analysis 	<ul style="list-style-type: none"> • Corporate level 	Risk assessment
<p>Ansof (1965,1990)</p>	<ul style="list-style-type: none"> • Resource conversion process • Systems theory • Company's culture 	Formalise	Program (rather than formulate)	<ul style="list-style-type: none"> • Environmental analysis • Capability plans and response • Managerial work capacity • Structure of the company • Periodic review • Strategic and tactical implications 	<ul style="list-style-type: none"> • Corporate level • Business units 	Company's culture, review mechanism,

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Pearson and Robinson (1988)</p>	<ul style="list-style-type: none"> External environment Grand theory 	Envision, cope with competitive environment	Capitulate, learn from past successes	<ul style="list-style-type: none"> Management traditional values and concerns 'financial, human and physical resources company's capabilities mission 	<ul style="list-style-type: none"> Corporate Business Functional 	Inherent management, quantities and qualities of resources
<p>Digman (1990)</p>	<ul style="list-style-type: none"> Organisation theory, microeconomic Mission statement 	Creativity	Continuous process, event driven strategic decisions	<ul style="list-style-type: none"> Mission The scope or domain of action, Skills and resources Competitive advantages Synergies Situation analysis Business Objectives 	<ul style="list-style-type: none"> Enterprise Corporate Business-unit Functional 	Situation analysis, Firm resource and competencies to determine strategic goals and structure Strategic control process

Table 3.2. Comparison between strategy management processes

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Thomson and Strickland (1990)</p>	<ul style="list-style-type: none"> Value systems Mission statement 	Goodness of fit, envision	Positive, centralise	<ul style="list-style-type: none"> Mission Organisational strengths & weaknesses Competitive capabilities Managers beliefs Shared values and company culture Success factors Performance measurement Business Objectives Leadership and teaming 	<ul style="list-style-type: none"> Corporate Business Functional Operating 	<ul style="list-style-type: none"> Strategy supportive budget, Internal administrative support systems, rewards and incentives
<p>Wheelen and Hunger (1992)</p>	<ul style="list-style-type: none"> Environmental scanning 	Formalise	Program and procedures	<ul style="list-style-type: none"> Mission Task and societal environment Performance measurement Business Objectives SWOT Performance Budgets 	<ul style="list-style-type: none"> corporate 	<ul style="list-style-type: none"> Performance measurement, Benchmarking

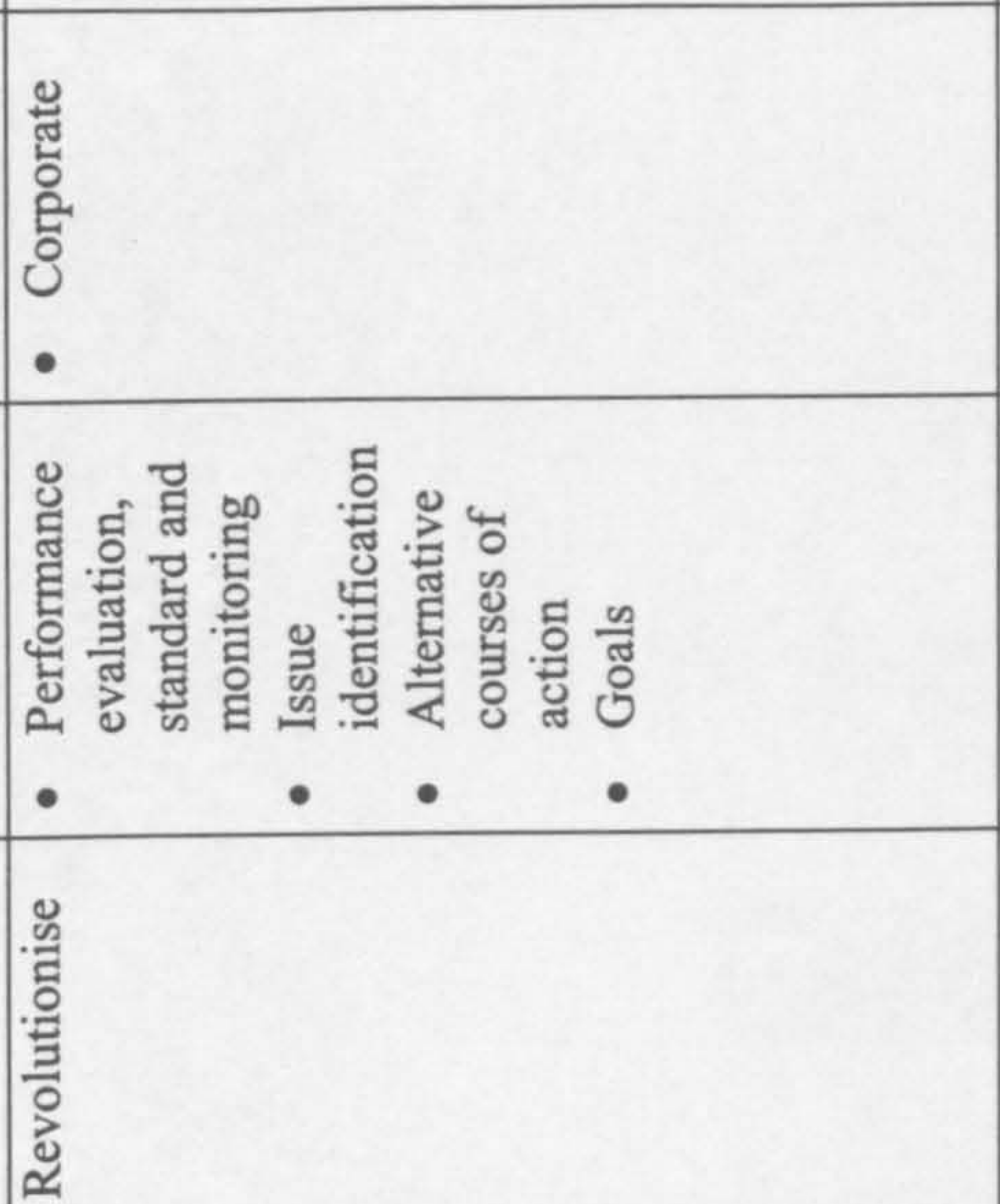
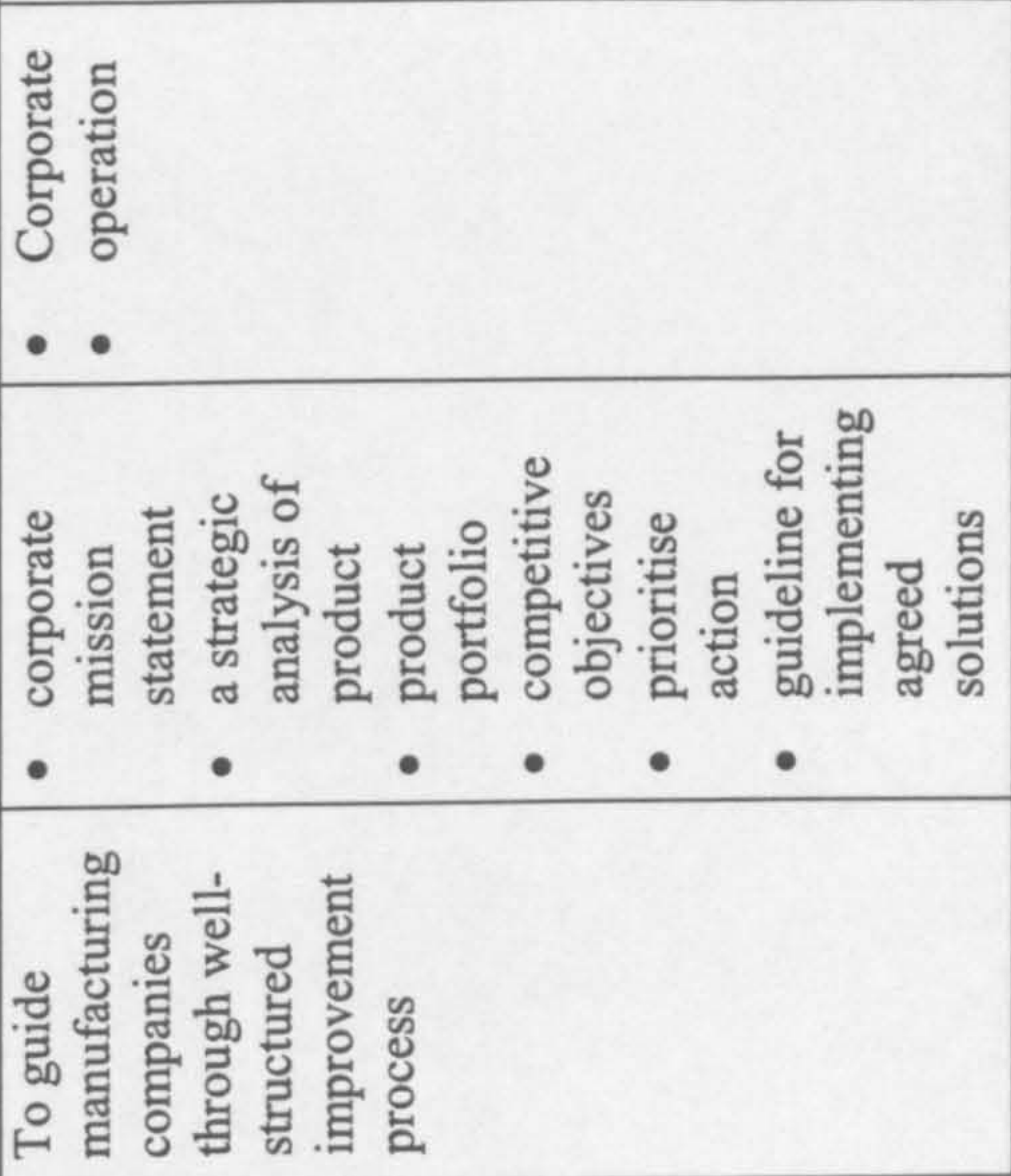
RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Goodman and Lawless (1994)</p> 	<ul style="list-style-type: none"> • Cybernetic and control systems • Open system • Current strategy 	Integrate, transform	Revolutionise	<ul style="list-style-type: none"> • Performance evaluation, standard and monitoring • Issue identification • Alternative courses of action • Goals 	<ul style="list-style-type: none"> • Corporate 	Negotiation, routine observation of performance
<p>STRATEGEM Hughes (1996)</p>  <p>Deliverables within the each stages:</p> <ol style="list-style-type: none"> 1. Strategic Analysis <ul style="list-style-type: none"> • Corporate mission • Strategic and competitive audit • Agreed improvements 2. Manufacturing analysis <ul style="list-style-type: none"> • Manufacturing audit report • Resource impact matrix 3. Manufacturing strategy <ul style="list-style-type: none"> • Manufacturing solutions and streams • Manufacturing strategy 4. Action planning <ul style="list-style-type: none"> • Prioritized company-wide 	<ul style="list-style-type: none"> • Mission statement • Competitive information 	Transfer their operations to achieve manufacturing excellence	To guide manufacturing companies through well-structured improvement process	<ul style="list-style-type: none"> • corporate mission statement • a strategic analysis of product product portfolio • competitive objectives • prioritise action • guideline for implementing agreed solutions 	<ul style="list-style-type: none"> • Corporate operation 	<ul style="list-style-type: none"> • computer based tools • workshops • workbook

Table 3.2. Comparison between strategy management processes

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Focus (2000)</p> <pre> graph TD L1[Level 1 Business Definition] --> FA[Financial Analysis] L1 --> CP[Corporate Plan] FA --> FP[Formulate Plan] FA --> PG[Profit Goal] FP --> MC[Market Congruence] PG --> MC FP --> WA[Work to Agenda] MC --> RP[Reassess priorities] WA --> RP RP --> I[Issues] </pre> <p>Level 1 Business Definition</p> <p>Level 2 Strategy Setting</p> <p>Level 3 Strategy to Action</p>	<ul style="list-style-type: none"> • Grouping market requirements, customer as well as product 	<p>Analyse, formalise, business improvement process, coalesce, transform</p>	<p>Lead to action, Minimise the time for analysis and synthesis</p>	<ul style="list-style-type: none"> • Financial analysis • Market profile • Competitor profile • Success factors • Performance measurement • Designed software • Value proposition 	<ul style="list-style-type: none"> • Corporate level • Business level • Business unit level 	<ul style="list-style-type: none"> • Profit & loss accounts • Value proposition • software designed

Table 3.2. Comparison between strategy management processes

Requirements		✓ Covered ☑ Limited Coverage ✗ Not Covered										
		Digman ('90)	Pearce & Robt. ('88)	Thomsan & Str. ('90)	Goodm. & Law ('94)	Andrews ('87)	Wheelen & Hunger ('92)	STRATEG	Lynch ('97)	FPCUS (2001)		
1.	Strategy management should be viewed as a key business processes, i.e. Strategy Management Process (SMP)	✓	☑	✗	✓	✗	☑	✗	✗	✗		
2.	SMP should be continuous	✓	✓	✗	✓	✗	✓	✗	☑	✗		
3.	SMP should provide a closed loop control system	✗	☑	✗	✓	☑	✗	✗	✗	✗		
4.	SMP should have an event driven trigger mechanism, i.e. external monitor.	✓	✗	✗	✓	✗	✗	✗	☑	✗		
5.	SMP should focus on business units	✓	✗	✗	✗	✗	✗	✗	✓	✓		
6.	SMP should focus on its competitive strategy and customer value proposition for each business unit	✗	✗	✗	✗	✗	✗	✗	✗	✓		
7.	SMP should consolidate various business unit strategies taking into account of various conflicts and trade-offs to develop operations strategy	☑	✗	✗	✗	✗	✗	✗	✗	☑		
8.	SMP should integrate a multiple levels of hierarchy	✓	✓	✓	✗	✗	✗	✓	✗	✓		
9.	SMP should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy	✗	☑	✗	✗	✗	☑	✗	✗	✗		
10.	Operations Strategy for each business unit arises at business processes level	✗	✗	✗	✗	✗	✗	✗	✗	✗		
11.	SMP should critically review the company objectives and deploy top-level objectives through all levels	✗	✗	✗	✗	✗	✗	✗	✗	✗		
12.	Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account of various conflicts and trade-off for each business unit	✗	✗	✗	✗	✗	✗	✗	✗	✗		
13.	Traditional strategic decision areas in operations strategy should be applied at business process level	✗	✗	✗	✗	✗	✗	✗	✗	✗		
14.	Performance measurement should arise at two levels: External and Internal	✗	✓	☑	☑	✗	✓	✗	☑	✗		
15.	External performance measures should provide an input to strategy management process	✗	☑	☑	☑	✗	✓	✗	☑	✗		
16.	SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers / market) performance measures	✗	☑	☑	☑	✗	✓	✗	☑	✗		
17.	SMP should maximise feasibility of the strategy	✗	✓	✓	✓	☑	✓	✗	☑	✗		
18.	SMP should make the link between a chosen strategy and expected operational benefit clear	✗	✓	☑	✓	✗	✓	✗	☑	✗		
19.	There is need for a formal, well define, understandable, adaptable and flexible process to facilitate strategy management	✓	✓	☑	☑	✓	✓	✗	✗	☑		
20.	SMP should result in a good documentation with a clear and detailed plan, including clear responsibility for actions	☑	✓	✓	☑	✓	✓	✗	✗	✗		
21.	SMP should facilitate learning from experience	✗	✓	☑	☑	✗	✗	✗	✗	✗		
22.	SMP requires significant integration between strategic thinking and strategic planning	✓	✗	✓	☑	✓	✓	✗	✗	✗		
23.	SMP should encourage innovation through providing managers with all business options, strengths and weaknesses, therefore, making them creative	☑	✓	✓	✓	✓	✓	✓	✗	✓		

Table 3.3. Strategy Management Models

3.3. Functionally Based Operations Strategy Processes

As the literature review chapter indicated, organisation strategies are frequently described in terms of a hierarchy of strategies, corporate, business / business unit, and operations strategy. In the above section different corporate and business level strategy formulation and implementation models are stated. Within the framework of organisation strategy, manufacturing and operations strategy is traditionally viewed as a functional level strategy. This section provides operations strategy formulation and implementation approaches.

Skinner (1969) and Hill (1985) stressed the importance of the process of operations strategy formulation and implementation. Adam and Swamidass (1989) literature review supported them by stating *'business and corporate strategy literature investigates strategic planning, planning processes and planning models, manufacturing and operations strategy does not. There is an urgent need to develop a body of literature on manufacturing / operations strategy planning process'*.

Different researchers pointed out some reasons for industries' lack of adoption of manufacturing concept within the corporate strategy. These are:

- Strong instinctive premises and mind-sets cloned into generations of managers to do the conventional functional organisation of business (Skinner, 1992)
- Missing conceptual links in the theory of manufacturing strategy (Skinner, 1992)
- Detailed examination of content elements relevant to operations strategy (cost, quality, delivery and flexibility) (Fine and Hax, 1985)
- Importance of co-ordination of operations strategy with functional and corporate-level strategies (Fine and Hax, 1985)

- The first stage of manufacturing systems design and operations strategy analysis interface is to understand and capture operations strategy (Hull and Wu, 1997)

To clarify these problems, researchers proposed a different operations strategy process as illustrated by the corresponding seven categories in Table 3.4. Different theses led to theory building in terms of considering

- Manufacturing systems and procedures (Skinner, 1992)
- Manufacturing controls (Skinner, 1992)
- Manufacturing operations (Skinner, 1992)
- Inter-functional strategy interaction (Leong et al, 1990)
- Capability building and manufacturing improvement programs (Leong et al, 1990)
- Which specific order winners and order qualifiers are important? (Hill, 1993)
- Identification of interface requirements emerging from manufacturing strategy process (Hull and Wu, 1997)
- Identification of strengths and weaknesses in operations strategy process development (Anderson et al, 1991)
- Merge operations strategy with ideas and methods from other disciplines. These are:
 - Adapting and developing concepts from business strategy (Leong et al, 1990)
 - Linking strategic action to the performance (Leong et al, 1990)
 - Linking environment and performance (Swamidass and Newell, 1987)
 - Linking customers' requirements to the competitive criteria (Hill, 1993, 1999)
 - Linking together administration system involving feedback and adjustment (Platts et al, 1996-1999)

On the other hand, some researchers, such as Schroeder et al. (1986) and Horte et al. (1987,) used quantitative analysis in order to

- profile existing studies and statistical techniques for assessing and combining their findings, and
- illustrate how operations strategy are defined in practice, identification strategies, and identified content elements of operations strategy.

Recently, some researchers, such as Platts and Gregory (Platts et al, 1996-1999), Hughes (1996) from University of Plymouth (who has proposed the STRATEGEM) represent a workbook-based audit approach to '*operationalise the previous strategy framework's e.g. Skinner and Hill, and make them accessible to the management of operating companies*'. Each stage of both approaches is carried out by a group of managers operating in a workshop environment and supported by a facilitator, who guides them through the process (Platts et al 1996-1999, Hughes, 1996).

Table 3.4. confirmed that the formulation process of functional based operations strategy is characterized by the activities, issues and models associated with developing a strategy for a specific organisation. Different researchers followed a traditional hierarchical top-down approach in formulating operations strategy under the umbrella of corporate strategy.

Within the hierarchical mode, Skinner's model introduced a hierarchical nature of strategy, the model focuses only on manufacturing and operations. This model does not explain how to build an operations strategy around the company's other functions (e.g. marketing, finance). Table 3.4. proved that the major differences between Skinner's and Hill's model is the interaction between the functions. While Skinner looked at the manufacturing function in isolation; Hill tried to link marketing with manufacturing. Although Hill tried to address all problems by providing a link to marketing, the marketing and manufacturing functions within the organisation, by themselves, do not make a business successful.

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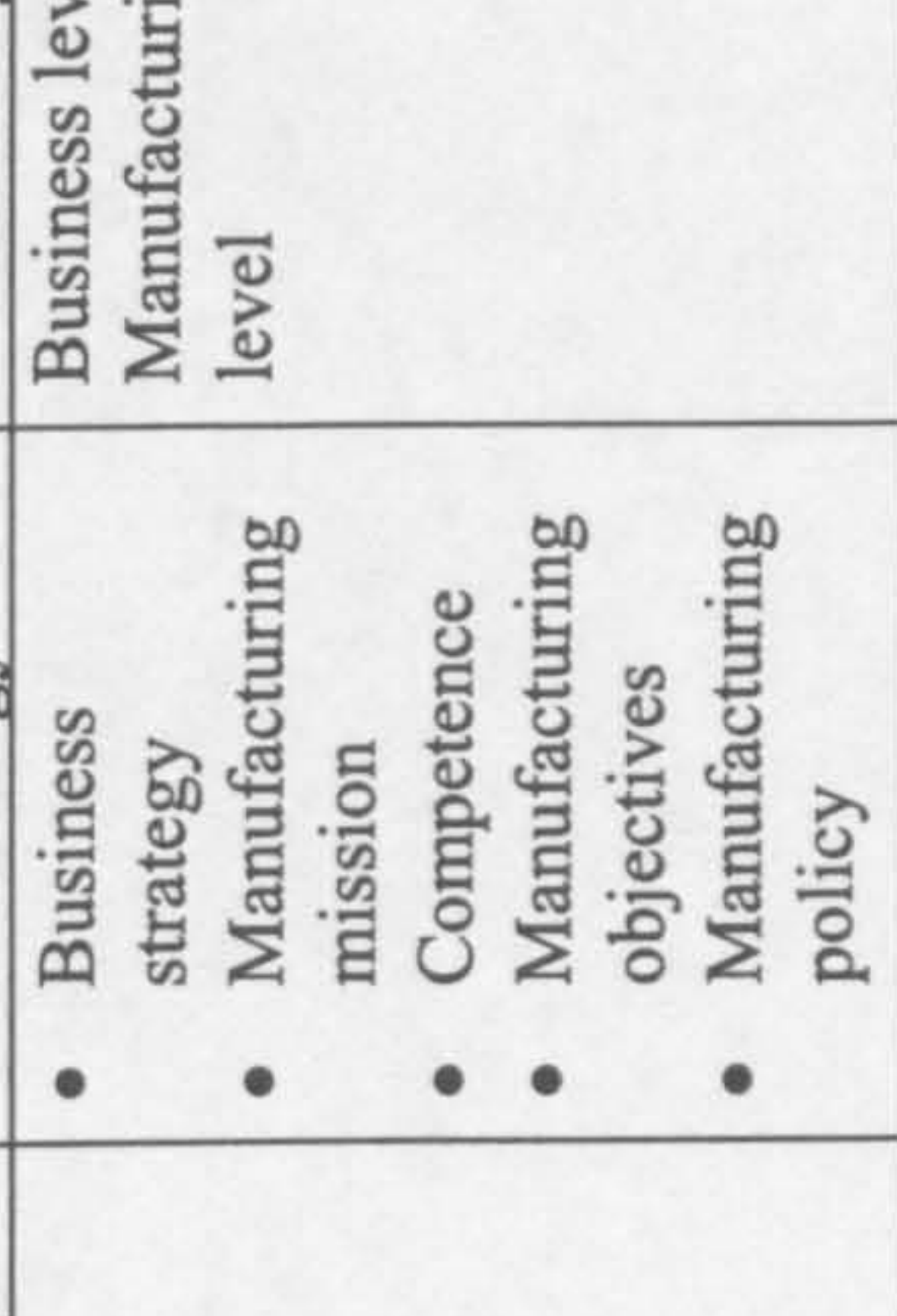
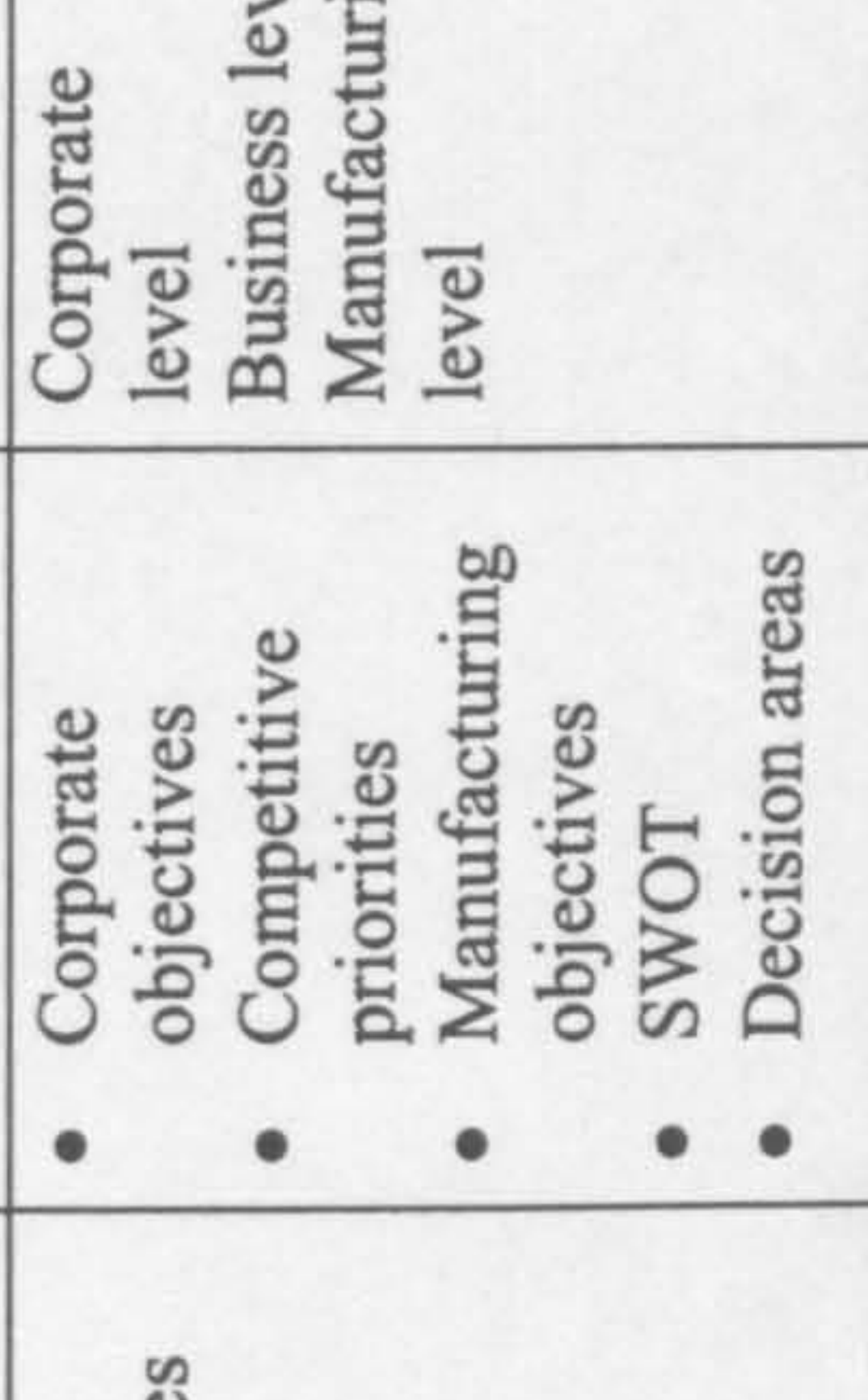
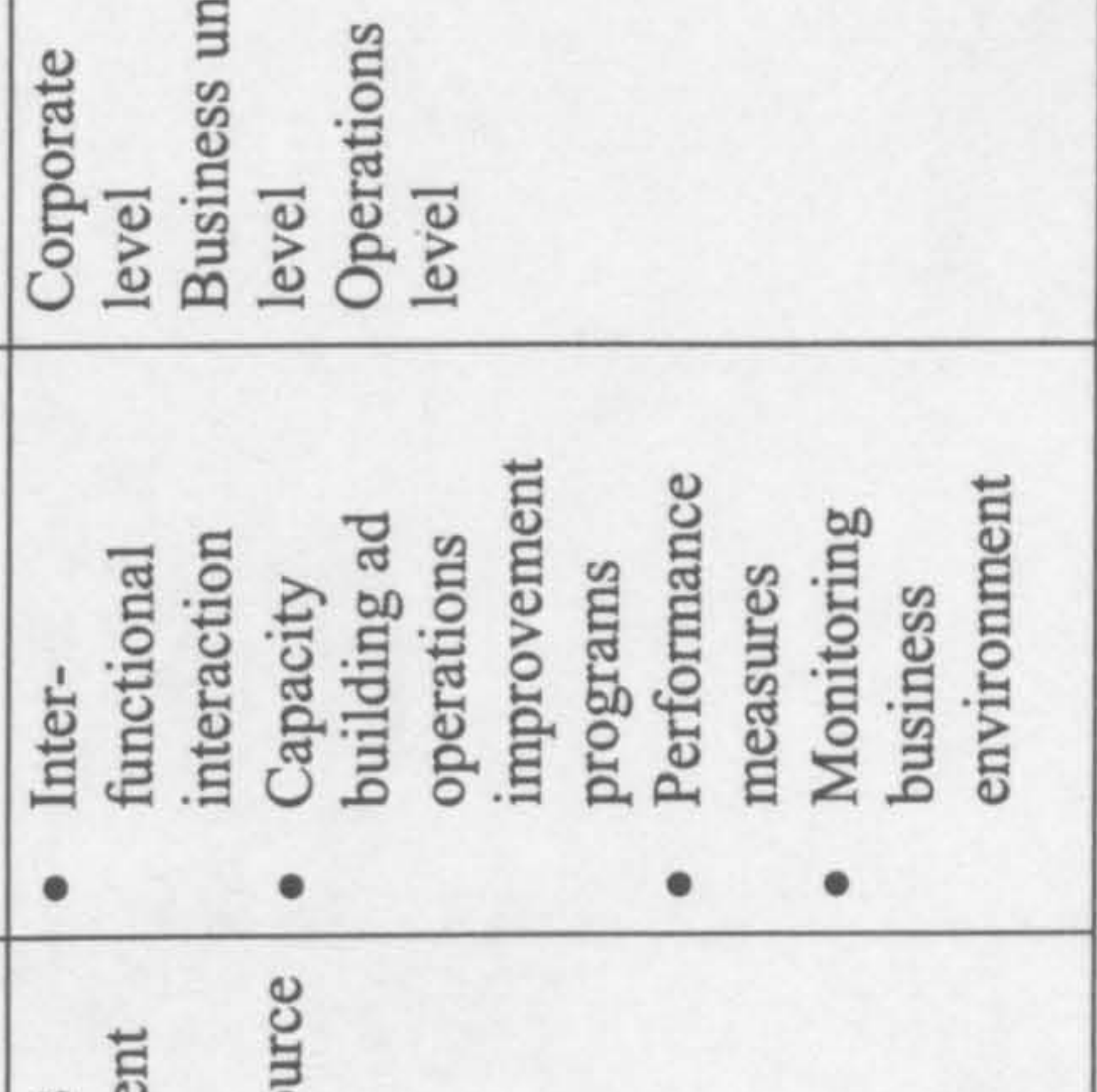
RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Schroeder et al. (1986)</p> 	<ul style="list-style-type: none"> Business strategy Learning theory 	Formalise	Program	<ul style="list-style-type: none"> Business strategy Manufacturing mission Competence Manufacturing objectives Manufacturing policy 	Business level Manufacturing level	Consensus among respondents
<p>Horte et al (1987)</p> 	<ul style="list-style-type: none"> Strategic direction Manufacturing 	Integrate, improvement in manufacturing capabilities	Plans, programmes	<ul style="list-style-type: none"> Corporate objectives Competitive priorities Manufacturing objectives SWOT Decision areas 	Corporate level Business level Manufacturing level	Performance measures
<p>Leong et al (1990)</p> 	Corporate strategy, inter-functional interactions	Integrate, improvement, capacity building	Operations improvement program, Better resource usage	<ul style="list-style-type: none"> Inter-functional interaction Capacity building ad operations improvement programs Performance measures Monitoring business environment 	Corporate level Business unit level Operations level	Performance measures, Monitoring business environment

Table 3.4 Operations Strategy Processes' Approaches

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Anderson et al (1991)</p> <p>The diagram shows a flow from internal inputs (Human, Organisational, Technological, Social) and external inputs (Social, Regulation, Economic, Technology, Competition) through process attributes (Managerial leadership, Organisational involvement, Resource allocation and reward systems, Decisions aids, Formalization and communication) to business strategy (Business Strategy process, Manufacturing Strategy process, Other functional strategy process) and manufacturing strategy (Business Strategy, Manufacturing Strategy, Other functional strategy), leading to firm performance (Short term viability, Profitability ROE, Market share, Long-term viability) and market customer requirements.</p>	Stakeholder characteristics in terms of external and internal factors	Analyse, organisation capacity and resources improvement	More operations involvement in Business Strategy Process Plan	<ul style="list-style-type: none"> Financial performance Customer requirements Stakeholders characteristics as a input 	<ul style="list-style-type: none"> Business level Operations level 	Monitoring business environment Performance measures
<p>Hill (1993, 1999)</p> <p>The diagram shows a flow from corporate objectives (Growth, Survival, Profit, Return on investment, Other financial measures) through marketing strategy (Product markets and segments, Range, Mix, Volumes, Standardisation versus customisation, Level of innovation, Leader versus follower alternatives) to how do products win orders (Price, Conformance, quality, Delivery, Speed, Reliability, Colour, range, Product range, Design, Brand image, Technical support) and process choice (Choices of alternative processes, Trade-off embodied in the process choice, Role of inventory in the process configuration, Process positioning, Capacity, Size, Timing, Location) to manufacturing strategy (Function support, Manufacturing planning and control systems, Manufacturing engineering, Quality assurance and control, Clerical procedures, Work structuring, Organisational structure, Payment systems).</p>	Corporate/objectives/strategy	Defining OWC based on market characteristics	Selecting processes to meet selected OWC	<ul style="list-style-type: none"> Marketing strategy Corporate objective 	<ul style="list-style-type: none"> Corporate marketing Manufacturing 	Iterative process

Table 3.4 Operations Strategy Processes' Approaches

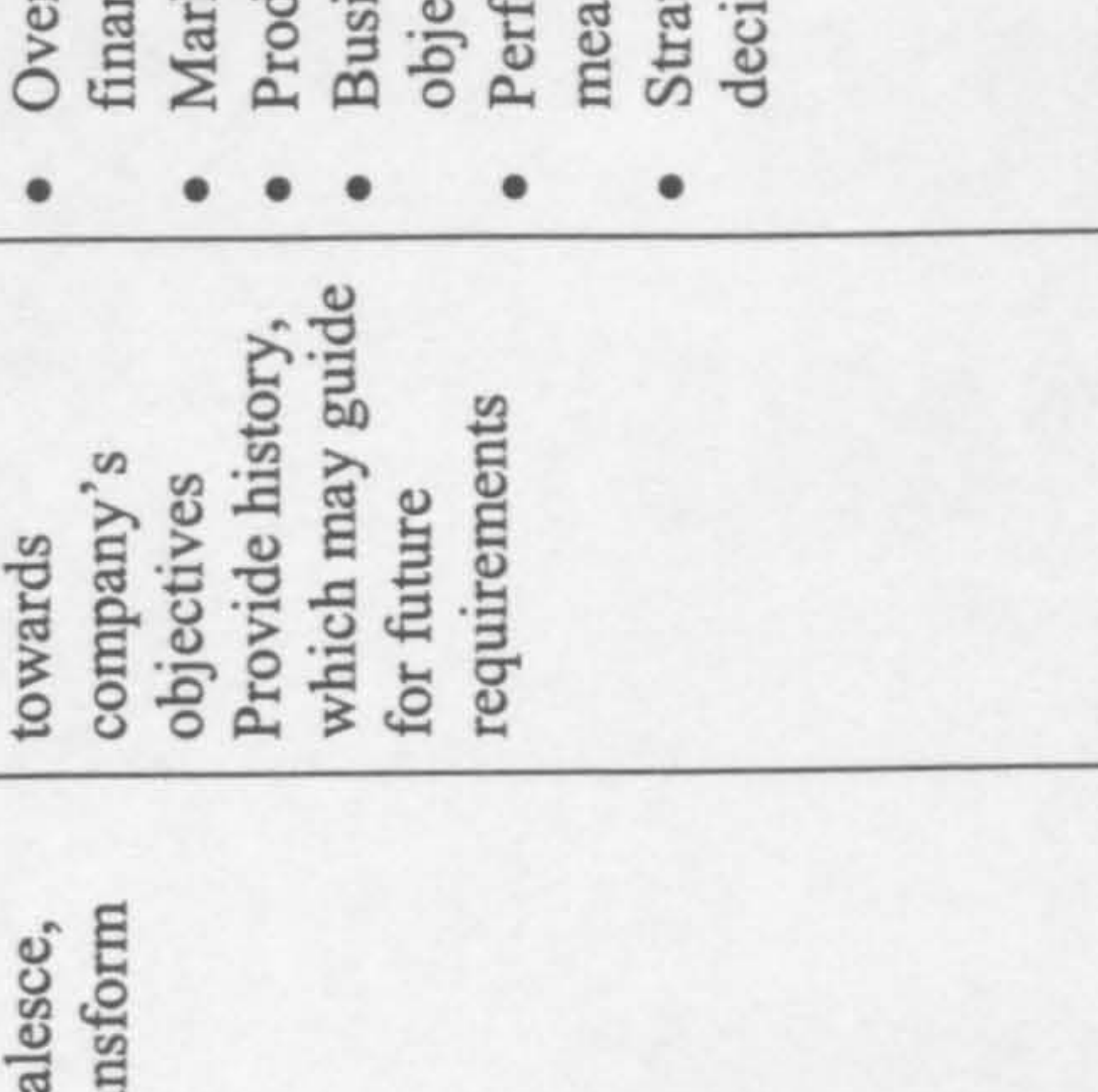
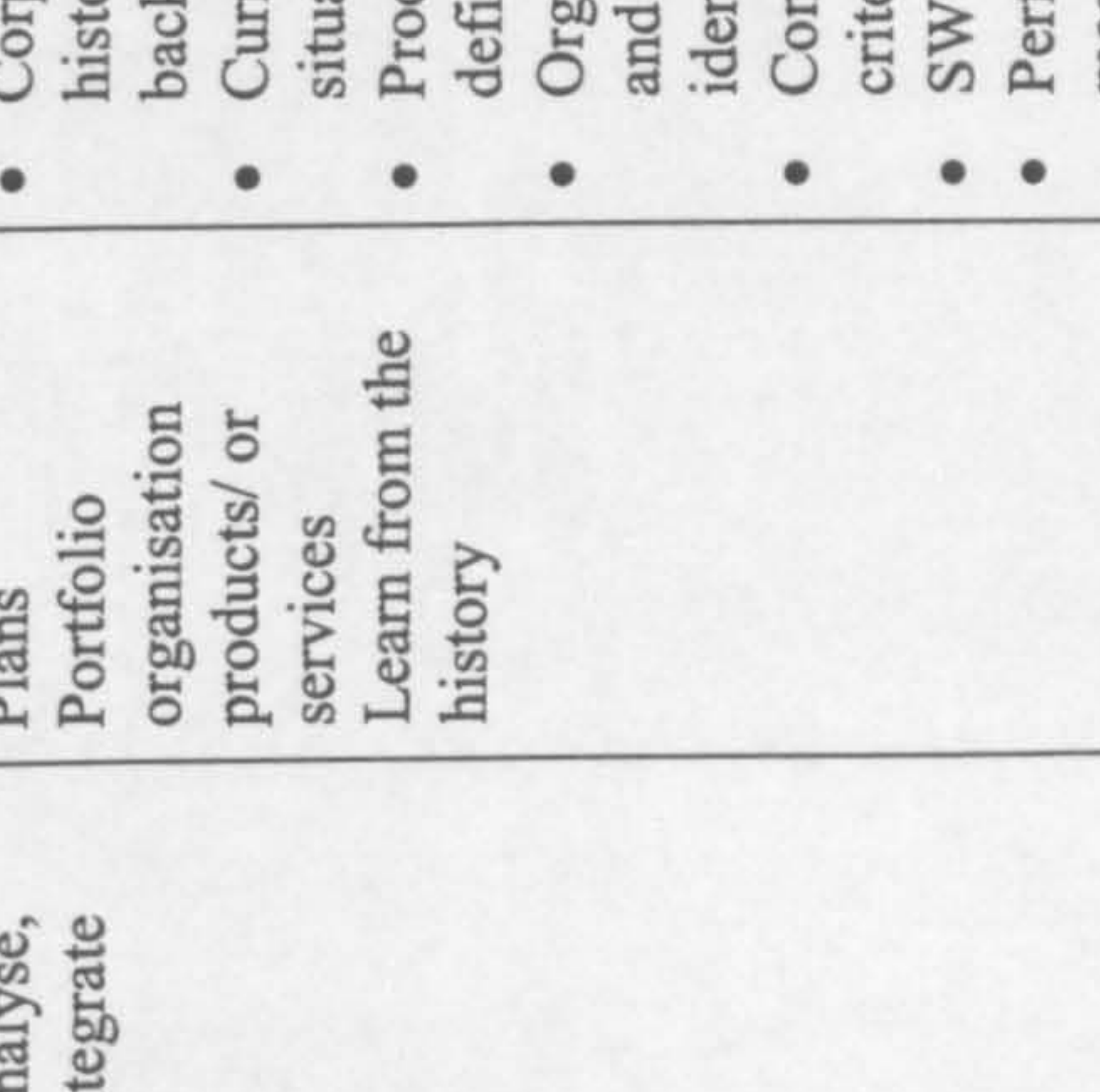
RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Cambridge (Platts, Gregory, 1996-1999)</p> 	<ul style="list-style-type: none"> Grouping product and customer requirements Corporate objectives and strategy 	<p>Analyse, learn, coalesce, transform</p>	<p>Calculate, Navigating towards company's objectives Provide history, which may guide for future requirements</p>	<ul style="list-style-type: none"> Current strategy chart Overview of financial data Market data Product profile Business objectives Performance measurement Strategic decisions areas 	<ul style="list-style-type: none"> Corporate level Business unit level Functional level 	<p>Use of scenarios Current strategy chart, workbook, audit method</p>
<p>Hull and Wu (1997)</p> 	<p>Identification of interface requirements</p>	<p>Analyse, integrate</p>	<p>Plans Portfolio organisation products/ or services Learn from the history</p>	<ul style="list-style-type: none"> Corporate historical background Current situation Product group definition Organisation and operations identification Competitive criteria SWOT Performance measures 	<ul style="list-style-type: none"> Corporate level Business unit level Operations 	<p>Interface</p>

Table 3.4 Operations Strategy Processes' Approaches

Some structured approaches, such as Fine and Hax (1985), Horte et al (1987), Hull and Wu (1997), face a number of observable difficulties. These include parallel operation decision issues with the wider processes and the demand of dynamic environment. Another difficulty in their model was in accomplishing satisfactory balance between offering three levels of strategies (corporate, business and manufacturing), despite the fact that identifying, in sufficient detail, the actions involved at corporate and business level. On the other hand, some researchers, such as Schroeder et al (1986), contributed the operations strategy concept and operations strategy process without getting into the details of operations strategy process.

Leong et al (1990) also offered a series of practical suggestions for operations strategy, including resource issues and theory building. But they failed to provide an example of its use as their model seems to be more theoretically based. Their useful research findings could be used as a starting point to design operations strategy process. The underlying principle is that there is a casual relationship between environment and strategic action and market conditions or company performance. Performance measurement should attempt to reflect strategic decisions.

From the Anderson et al perspective, operation strategy process could be improved by more manufacturing involvement in the business strategy process. Many authors suggested that, in order to design the most helpful operations strategy process, companies should incorporate them into an integrated corporate-level (e.g. business strategy) as well as functional level, (De Meyer and Ferdows 1991, Fine and Hax 1985, Schroeder et al. 1986).

Although the latest model (Platts et al, 1999) offers a more idealised and definable model of the operations strategy process than the previous one, the most up-to-date model does not provide a good template for elaboration of operational level use. This

offers a guide to operation level and business unit level. Furthermore, they do not contemplate current and future company's financial performance and try to link them to the operational performance as Hoshin does (Babich, 1999).

Hughes puts forward a powerful argument for managing business in a more strategic manner, using information that is more likely to be predictive by senior managers than operational level managers as well as historical. Although information about customer, supplier relationships, or which customers are targeted by competitors, will give important clues as to how businesses are likely to perform in the future, he offered no overall framework for the integrated development of manufacturing strategy.

Even Hull and Wu's (1997) recommended interface aim is merely to provide generic guidance for an action plan detailing and designing task selection, the difficulty in their model is in achieving reasonable balance between offering an enthusiastic overview of manufacturing strategy formulation, whilst at the same time specifying in sufficient detail the actions involved at each stage.

Although there have been a number of valuable contributions in functional based operations strategy formulation up until now, the above approaches could not manage to fulfil the whole dynamic strategy management process requirements (identified in Chapter 2) as illustrated in Table 3.5.

Requirements	✓ Covered		☑ Limited Coverage		✗ Not Covered				
	Skinner (1969)	Fine and Hax (1985)	Schroeder et al (1986)	Horte et al (1987)	Leong et al (1990)	Anderson et al (1991)	Hill (1993, 1999)	Platts & Gregory 1996	Hull and Wu (1997)
1. Strategy management should be viewed as a key business processes, i.e. Strategy Management Process (SMP)	✗	✗	✗	✗	✗	✗	✗	✗	✗
2. SMP should be continuous	✗	✗	✗	✗	✗	✗	☑	✗	✗
3. SMP should provide a closed loop control system	✗	✗	✗	✗	✗	✗	✗	✗	✗
4. SMP should have an event driven trigger mechanism, i.e. external monitor.	✗	✗	✗	✗	✗	✗	✗	✗	✗
5. SMP should focus on business units	✗	✗	✗	✗	✓	☑	✗	✓	✓
6. SMP should focus on its competitive strategy and customer value proposition for each business unit	✗	✗	✗	✗	✗	✗	✗	✗	✗
7. SMP should consolidate various business unit strategies taking into account of various conflicts and trade-offs to develop operations strategy	✗	✗	✗	✗	✗	✗	✗	✗	✗
8. SMP should integrate a multiple levels of hierarchy	✓	✓	✓	☑	✓	✓	✗	✓	☑
9. SMP should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy	✗	✗	✗	✗	✗	✗	☑	✓	✗
10. Operations Strategy for each business unit arises at business processes level	✗	✗	✗	✗	✗	✗	✗	✗	✗
11. SMP should critically review the company objectives and deploy top-level objectives through all levels	✗	☑	☑	☑	✗	☑	☑	✗	✗
12. Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account of various conflicts and trade-off for each business unit	✗	☑	✗	✗	✗	✗	✗	✗	✗
13. Traditional strategic decision areas in operations strategy should be applied at business process level	✗	✗	✗	✗	✗	✗	✗	✗	✗
14. Performance measurement should arise at two levels: External and Internal	✗	✓	✗	✗	☑	☑	✗	✗	☑
15. External performance measures should provide an input to strategy management process	✗	✗	✗	✗	✗	✗	✗	☑	✗
16. SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers/ market) performance measures	✗	✓	✗	✗	✗	☑	✗	✗	✗
17. SMP should maximise feasibility of the strategy	✗	☑	✗	✗	✗	☑	☑	✗	✗
18. SMP should make the link between a chosen strategy and expected operational benefit clear.	✗	✗	✗	☑	☑	☑	✗	✗	✗
19. There is need for a formal, well defined, understandable, adaptable and flexible process to facilitate strategy management	☑	☑	☑	✗	✗	☑	☑	☑	✗
20. SMP should result in good documentation with a clear and detailed plan, including clear responsibility for actions	✗	☑	☑	✗	✗	☑	✗	✗	✗
21. SMP should facilitate learning from experience	✗	✗	✗	✗	✗	✗	✗	☑	✗
22. SMP requires significant integration between strategic thinking and strategic planning	✗	✗	☑	☑	☑	☑	✗	✗	☑
23. SMP should encourage innovation through providing managers with all business options, strengths and weaknesses, therefore, making them creative	☑	✓	✗	✓	✗	☑	✗	✓	☑

Table 3.5. Operations Strategy Models

3.4. Business Processes Based Operations Strategy Process

In the previous section, a review was carried out on models of general corporate, business strategy or operations strategy formulation processes. This section's aim is to state business process approaches to strategy management or operations strategy. There have been comparatively few attempts to process based strategy formulation process. Most of these are highly conceptual, considering corporate or business level strategy.

Recently, process oriented approaches to Strategy Management have come to the fore, such as Hoshin (Brachulis 1998; Cowley and Domb 1997; Feurer 1995); Talwar 1997 Edwards and Peppard, 1994, in order to build premise for the future competitive success.

Edward and Peppard (1994) tried to bridge the gap between strategy formulation and implementation (Edwards and Peppard, 1994). approached business re-engineering in terms of definition of the business architecture through enabling the organization to focus more clearly on customer requirements. They assumed that the business reengineering should be considered by “ *changing an organisation to reflect more what it does (e.g. satisfy customer requirements) rather than what it is (e.g. a manufacturer)*”.

Edward and Peppard (1994) addressed a series of “essential” issues for strategy as follows:

- *Competitive criteria within the organisations markets*
- *Stakeholder requirements*
- *Portfolio organisations products and/or services*
- *Product and process characteristics*
- *Defining critical Business processes*
- *Maintaining alignment of BP capabilities with customer needs*

On the other hand, Talwar's 1997 proposed methodology was that in order to build future competitive success, it is necessary to follow the next steps as follows:

1. Clarify and communicate strategy:
 - Who are we? What is our mission, values etc.?
 - On which markets, products and service should we focus?
 - What are the immediate priorities? etc.
2. Develop the competencies and capabilities we need to ensure effective delivery of the strategy:
 - e.g. product management, supplier management
3. Create the key processes to support the development and exploitation of competencies:
 - e.g. supplier management - the key processes might be supplier identification and vetting, contracts management and supplier performance appraisal
4. Implement the architectural changes required:
 - Reappraisal of physical locations
 - Changes in organisational structure, rewards and staffing
 - Refinement of the technology infrastructure
5. Assess the risk in implementing these tasks
6. Create and implement a 'change management' plan which addresses those risks and ensures that we emerge with a motivated and committed workforce

Hoshin - Kanri translated, as policy deployment is one of the aspects of Japanese management systems (Cowley and Domb 1997). The Hoshin approach focuses on daily operational strategies that are defined by describing activities and resource allocations for short-term solutions (Cowley and Domb 1997; Feurer 1995; Brachulis, 1998, Witcher and Butterworth, 1999).

Hoshin planning approach facilitates (Figure 3.2)

- helping orchestrate the direction of the company
- being involved in thinking of ways to do things better
- implementing ideas
- acquiring the habit of continuous improvement and annual breakthroughs

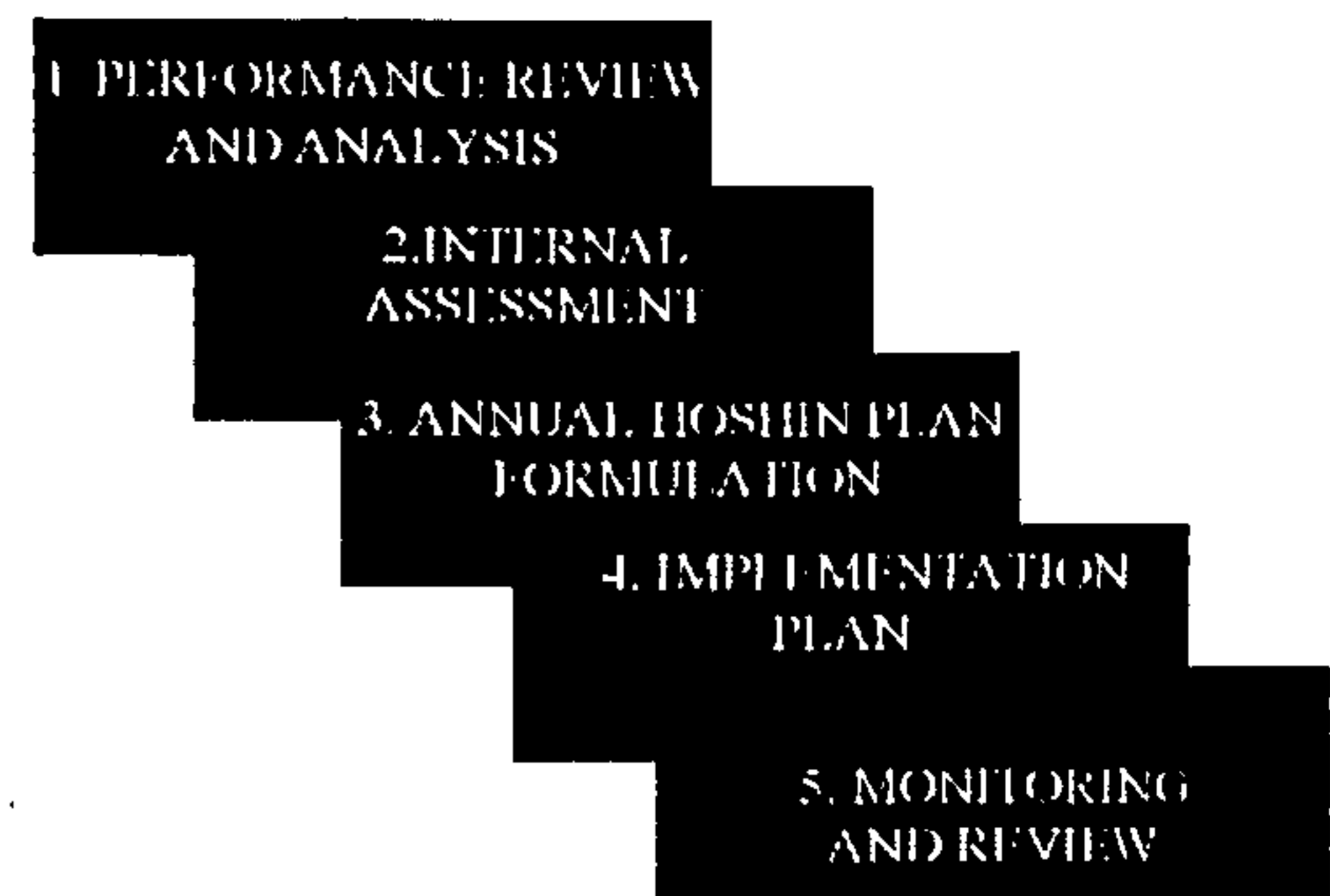


Figure 3.2. Hoshin- Kanri strategy approach

In seeking more practicable Hoshin-Kanri usage, a number of case studies were applied by different researchers, (e.g. Feurer et al 1995 at Hewlett-Packard, Wircher and Butterworth 1999 at Xerox (UK).

Different models and frameworks to process based approach to strategy formulation process are compared by the defined categories as shown in Table 3.6. This table. shows that business process literature offers a perspective on strategy formulation in which business processes are central. In this respect, it compensates for the performance measurement and operations strategy literature. However, the bulk of the work in this area remains at a conceptual level, such as the work done by Edward and Peppard (1994), or actions involved are insufficient at each stage, such as the work done by Kaplan and Norton (2001), Talward (1997), Babich (1999).

Although the Edwards and Peppard, (1994) model offers a solution to link strategy formation to the implementation, they failed to provide a detailed case study example of its use. Their approach constitutes a basis for further development rather than a step-by-step, fully developed model.

Even though Talwar (1997) went on to discuss the elements of process based view strategy in depth, recognising the strong linkage between strategy, core processes and architecture, he failed to relate financial analysis to his approach, before starting the detailed action.

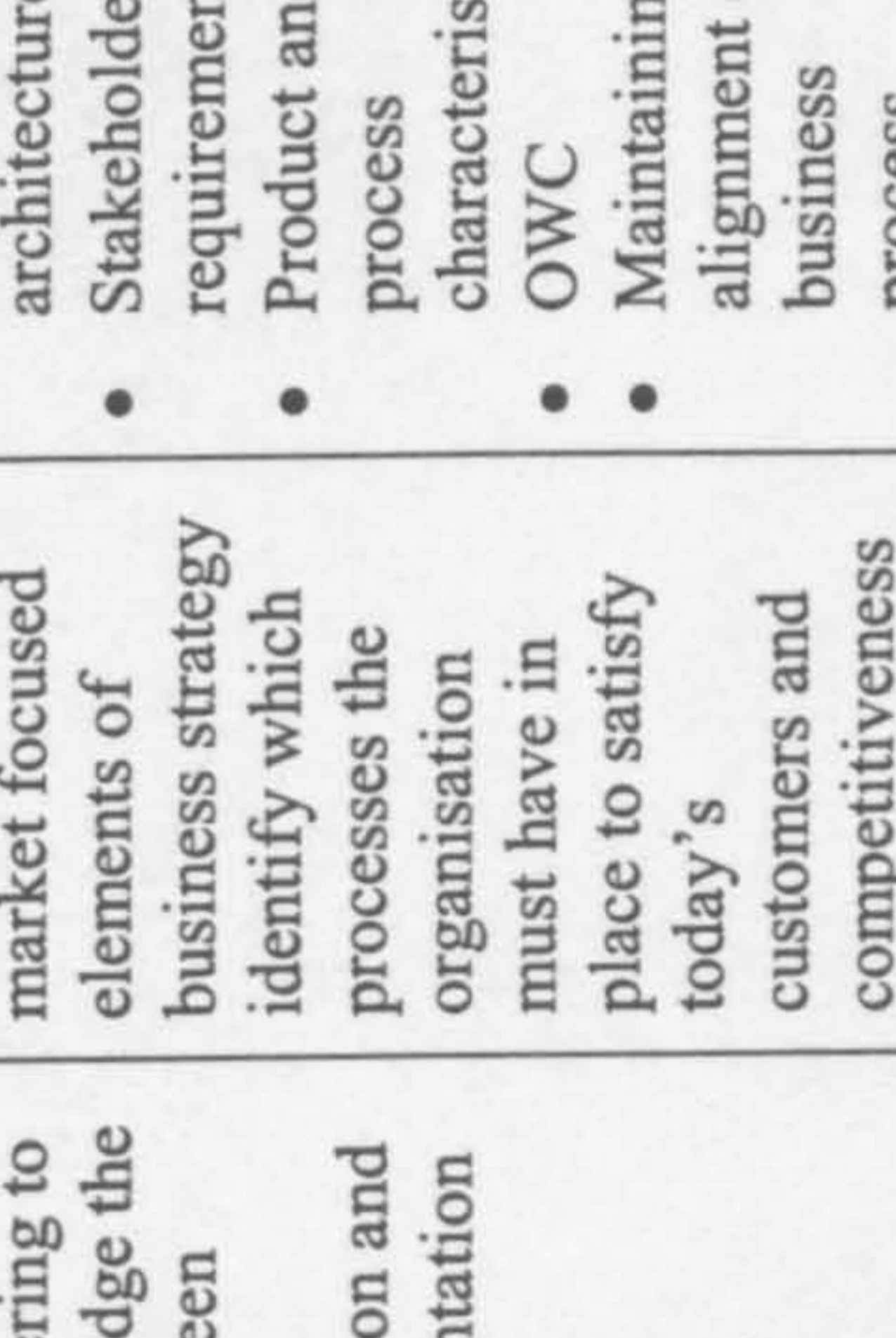
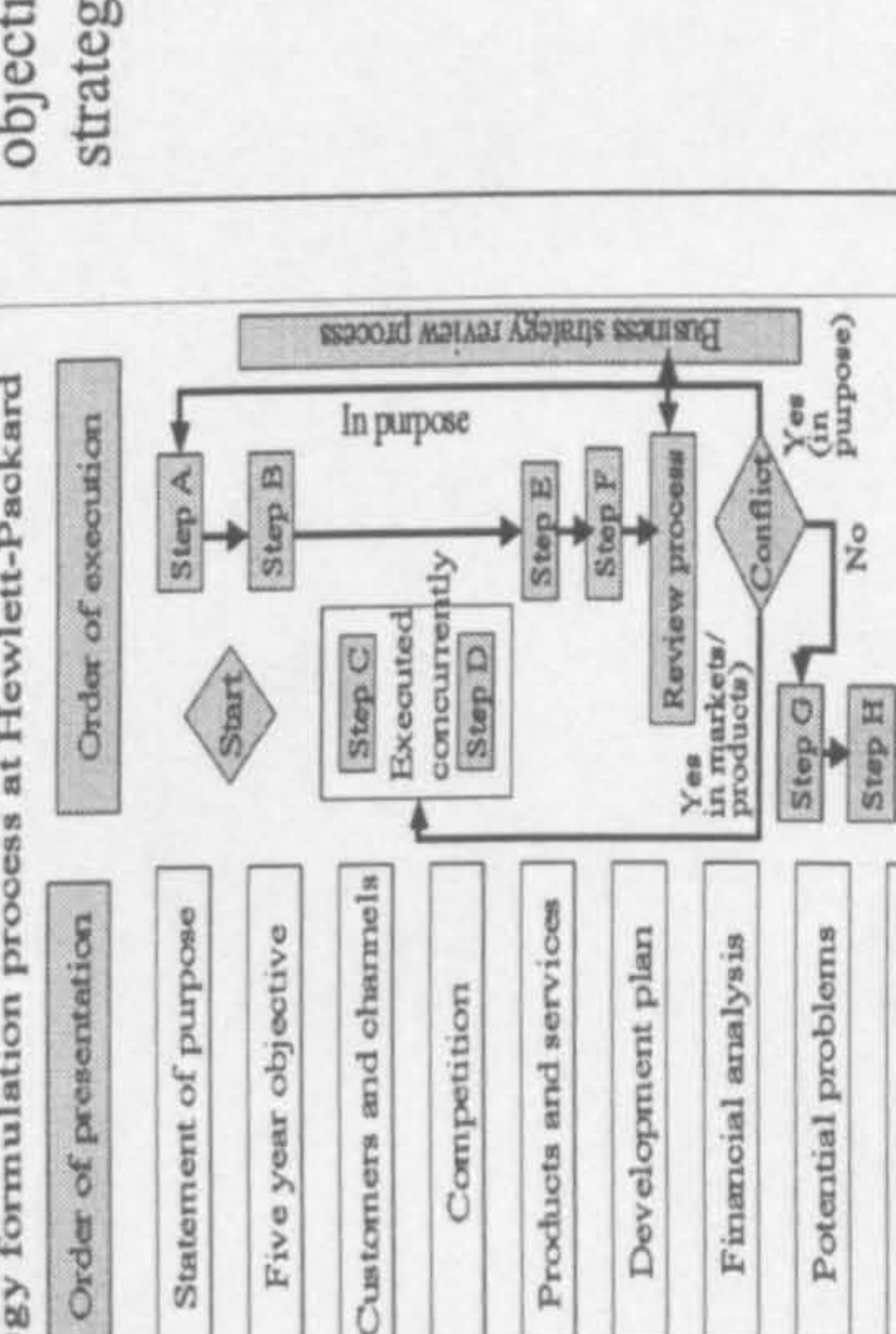
RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Edwards and Peppard (1994)</p>  <p>Figure . Linking Business Unit Strategy to Business processes</p>	<p>Market characteristics, Business Unit strategy</p>	<p>Use business reengineering to help a bridge the gap between strategy formulation and implementation</p>	<p>The product and market focused elements of business strategy identify which processes the organisation must have in place to satisfy today's customers and competitiveness</p>	<ul style="list-style-type: none"> Business architecture Stakeholder requirements Product and process characteristics OWC Maintaining alignment of business process capabilities with customer needs 	<ul style="list-style-type: none"> Business unit Business processes 	<p>Monitoring business environment Business re-engineering</p>
<p>Feurer et al. (1995)</p>  <p>Strategy formulation process at Hewlett-Packard</p>	<p>Corporate/objectives/strategy</p>	<p>Focus on success of stories of computer industry (Hewlett-Packard), and examines its approaches to dynamic strategy formulation and implementation</p>	<p>Knowledge about the competitive environment is dynamically transformed into strategies which are translated into measurable objectives and actions</p>	<ul style="list-style-type: none"> Hoshin-Kanri process Product and process characteristics Business processes Process oriented team based 	<ul style="list-style-type: none"> Corporate level Business level Division level Unit level 	<p>Common purpose, Scenarios Monitoring business environment</p>

Table 3. 6. Comparison between Business Process Based Strategy Management Processes

RESEARCHERS	Starting Point (Base Discipline)	Intended Message	Realised Message	Enablers of Strategy	Model Hierarchy	Facilitation method
<p>Talwar (1997)</p>	Business strategy	Business re-engineering as a strategy driven approach	Rethink, restructure and streamline the business structures, methods of working, management systems and external relationships through creating and delivering value	<ul style="list-style-type: none"> shareholder value external benchmarks redesign of business key drivers business architecture core competencies / capabilities 	<ul style="list-style-type: none"> Business Business processes 	Commitment and brainstorming
<p>Kaplan and Norton (2001)</p>	Balanced Scorecard	Aligning and focusing resources on strategy	Organisation must be aligned around its strategy, and performance measures systems that help create alignment.	<ul style="list-style-type: none"> Business unit Balanced Scorecard Budget and capital investment Information Technology Value propositions 	<ul style="list-style-type: none"> Business units Business processes 	Audit method

Table 3. 6. Comparison between Business Process Based Strategy Management Processes

<i>Requirements</i>		<i>✓ Covered</i>	<input checked="" type="checkbox"/> <i>Limited Coverage</i>	<i>✗ Not Covered</i>	<i>Edawrd & Peard (1994)</i>	<i>Talwar (1997)</i>	<i>Feurer et al (1995)</i>	<i>Kaplan & Norton (2001)</i>
1.	Strategy management should be viewed as a key business processes, i.e. Strategy Management Process (SMP)				X	X	X	X
2.	SMP should be continuous				<input checked="" type="checkbox"/>	X		✓
3.	SMP should provide a closed loop control system				<input checked="" type="checkbox"/>	X		✓
4.	SMP should have an event driven trigger mechanism, i.e. external monitor.				X	X	X	✓
5.	SMP should focus on business units				✓	X	X	X
6.	SMP should focus on its competitive strategy and customer value proposition for each business unit				X	X	X	✓
7.	SMP should consolidate various business unit strategies taking into account of various conflicts and trade-offs to develop operations strategy				X	X	X	X
8.	SMP should integrate a multiple levels of hierarchy				✓	✓	<input checked="" type="checkbox"/>	X
9.	SMP should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy				X	X	✓	X
10.	Operations Strategy for each business unit arises at business processes level				✓	<input checked="" type="checkbox"/>	✓	✓
11.	SMP should critically review the company objectives and deploy top-level objectives through all levels				X	X	✓	✓
12.	Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account of various conflicts and trade-off for each business unit				X	X	X	X
13.	Traditional strategic decision areas in operations strategy should be applied at business process level				X	X	X	X
14.	Performance measurement should arise at two levels: External and Internal				X	X	✓	✓
15.	External performance measures should provide an input to strategy management process				<input checked="" type="checkbox"/>	X	X	X
16.	SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers/ market) performance measures				X	X	<input checked="" type="checkbox"/>	✓
17.	SMP should maximise feasibility of the strategy				X	X	<input checked="" type="checkbox"/>	✓
18.	SMP should make the link between a chosen strategy and expected operational benefit clear.				X	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	✓
19.	There is need for a formal, well define, understandable, adaptable and flexible process to facilitate strategy management				X	<input checked="" type="checkbox"/>	✓	✓
20.	SMP should result in a good documentation with a clear and detailed plan, including clear responsibility for actions				X	X	✓	X
21.	SMP should facilitate learning from experience				X	X	X	✓
22.	SMP requires significant integration between strategic thinking and strategic planning				X	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	✓
23.	SMP should encourage innovation through providing managers with all business options, strengths and weaknesses, therefore, making them creative				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	✓	✓

Table 3.7. Business Process Based Strategy Models

plan, the strategy process is necessary to pass through a financial phase and their effect on each action.

Feurer et al (1995) strategy analysis of envisioning, objective setting, measurement and evaluation presents valuable lessons for the future. Because of financial pressures created by a dynamic environment, managers today are forced to think in the short term as in Hoshin (Feurer et al, Babich 1999) and the Balanced Scorecard approach. To tackle the dynamic environment, managers need to take a long-term view as well as a short-term view to ensure success in the future. Furthermore, they fail to show the relation between the levels clearly indicated by the Hoshin approach. Although Kaplan and Norton (2001) provided many case study applications of the strategy formulation model and stated what they learnt during a process practical application in the firm, they did not clearly explain the necessary level of detail with practical ease-of-use.

In establishing strategy for the company, it is essential that cause and effect relationships be established between levels that are congruent to the strategic objectives and performance measures of the company.

The above available approaches could not manage to fulfil the whole dynamic strategy management process requirements, as illustrated in Table 3.7.

3.6. Conclusion

This chapter was intended to present a critical point of view on strategy management formulation and implementation processes in a dynamic environment. The following chapters move from the broad to specific tools and techniques for managing strategy in individual firms. Along the way, a variety of issues and viewpoints are examined but the focus is on strategic decision-making. All of these approaches led to an interesting light on how strategy-making process can make a difference. Research by Hars and Banbury (1994) supported this research finding that “*even after controlling for size and*

key factors in firms' competitive environment, strategy-making processes is significant predictors of firm performance".

This is reviewed in Table 3.3., 3.6. and 3.7 and shows that the approaches within three different levels of abstraction cannot fulfil the strategy management process requirements, which were identified in Chapter 2. Most fulfilled approaches at each level are summarized as follows:

- Pearce and Robinson (1988) fulfilled about 50%
- Cambridge Approach (Platts and Gregory, 1996) fulfilled about 36%
- Balanced Scorecard (Kaplan and Norton, 2001) fulfilled about 63%

The literature review started from three research propositions and developed more than twenty-three specific requirements. This chapter demonstrated that none of the existing approach to strategy management was able to fulfil all the requirements specified (Table 2.9.) Therefore, there is a need to develop a model, which will fulfil the dynamic strategy management process requirements, and further contribute knowledge to this field by applying new strategy management process to several companies, and learn from the empirical data.

In order to fulfilling these three initial research propositions, as well as research requirements, the following plan was adopted:

- 1. develop a systematic process based approach to help manufacturing companies successfully carry out dynamic strategy development*
- 2. validate the new dynamic strategy management process approach*
- 3. apply the process to various companies (case studies)*
- 4. analyse and discuss the individual case studies and conduct a cross case analyses to learn from these applications.*

Chapter 4- Research Methodology

4.1. Introduction

The main aim behind this research is to *develop a better understanding of the effect of a business process based approach to strategy management*’.

In order to reach above the objective and fulfill the new strategy management process requirements, specific objectives of this research are identified as follows:

1. *develop a systematic process based approach to help manufacturing companies successfully carry out dynamic strategy management*
2. *validate the new dynamic strategy management process*
3. *apply the process to various companies (case studies)*
4. *analyse and discuss the individual case studies and cross case studies to learn from this application*

The objective of this chapter is to describe the research methodology used to accomplish main and; specific objectives, and in particular, the design of the research process. As it can be understood from the research requirements, the research described in this thesis clearly addresses an industrially-based problem area. As such, the work occurs under the category of management research. It is, therefore, necessary to review the literature on the management research methods before describing the approach that has been used in this research. Moreover, research methodology refers to the general orientation or style adopted by an enquiry to address research requirements and hypothesis. Research requirements are the main drivers for undertaking this research. Therefore, designing a plan for a research is basically concerned with transforming the research requirements into a coherent structured research project.

Therefore, the chapter is divided in three parts:

- The first part discusses the underlying management research issues relating to strategy management research approaches and research plan.

- The second part provides an overview of the approach to conducting research. First, the theoretical foundation of research is established, which is based on the theory that underlines the problem (research requirements) being examined, either theory building or verification. Next, a review of a different research plan is stated. The research plan chosen to meet research objectives, which are found in the second chapter, is presented, together with the reasons for this choice.
- The third section describes several data collection methods and a discussion of the selected research data collection method in conjunction with the research design. Then, an appropriate research design is selected. The following sections are explained under the research design section.

4.2. Management Research

The variety of approaches to the management research contain the development of methods for problem definition and solving sequence that may follow as a systematic check for anyone undertaking research at whatever level. (Hill and Johnson, 1991) *(The classification of management research will help clarifying research design.)*

A number of authors have tried to develop classification or categories of management research. Both Hedrick et al (1993) and Gill and Johnson (1991) identify the broad categories of basic and applied research. Easterby-Smith et al (1996) adds a third category of action research. All of the authors stress the need for some kind of systematic approach when conducting research of any type.

It is clear from the literature that two paradigms exist within the management research field. At this point it is better to explain how these paradigms relate to strategic management within the management research. Ansoff (1987) illustrates that 'hypothesis' and 'theory' are concepts familiar to all scientists. Figure 4.1 demonstrates their relationship to a paradigm. Ansoff showed a paradigm as a 'scientific umbrella, which at once unifies and reconciles several preceding theories that have appeared to be contradictory' (Figure 4.1.)

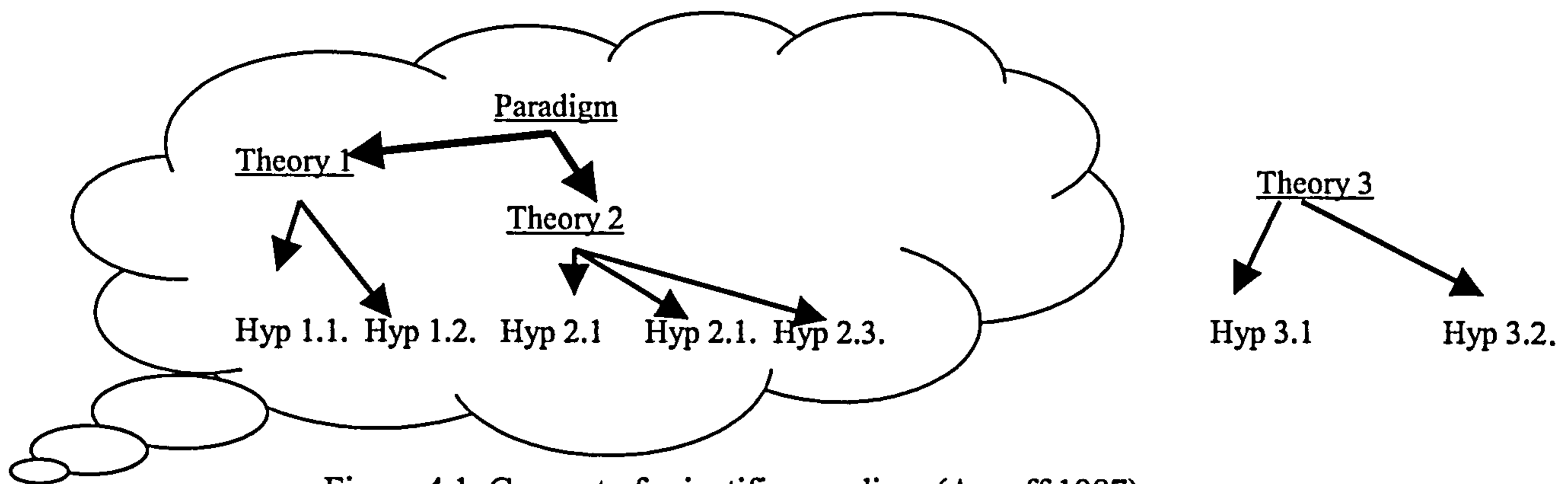


Figure 4.1. Concept of scientific paradigm (Ansoff 1987)

There are two paradigms, which drive the research methods; positivism and phenomenological (Esterby-Smith et al, 1996). Table 4.1. summarises the key characteristics of each approach.

	Positivist Paradigm	Phenomenological Paradigm
Basic Beliefs:	<ul style="list-style-type: none"> • the world is external and objective • observer is independent • science is value-free 	<ul style="list-style-type: none"> • the world is socially constructed and subjective • observer is part of what observed • science is driven by human interest
Researcher should:	<ul style="list-style-type: none"> • focus on facts • look for causality and fundamental laws • reduce phenomena to simplest elements • formulate hypotheses and then test them 	<ul style="list-style-type: none"> • focus on meanings • try to understand what is happening • look at the totality of each solution • develop ideas through induction from data
Preferred method include:	<ul style="list-style-type: none"> • operationalising concepts so that they can be measured • Taking large samples 	<ul style="list-style-type: none"> • using multiple methods to establish different views of phenomena • small samples investigated in depth or over time

Table 4.1. The key Features of Positivist and Phenomenological Paradigms (Esterby-Smith, 1996)

While these two paradigms seem to be contradictory, few people manage to operate within their pure forms. The views of most people are positioned somewhere in between these two paradigms (positivist, phenomenological). To understand better this, it is useful to consider observable types of strategic management behaviour within the management research.

The literature enthusiastically endorses the idea that a combination or hybrid of the positivistic and phenomenological philosophies encompasses the following issues:

- the study of natural strategy management research settings
- people as the primary data gathering instruments
- the use of tacit knowledge
- targeted rather than random sampling

Conclusion:

Therefore, this research, like the vast majority of management researchers, provides a middle ground between the two paradigms. This delivers the researcher to ask questions about what managers do (**Phenomenological paradigm**), what is the firm's competitive environment and its relative position, as well as what causal relationship between firm' suppliers to customers can be identified as (**Positivist paradigm**)

4.3. A Systematic Approach for Research

Before reviewing different approaches to the research methodology and selecting the research methodology to be adopted, it is important to understand the reasons why research methodology is important. Research methodology:

- enables an enquirer to undertake research in a systematic way
- introduces a logical justification of data collection, analysis and categorisation
- helps justification of data collection methods and any design modifications
- helps allay methodologically based fears in the minds of sponsors, examiners and other interests parties

This section describes as illustrated in Figure 4.2, the underlying philosophical issues relating to research methodology, strategy development and research method selection and design.

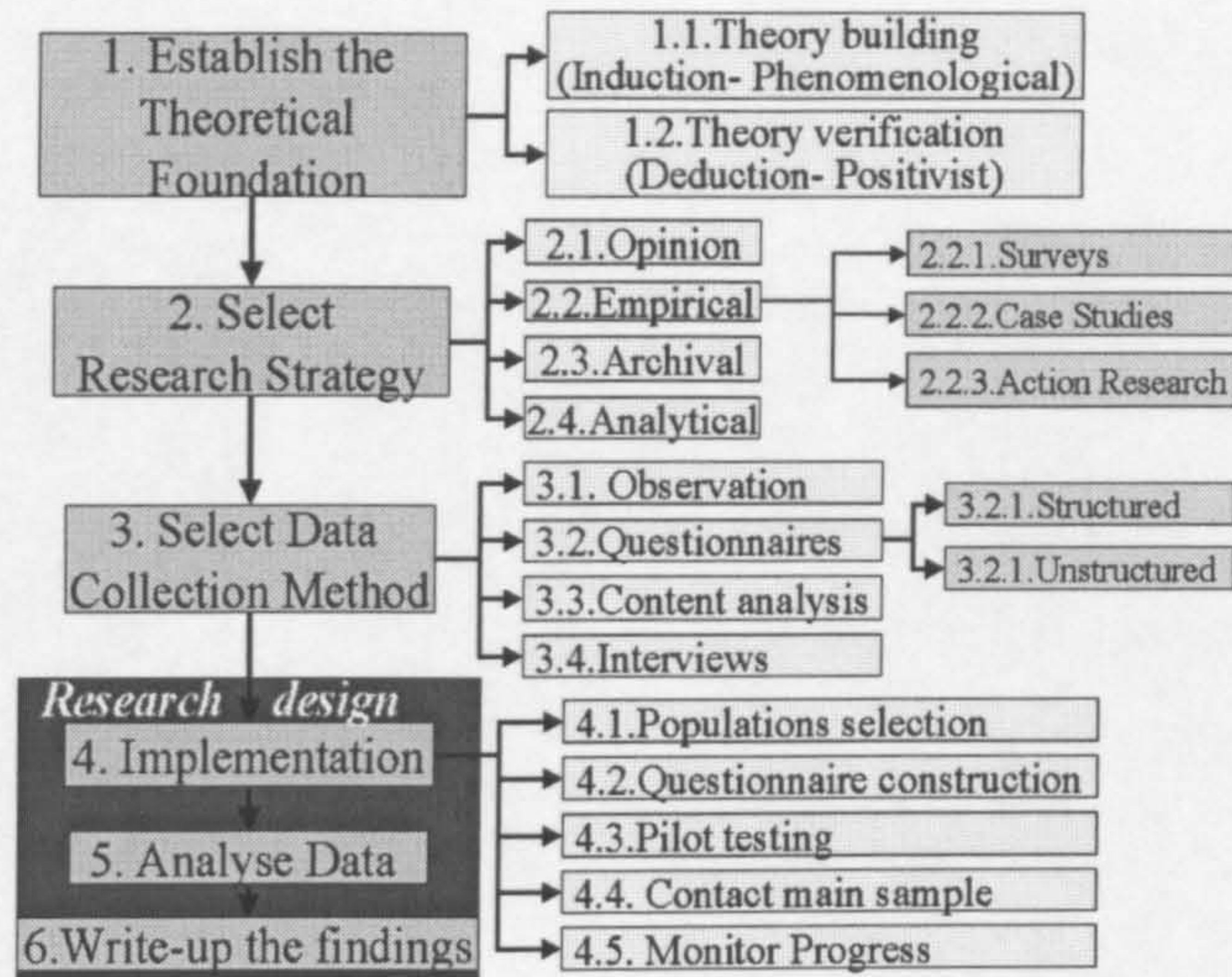


Figure 4.2. A systematic Approach for Research

4.3.1. Establish the Theoretical Foundation

Theory provides the foundation for all scientific research. Build theory and verify theory are two contrasting theories for operations management (Flynn et al 1990). They form the basis of any theory debate on research methodologies in the operations management. These are:

4.3.1.1. Theory Building

The origin of the theory building is based on some assumptions, frameworks, a perceived problem or, perhaps, very tentative hypothesis rather than pure hypothesis (Flynn et al, 1990). This allows reality to be conceived in terms of being grounded in data, rather than with little concern to the origin of the theory.

The researcher's role is to understand their theories and the problem of reactivity occurs during and after each study. Flynn et al (1990) propose a range of characteristics of what they term '*interpretative exercise designed to produce a theory for later testing*', which fall within the phenomenological paradigm. The approach shares much larger samples and more structured data collection methods for hypothesis testing. Hypotheses are the outcome of this inductive research activity - in contrast to the deductive approach. These encompass a gain in the understanding

of the process in the organisation that produce observed effects, in terms of the proposed theory (Flynn et al 1990)

4.3.1.2. Theory Verification

Theory verification is based on scientific method by using hypotheses, which are generated in advance of the study, and are tested by the data collected. Flynn et al (1990) stated, ‘ *the focus of theory verification is on testing the hypothesis to within specified confidence levels, not on the origin of the hypothesis*’.

Conclusion:

It would be difficult to repeat exactly the conditions of a strategy development for the manufacturing company, since much would change over time or between companies. Also the new Strategy Management Process agenda requires a holistic, integrated theory building, to investigate how each process allied together to fulfil the Requirement 10, 11, 12 (Section 2.6.). Therefore, this research provides a middle ground between the two theoretical foundations. This research starts with theory verification by identifying research requirements and hypothesis (see Literature review) generated in advance of the research, and they are tested by the structured questionnaire. This delivers to the researcher an understanding of managers’ eagerness to transform from functional approaches to strategy management to process based approaches, leaning towards quantitative research methods (Phenomenological- Inductive). In total, this research origin is not based on a hypothesis, but rather some frameworks, perceived requirements. Therefore, theory building is used in the beginning. Furthermore, this approach is termed deductive. Positivists advocate the use of operationalisation to break concepts down into measurable indicators of their existence.

4.3.2. Research Plan

Research plans have traditionally tended to fall into four types of approaches: opinion, empirical, archival and analytical research (Buckley et al, 1976). The characteristics of these plans are shown in Table 4.2.

Strategy	Objective/Application	Strengths	Deficiencies
Opinion	<ul style="list-style-type: none"> To seek the views, judgements, or appraisals of other people It is best suited for research on attitudes, impressions, beliefs and future research 	<ul style="list-style-type: none"> The ability to capture people's impressions Simplicity The ability to sample large population The opportunity to analyse data through various statistical procedures 	<ul style="list-style-type: none"> The bias introduced in survey instruments Non-factual, unrealistic Unstable over time
Empirical	<ul style="list-style-type: none"> To observe and/or experience things for oneself rather than through mediation It is best suited to analyse actual behaviour, fact-finding and seeking reality 	<ul style="list-style-type: none"> Contact with reality Using laboratory studies, the most stringently controlled research can be carried out 	<ul style="list-style-type: none"> It is limited to present situation Sensory error Psychological interpretation Lack of precision of the instruments used Bias due to the investigator's prejudice
Archival	<ul style="list-style-type: none"> To examine recorded facts It is best suited to historical analysis, extrapolation of past trends into the future and gathering hard evidence 	<ul style="list-style-type: none"> The ability to access and manipulate a vast quantity of factual information 	<ul style="list-style-type: none"> Selective de-positioning Selective survival Selective retrieval Filling in the gaps Skill deficiencies
Analytical	<ul style="list-style-type: none"> By the use of internal logic to break down the problem into its component parts in order to discover its true nature and the causal relationships among variables It is best suited to cerebral activity and provides most scope for imagination and creativity 	<ul style="list-style-type: none"> The observation of the need to search for additional data The requirement for mental power to be brought to the task 	<ul style="list-style-type: none"> Requires first-rate mental ability Unwillingness or inability to apply the scientific method of research Can only create theory - hard to be proved Logical error Problem semantics Temptation to focus on trivial and irrelevant problems

Table 4.2. The characteristic of research plans (Buckley et al, 1976)

Conclusions:

Operations management concerns people and groups in the organisation (Westbrook, 1995). This research, as explained in the previous section, uses both theory building

and theory verification within the different stage of the research. Flynn et al (1990) pointed out '*theory should be developed from a careful, consistent documentation of actual practice and the subsequent discovery of relationships between actual practise and plant performance. Theory also verified through the collection of empirical data, as illustrated Roth's manufacturing strategies*' In this research, therefore, an empirical plan is selected as a research plan, which is used to show relationships between different levels of the organisation in terms of objectives and performances.

4.3.2.1. Empirical Research Plans

Empirical research plans within operations management are classified into three methods as follows:

- *Surveys*: Surveys can be used especially for descriptive studies, as well as experiments for explanatory. Surveys usually appropriate the careful random selection of samples that enable results to be generalised to wider populations with a high degree of confidence. It is based on self-reports of factual data, as well as opinion (Flynn et al, 1990) Using highly structured questionnaires to gather data for a quantitatively analysable survey based research brings together easy replication; therefore, it is also reliable. (Gill and Johnson, 1991)
- *Case Studies*: A case study documents or records, in detail, the operational activity of a single organisation. To allay fears in the validity of a single case study, it is necessary to conduct survey research, or some other type of comprehensive data gathering. In multiple case studies look at several sites, endeavour to reach general conclusions than those provided by a single case study. Case studies tend to be appropriate for building theories, as well as theory verification from the observation of practice. (Westbrook, 1995; Flynn 1990). The main criticism of the case study is the difficulty to understand, in depth the real situation through a small number of visits to one or more companies.
- *Action Research*: Westbrook (1995) sees action research as a variant of case study research. The difference is that an action researcher is not an independent

observer (as in case studies), but becomes a participant within a process of changes. To tackle the increasing ecological validity, quasi-experiments and action research trade-off internal validity when compared with the ideal experiment. (Gill and Johnson, 1991)

The research may be concerned with more than one purpose but usually one will predominate. This can be summarised in Figure 4.3. which shows the relationship between the research strategies in a matrix form.

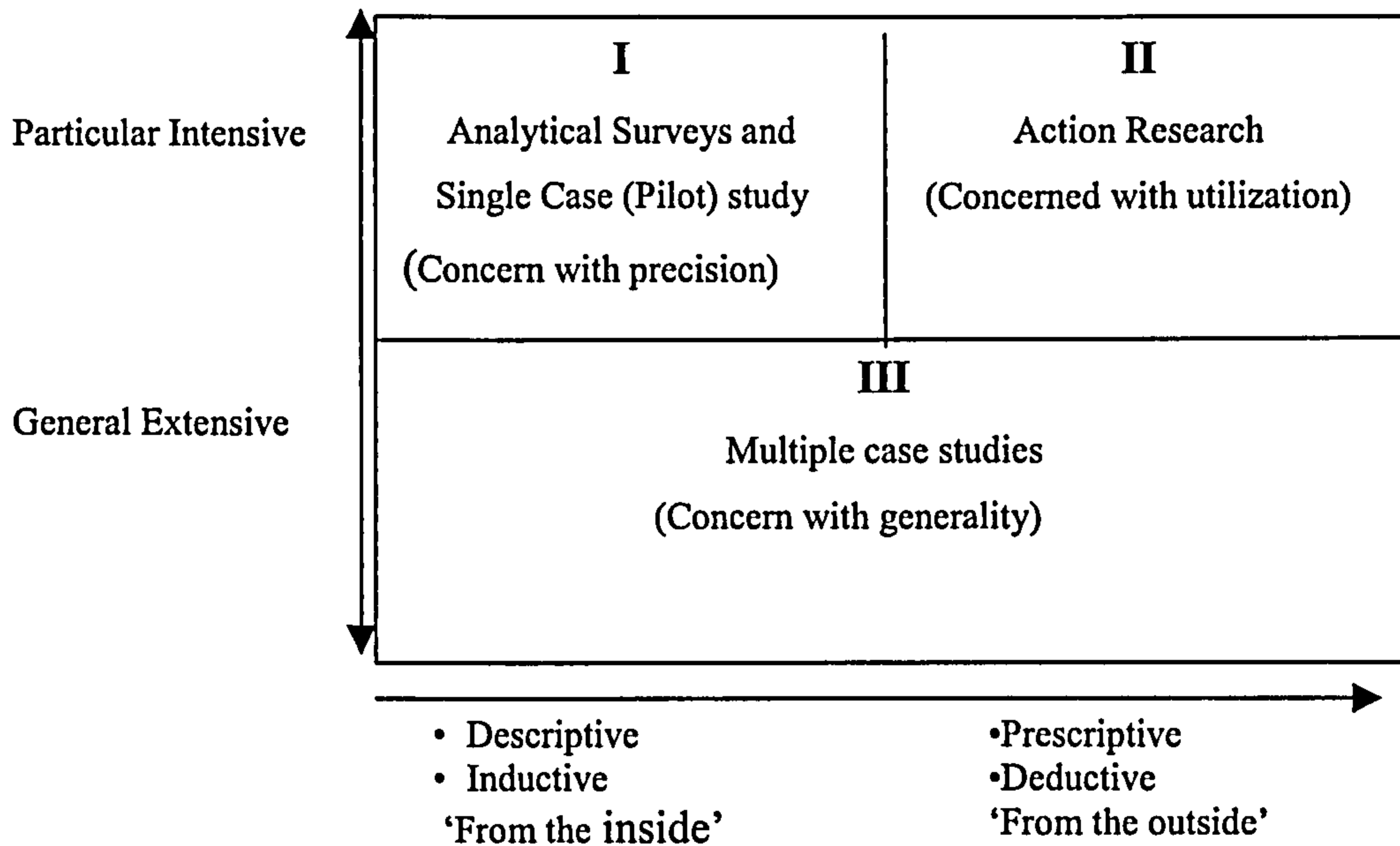


Figure 4.3. Choosing research strategies

The notion of a case suits the self-contained and clearly identifiable nature of manufacturing environments as well as the exploratory nature of the research. Furthermore, Porter (1991) stated “the complexity, situation specificity, to changing nature of the firm and its competitive environment strains conventional approaches to theory building and hypothesis testing”.

Conclusions: Therefore, to rationalise the winning plan of firm, there is a need for a theory of strategy which links external environmental circumstances and firm behaviour to market outcomes (Porter, 1991).

Thus, it can be seen from the research problems stated in literature review chapter, the data sought in this study is derived from multiple case studies by using action research tactics.

Multiple case studies, using action research method were chosen as a research strategy for various reasons, as follows:

- The researcher has to work closely with managers
- The researcher will become a part of the system and has the opportunity to criticise existing theory from the perspective of practice
- Action research methodology offers the broad principles in the early work and provides more structured and precise tools for understanding the firm's current situation and where they would like to be
- It also helps the researcher to think through the problem by better understanding the firm and its environment and defining and selecting from amongst the strategic alternatives available

4.3.3. Data Collection Methods

Data collection methods can be categorised into three headings as follows:

4.3.3.1. Observation

Observational methods provide the process of noting and recording information about people and behaviour without asking questions. "Observation accommodates the systematic description of events, behaviours, and artefacts in the social setting chosen for the research" (Marshall and Rossman, 1989).

4.3.3.2. Interviewing

Easterby-Smith et al (1996) argued that the interview is an appropriate research method, when the conditions are as follows:

- the step-by-step logic of a situation is not clear
- the subject matter is highly confidential or commercially sensitive
- the interviewee may be reluctant to be truthful about this issue other than in confidence in a one-to one situation
- it is necessary to understand the constructs that the interviewee uses as a basis for her opinions and beliefs about a particular matter or situation
- one aim of the interview is to develop an understanding of the respondent's 'world' so that the researcher might influence it, either independently or collaboratively as might be the case with action research

A interview can be described as an interaction involving the interviewer and the interviewee in the light of obtaining valid and reliable information. The benefit of the approach is to gather large amounts of data quickly. It also allows for immediate follow-up questions, if necessary, for clarification. However, interviews require co-operation and essentially include personal interaction. Interviewees may not be of a mind to share necessary information, which is appropriate for the research (Marshall an Rossman, 1989).

Structured and non-structured interviews are two essential techniques for the investigation. Table 4.3.compares two approaches advantages and disadvantages (Hart, 1987)

	Standardised or structured interviews	In Deep, focused or unstructured interviews
Advantages	<ul style="list-style-type: none"> ▪ Interviewer briefing and training simplified ▪ Less scope for interviewer bias ▪ Less interviewer variation ▪ Classifying, coding and analysis simpler ▪ Results comparable ▪ Higher reliability ▪ Greater opportunity for measurement 	<ul style="list-style-type: none"> ▪ Questions can be deep searching ▪ Data rich and full ▪ High degree of validity ▪ Probing possible ▪ Can obtain clarification of ambiguities
Disadvantages	<ul style="list-style-type: none"> ▪ Questions must be simple and (usually) closed ▪ Data lack depth ▪ Lower validity ▪ Cannot probe ▪ Cannot obtain clarification of ambiguities 	<ul style="list-style-type: none"> ▪ Interviewers need skill and training ▪ Interviewer bias may increase ▪ Greater interviewer variability ▪ Results often not comparable ▪ Reliability questionable ▪ Less scope for measurement

Table 4.3. Structured and non-structured Interviewing Techniques (Hart ,1987)

However, the choice of the particular interview techniques will depend upon information to be gathered and the research objectives to be met.

4.3.3.3. Questionnaire

The questionnaire can be used in a large-scale investigation and is a highly formalised method of collecting data. “They facilitate the direct probing of specific task details as well as examining the attitudes and feeling towards the tasks”. Questionnaires can form the basis for a wide range of responses, including choice, opinion, fact, preference, and attitude. The questionnaires are, however, required to examine “bias, sequence, clarity and face validity”. Whilst questionnaires are inherently essential, they can be tested through using small groups in order to determine their usefulness as well as reliability (Marshall and Rossman, 1989).

Summary:

So far, we reviewed potential data collection methods, listing their advantages and disadvantages and the ways in which each might be appropriately used to achieve research objectives of discovering what managers actually do.

It is important to note that the ultimate objective of any research (either by means of qualitative or quantitative methods) is to fulfil the research objectives and the knowledge to be gained afterwards. Before designing the research (data collection), it is necessary to address the question of qualitative or quantitative technique (data).

To make a choice, one has to understand the two concepts, the circumstance in which they are applicable, and then their significance to this study. Qualitative research is a type of Ethnography or Descriptive Survey research, which begins with defining very general concepts (Brannen, 1992). Aside from Bullock et al (1992) qualitative research “as an approach which explores the processes behind observed association between factors, charts individual outcomes and explores the meaning and contexts of individual’s’ behaviour”. On the other hand, quantitative research is a type of

Experimental Design or action research, which tends to look through a wide lens, searching for patterns of inter-relationships between a previously unspecified set of concepts (Brannen, 1992). Bullock et al (1992) outlines the quantitative research to be used for a measurement or numerical approach application. It can be adopted to include extensive surveys which can consider broad issues, incorporate a range of factors, include a wide geographical spread of representative samples and focus on group outcomes.

Much of what has been interpreted as implying quantitative and qualitative research is more appropriate than those based on a single method. Bryman (1992) suggest a four-fold division of types of research in terms of whether the data are quantitative or qualitative against the research method is quantitative or qualitative. Table 4.4. shows these distinctions within the matrix format.

		Type of Method	
		Predominantly Quantitative	Predominantly Qualitative
Type of Data	Predominantly Quantitative	I Congruent	II Incongruent E.g. quantification of answers to semi- or unstructured interviews or observations in participant
	Predominately Qualitative	III Incongruent E.g. answers to open-ended questions in a structured interview schedule	IV Congruent

Table 4.4. Linking Quantitative and Qualitative Research and Data (Bymann, 1992)

Conclusions;

In the quantitative approach, the concepts and constructs are *predetermined* (positivistic and deductive), whereas in the qualitative approach they *emerge* from the data (phenomenological and inductive) and are grounded in empirical data collected through research.

The selection of a research plan and methods must tackle the methodological issues of research validity and reliability. As a consequence, the objectives and foreseeable difficulties involved in the research must be fully considered to minimise the many possible pitfalls.

4.3.4. Research Design

The research plan refers to the general orientation or style adopted by an enquiry to address research requirements and hypotheses. Designing a plan for a piece of research is primarily concerned with transforming the research requirements into a coherent, structured research project. In general, the adopted research plans must be appropriate for the requirements / questions to be answered by the research. Since this research has more than one problem, selection of the appropriate research plan should be organised for each problem or some requirements together. These are:

- Underline thinking
- Primarily research
- Method development
- Testing the model
- Evaluating the research

First research starts with some assumptions, in terms of underlying thinking.

Preliminary research consists of exploring existing literature on Strategy Management in general, and Operations Strategy, in particular. Intensive discussion with the research supervisors are held at this early stage and discussion group in web site mailbase.com (e.g. manufacturing strategy, business process re-engineering and so on) are also followed to identify the high level requirements of Strategy Management and Operations Strategy Process to be addresses by the research, and discussion group. Once the tentative strategy management problems to be addressed have been selected, the structure of the questionnaires was designed to validate the research problems.

The third stage initiates existing literature, in particular Operations Strategy formulation approaches to discover the detailed requirements of the Operations Strategy. This literature review also includes the wide range of management and manufacturing tools and techniques that can be used in the Strategy Management Process. Strategy assessment models were also then reviewed and a questionnaire designed according to the models best suggestions to have the successful strategy.

Then the methods will be tested to check validity, applicability and flexibility through the implementation of the methods to various case studies within various manufacturing companies. All feedback from the participants was used as a basis for improving the method.

Finally, feedback from the managers and the consultancies then helped to link the model to the existing strategy management view, as well as stating the benefits and limitations of the model. Conclusions and recommendations were then drawn and the future work identified. The following section provides a description of each stage of the research. Within each stage, data collection method (interview, questionnaire, observation, so on) and research plans are explained by stating the reasons chosen behind them.

4.3.4.1. Underlying Thinking

The research starts with some assumptions by considering existing research as a point of departure, such as IPMS, Balanced Scorecard, Cambridge University Models. In this stage, research questions and initial research objectives are defined.

4.3.4.2. Preliminary Research

The preliminary study, which was explained in more detail in Chapter 2-literature review, was carried out from October 1997 to January 1999. Firstly, an initial problem within the Strategy Management views (Functional versus Process) and managers' causes in Strategy Assessments was constructed, based on a comprehensive literature review. As managers are busy people, the best way to get

information from them is through interviews. Their format can vary from unstructured to semi-structured or even completely structured. As unstructured or semi-structured interviews are likely to be very time consuming (Ref, Table 4.4.), it was decided to use two structured questionnaires. At this stage, along with a literature review, a structured interview was carried out with ten manufacturing companies.

The first questionnaire's aim was to understand the manager's enthusiasm for the process based Strategy approach. To transform their functional based approaches to a business process approach, the questionnaire was designed to explain the main characteristics of the two approaches. Without notifying them of the real reasons behind the questionnaire, managers were asked to fill in a questionnaire about what they thought a good business and operations strategy should include. It usually took about ten minutes to complete. There are 20 questions (see Appendix A), each of which has six options, choosing one from strongly agree to strongly disagree.

The second questionnaire was used to identify how effective the company's current strategy is, and how this effectiveness could be improved by developing a new strategy. It usually took 20 minutes to complete 37 questions, as seen in Appendix B.

Apart from its data collection function, both questionnaires had a number of methodological benefits early on in the research:

- The questionnaire yielded valuable information, which contributed towards case studies.
- The second questionnaire exposed managers desired strategy issues.

At that time the challenge seemed mainly to turn the strategic phase into a more dynamic, practical cross-functional (process based approach) Strategy Process to help people struggling with dynamic environment. Subsequently, research problems were defined from the literature. The core assumptions of the research have, however, remained the same.

The first stage will study the literature currently available to identify both state-of-the-art and current problems of performance measurement systems.

4.3.4.2. Method Development

Based on preliminary research, the new Strategy Management Process (PROPHECY) started developing in winter 1998/1999. The perception about the objectives, contents and the structure of the PROPHECY developed over time, the following sections cover the model development and justification depending on the company's characteristics and requirements. Each application includes what we learnt during the testing process in terms PROPHECY outline (design) weaknesses and how we can improve usage. All different PROPHECY applications in different companies are methodically described in Chapter 6-Case Study. As each application was an essential part of the model development process, it is described in this chapter in terms of background and objectives and assessment of PROPHECY.

PROPHECY Background and Objectives

In the method development phase (1998-1999), the steps in the PROPHECY are described, as is the reasoning behind their inclusion and the issues they are intended to address. Again, it is shown how the PROPHECY process is related to two structured questionnaires (in pre-understanding stage), and also reference to the literature.

In the first stage of the research some general principles and approaches were applied to identify gaps and problems in the literature. Although the pre-understanding stage concerned a survey of models, tools and practices in the Strategic Management in general, the literature search assisted in developing a broad understanding of the current activity in area of Operations Strategy and Business Strategy.

The research outcomes of four stages are explained in Chapter 6 in detail.

4.3.4.4. Testing the Model

This section introduces the methodology, namely action research used in collecting the data for this research. First, the means of establishing a sample of SME firms for action research (case study) is explained by reference to meetings with Directors of manufacturing companies. These introductory meetings are shown to provide an overview of small and medium size firms in Scotland.

Second, the reasons for using action research methods for each multiple case study are explained and the section relating to Strategy Management Process is analysed in detail. Next, the audits and interviews are discussed. Following a discussion of the semi-structured (administered) questionnaire, a description of its implementation is included.

- **Establishing the Sample**

One aim of the research was to incorporate a different range of SME firms as possible, in terms of different industries but at the same time it was essential that first firms should be in Scotland in order that the whole PROPHECY process could be applied. The Scottish Enterprise Database was used to find SME manufacturing companies, which are located close to Glasgow. First of all, a letter was sent to manufacturing firms (112 firm in total), which had between 50 and 150 workforce listed on the Scottish Enterprise database. This letter (see Appendix C) describes, briefly, the aim of the research and explained the involvement required of each participant and time scale for each stage of the model, promising a Strategy report for all who agreed to take part. In the beginning, six companies were interested in participating in the research. The reason behind such a small number of companies participating is that not only are managers reluctant to participate in such exercises but also the Scottish Enterprise's database records proved to be out-dated. Several of the firms were "to busy" or unwilling to help. It should be mentioned here that the

Highlands and Islands were excluded from the database for reasons of practicality (e.g. financial, time for travelling).

- **Meeting with directors**

Between May and June 2000, an introductory meeting with four directors was held either in their company or in Strathclyde University. The first introductory meetings with the directors were held in order to:

- acquaint SME manufacturing companies about the purpose of the project,
- reassure them of the professional conduct of the Centre for Strategic Expertise at Strathclyde University,
- learn about the firms' strengths, weaknesses and competitive position within the industry

- **The Workshops**

During June 2000, a series of workshops for two firms namely Alcan Glasgow, Alcan Rogerstone, was held in Strathclyde University. There were several reasons for this. Firstly, the model had to be tested in the company to ensure that it worked well and facilitated the structure for an easy process. Before holding the workshops, some sections of the workbook had been completed by using information obtained during the previous research with Alcan Ltd.(e.g. profit and loss accounts, company objectives, EVA for each business unit and so on). The reason for this was to gain time and to see all of the processes practicability instead of part of them.

This workshop assisted the managers, in which their company were operating, in terms of strategy development. In addition, these workshops were used as a training ground for the researcher who took it in turn to administer a section of the PROPHECY process, gaining in confidence and fluency as the researcher became more familiar with the layout and order of the questions. It was important too that the researcher was able to explain exactly what was wanted. Workshops helped to answer any queries and highlight any problems early on. During this initial period of

applying the PROPHECY process, amendments and improvements, in terms of layout and guidelines, were made.

- **The Case Studies**

Between July 2000 and April 2001, four case studies were conducted. There were several reasons for these. Firstly, the 'PROPHECY process' should be tested in real situation to ensure that it read well, obtaining the information required. At this stage, research was drafted in and initial interviews and audits were carried out with the manager in each company. During the audits and interviews, notes were taken for later discussion. Following each interview and audit, the researcher discussed the findings with her supervisor and, if necessary, amendments were made to the design of the questionnaire depending on the company characteristics. Later, the adopted PROPHECY process was used for the following interviews and audits. Each case study was adapted to incorporate a standard presentation of each level strategy, which included specific tools taken from those suggested in the workbook. Therefore, the approach to developing a strategy statement for each business unit and process were standardised, so those different business unit strategies were fully compared and explored.

In general, interviews and audits were held at the company, although sometimes one or two chose to come to the university. The meetings at each stage were fairly lengthy, and took anything from between one to five hours. However, some stages required two or more days of meeting (e.g. each business process analysis within the business unit).

The first meeting with Manufacturing SME Companies directors shall now be discussed for main case studies under the previously defined headings:

- **Introduction**

The aim of the main project was explained, and the reasons for research classified. It was also mentioned that they did not need to pay any money. The reactions of the director were generally favourable, with comments such as “we will be obviously be interested in the study”.

The directors were typically keen to help, and especially interested in having a paper version of company’s business processes strategies, as well as value adding strategies with regard to their own idea and business analysis. To encourage their co-operation, it was, therefore, explained that a software version of the methodology would be available in the future to those who had helped.

- **Data Collection**

Data gathering collection methods were designed from pilot findings and finalised during the initial stages of the main research period.

The objectives of the main research period was to be flexible in the design of the model and data collection methods, collect data to populate the model for the four case studies and validate the model relationships from qualitative data.

The PROPHECY process was based upon a development of a strategy management process that was explained in Chapter 5. The approach adopted for each stage of the information facilitation method is the same as adopted for the facilitation method described in Chapter 5 (input, strategy formulation, strategy implementation, learning and improvement), as well as the case study to fulfil against Strategy Management Process requirements. A series of workshops are organised and the structured open or ended questionnaires are used as an outline agenda and a basis for discussion.

In summary, data collection for each case study was restricted to:

- The semi-structured interviews
- Audit with managers and alternative options for each stages of the process, which arise during the strategy statement
- Copies of process documents
- The summary of each meeting
- Approximately five page document for each Business Unit

A full description of the semi-structured interview and audits are provided in Chapter 7,8,9, and 10 (Case Studies).

Acceptability of PROPHECY examined:

- How once strategy had been developed and implemented, the managers would evaluate the performance of these strategies, and control any variations from objectives
- What were the few key things that would determine whether or not the business would make it
- How did it keep track of the performance measures
- How each action will impact on the company's profit and loss account

At the end of the PROPHECY process, managers were asked how they described the success or failure of strategies, and the comments they made were taken on board. Later, managers were asked to score what they feel about the PROPHECY process against each points they raised for the successful strategy.

- **Evaluating the Research**

The methodology of the project was justified and finalised. The new strategy management process (PROPHECY) was evaluated to see if it managed to fulfil the requirement defined in Chapter 2 in two different ways: subjective and objective. Objective requirements were checked by design of the PROPHECY. Subjective requirements are considered by using the administer questionnaire about strategy management process performance and comments made by the managers and

academics (Chapter 6). The practicability of the model was then discussed. It was shown how case studies helped to refine the PROPHECY process and established the final form.

Following on from this, the theoretic novelty of the PROPHECY process was discussed, along with the reasons behind it. It was found that such a process would enable

- facilitation in understanding whole company's process and strategy without being in the company
- a focus on each business market and creation of strategies and values for them

4.4. Discussion and Conclusion

On the basis of a review of research methods, especially those designed to collect data on the complex topic of managers' opinion, it can be seen that there is no ideal, sole method of collecting such data. There are number of possibilities. Practical research data collection, therefore, tended to be a combination or hybrid of the data collection methods. e.g. use some indirect form of standardised or structured interviews, ask those interacting with the centre person, systematically observe the behaviour, ask the managers questions to find out how confident managers feel that their chosen strategy will succeed over the risk of business failure. To sum up, each research problem can be solved with a different research plan and method. A summary of the research methods selected to address each dynamic strategy management process requirement under the specific objectives during the research development are shown in Figure 4.4.

In this section the view is taken that the research problem, questions and objectives should guide the decision about whether to employ quantitative versus qualitative, descriptive versus experimental research and etc. Integrated research strategies and data collection methods can facilitate the tactics of doing research and help to create research design.

Using action research combined with a multiple case studies, strategy is the focal point to having a successful strategy management process in manufacturing companies; together with the control it gives to the researcher in facilitating the process without working in the company.

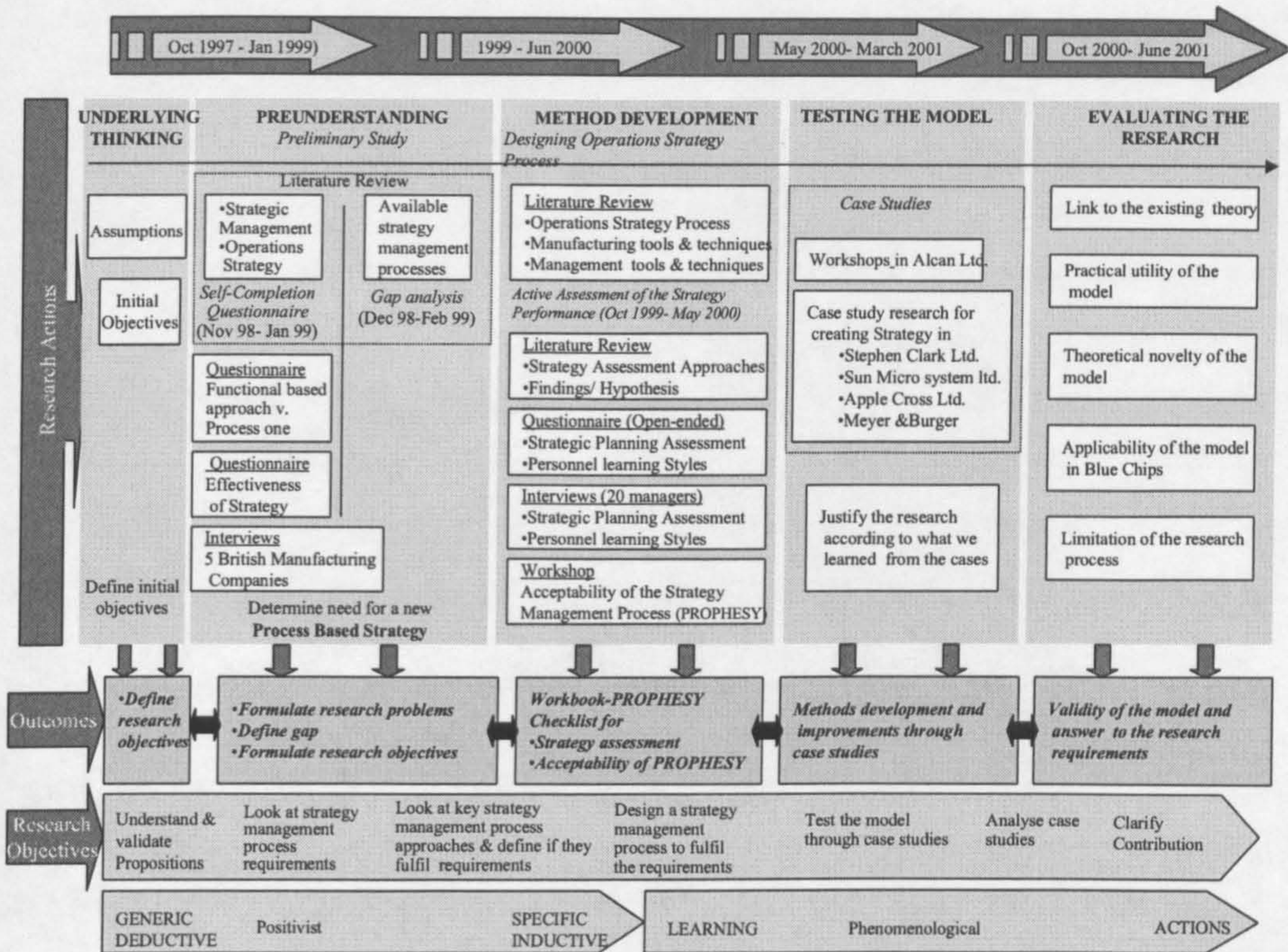


Figure 4.4. Research Methodology Map

A review on the philosophy of research design and methods, a framework of strategy management research approaches and research plan approaches for selecting appropriate research design and research limitations has been presented.

The following chapter will conduct the literature review of tools and techniques to develop a new business process based strategy management approach.

Chapter 5 - PROPHECY Evolution

5.1. Introduction

The new operation strategy process requirements were introduced in Chapter 2 (Review chapter), and continued by critically evaluating the existing strategy management frameworks, models, methodologies, tools and techniques, which have been classified according to their scope (business wide strategy, functional / operations strategy, process strategy) in Chapter 3. Chapter 2 and 3 confirmed that the nature of development in strategy management process formulation has much to do with these new requirements, in addition to the management and strategy tools and techniques on how organisations should be operated in today's dynamic environment. To fulfil these dynamic strategy management process requirements, PROPHECY (Process Oriented Performance Headed Strategy) was developed which is documented in detail in a workbook format (Acur 2000). The evolution PROPHECY is the main focus of this chapter, which is discussed in more detail in the following sections.

The literature review demonstrated (see Chapter 3) that almost all approaches to strategy management process comprises of three stages, which are inputs, formulation and implementation, as shown in Figure 5.1.

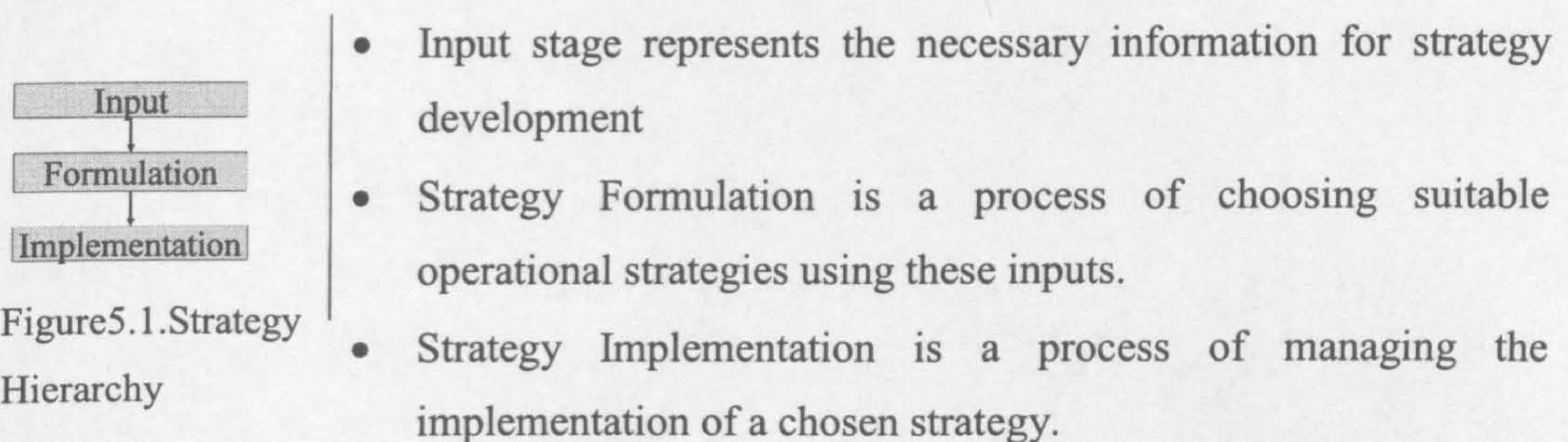


Figure 5.1. Strategy Hierarchy

In some cases actual strategy can be very different from what was planned initially. In such cases, actual strategy can be described as an emergent strategy according to the view of Mintzberg et al (1991, 1998), as illustrated in Figure 5.2.

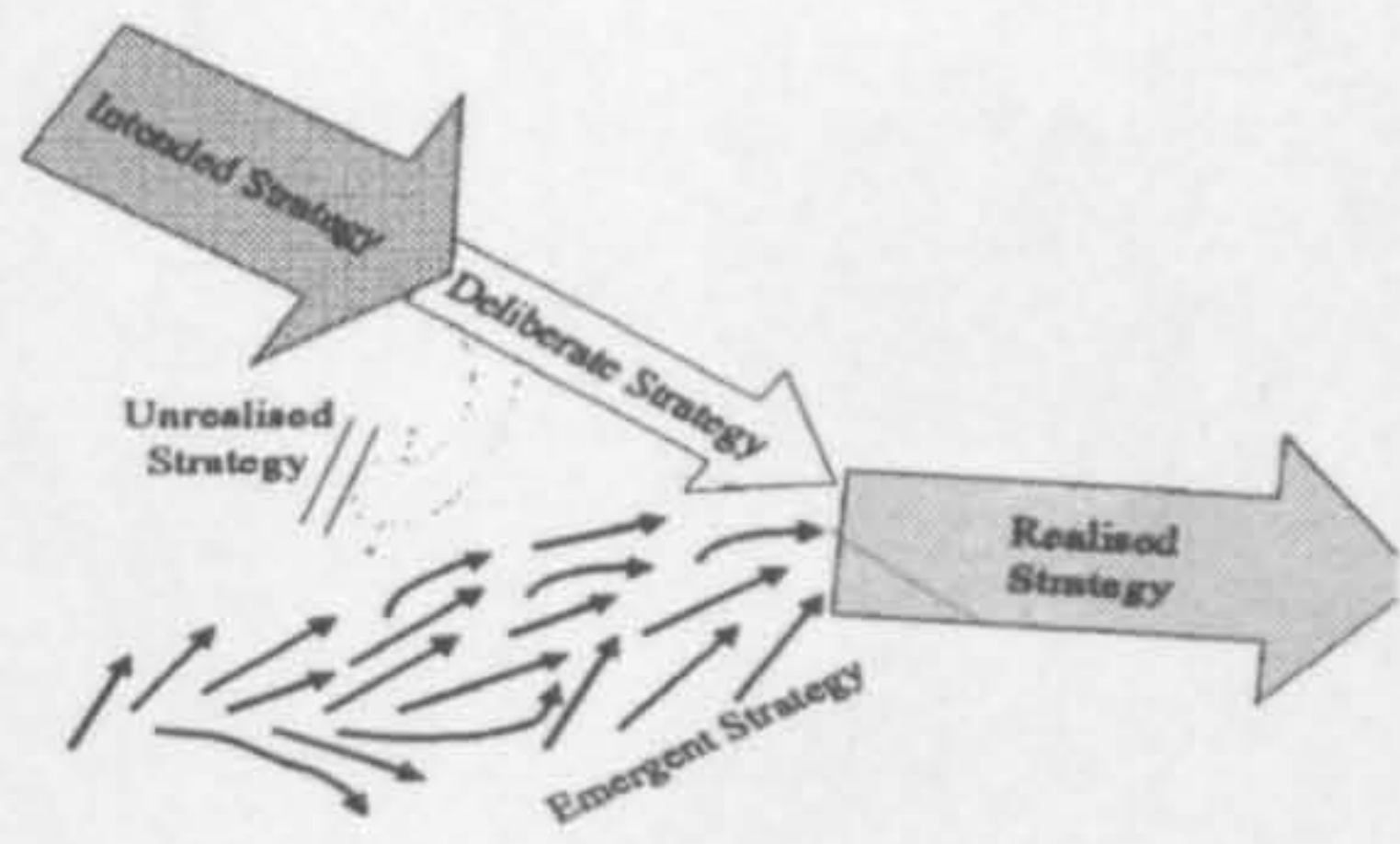


Figure 5.2. Strategies-deliberate or emergent (Mintzberg et al, 1998)

Mintzberg et al (1998) expressed that strategies can emerge as a result of a variety of factors. They argue that a strategy can be planned or can emerge as a pattern, which can be seen retrospectively. They consider that it is important for the organisation to recognise emergent strategies, as it will have an impact on the process of formulating a strategy management process. An emergent strategy will have played a part in the formulation of current behaviours and values held within the operation and organisation as a whole.

Business environment is changing, therefore, it is important to monitor the adopted strategy and have a review mechanism aligned with the performance measures. This led one of the specific strategy management process (SMP) requirements, which was '*SMP should provide a closed loop control system*'. The concept of a 'closed loop' control system originated with Deming and Juran in the 1950s. The application of "closed loop" strategy management process is based on a further development of Deming's PDCA (Plan-Do-Check-Act) cycle, as seen in Hoshin planning (Babich, 1995; Cowley and Domb, 1997). Monitoring progress continuously is not only an essential factor, but it also requires learning from the mistakes, if the company wants to keep up to date with the strategic situation. Therefore, the other stage, namely learning and improvement, should be added. The last stage is *Learning and Review*, which is a process of monitoring and reviewing to assess 'efficiency', 'effectiveness' and 'evolution' of business performance and strategies that drive competitiveness.

These various stages of a "Dynamic Strategy Management Process" may be mapped onto the PDCA (Plan, Do, Check, Act) cycles as illustrate in Figure 5.3.

These four stages to strategy management process are shown together in Figure 5.4.



Figure 5.3. Dynamic Strategy Management Process

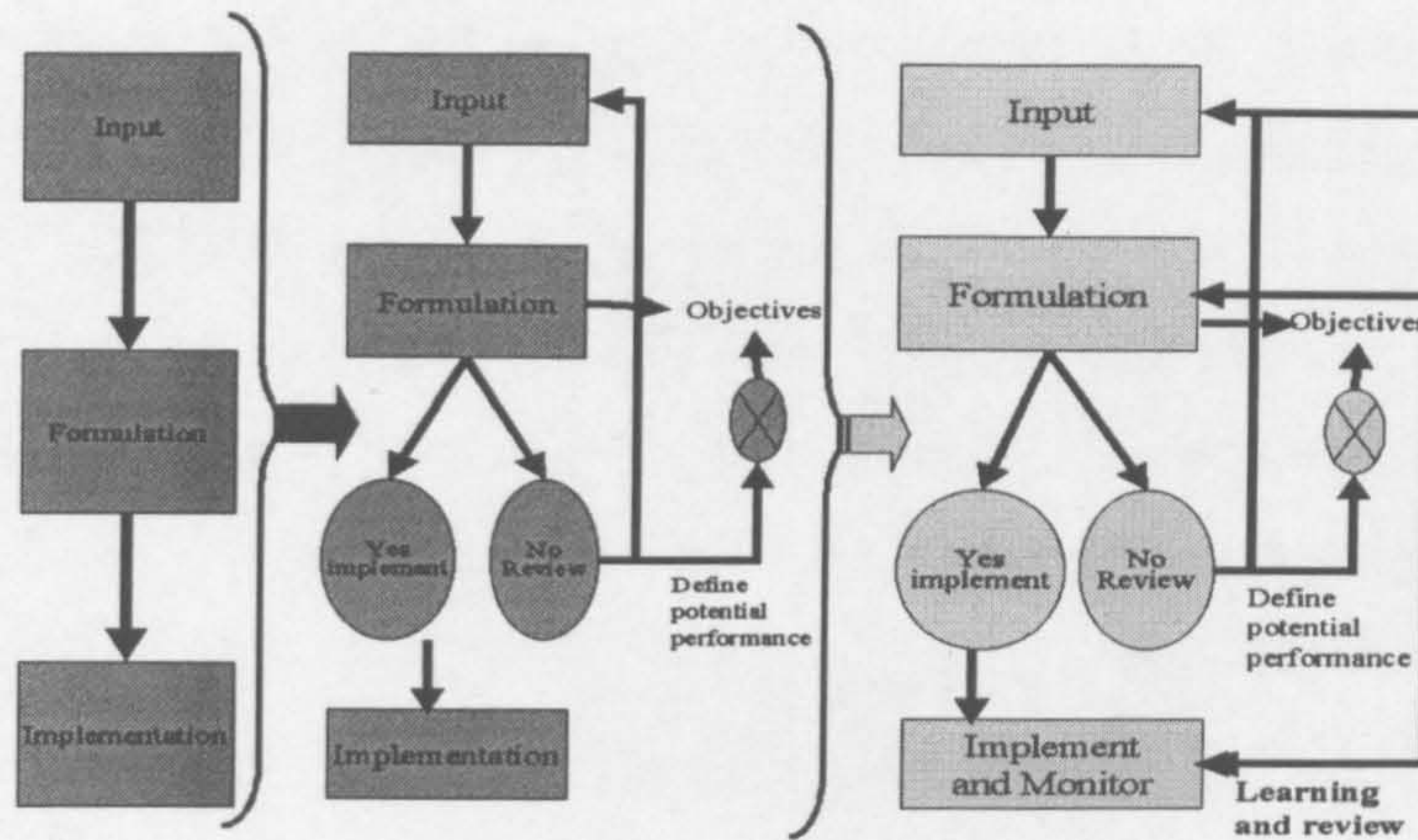


Figure 5.4. Strategy management process

The language of the various strategy management processes is very similar and most of them compatible with Figure 5.4. Some do not encompass all four stages, but, in general, all of the strategy management processes share this generic structure. Almost all approaches include an input stage. In this stage, all information about the company are obtained, including their products, processes, past and current strategies, etc. The majority of strategy approaches start formulating strategies after gathering all information about the company. The formulation stage of the process, whether it is based on the creation or simply the identification of stakeholders needs, involves satisfying the stakeholders' needs. In addition, this stage includes the internal and external analysis and companies, competitive position. At the very least, these analyses are used to reach the 'buy, sell, milk, hold' portfolio decisions as well as strategic options. After formulating strategy, the decision should be given about what selected strategies / objectives are the best options for the company's wealth, market position and its sustainability. These can be monitored through using performance measures. Furthermore, it is necessary to have a two-way feedback mechanism in each stage of the process to tackle dynamic environment changes.

As stated in Chapters 2, 3 and 4, the focus of the research was upon developing a set of requirements for a dynamic strategy management process and introducing a process called “PROPHECY”, which meets these requirements. Since the strategy management process is made to hold the potential for competitive advantages, it requires purposeful design and management attention within each stage of the process. Therefore, this chapter’s aim is to review management, strategy and operations tools - techniques and methodologies that have emerged that are related to the strategy management process. At the same time, it will highlight whether the appropriate tools and techniques fit into new dynamic operations strategy process.

This chapter is structured in terms of new strategy management process stages as follows:

- Input
- Formulation
- Implementation
- Learning and review

5.1. Input

The input (data collection) stage offers an opportunity to help clarifying these issues, and more importantly to lead strategy statements throughout different levels within the company. Hence, this is the heart of the strategy management process in the sense that in succession, it produces all information from which can be taken later.

5.1.1. The company’s History

Why should we consider the company’s history?

Strategy management process involves decisions concerning

- what a company might do, given the opportunities in its environment
- what it can do, given the resources at its disposal

- what it wants to do, given the personal values and aspirations of key-decision makers
- what it should do, given the ethical and legal context in which it is operating (Dobson and Starkey, 1993)

Reaching sound conclusions to such concerns requires more than a short discussion or statement of opinions from the managing director. Therefore, the first step in creating a strategy management process is to reach a clear understanding of the company's overall business purpose and direction. In short, it is essential to understand the company's history in order to identify its successful futures, strengths and any possible weaknesses.

How do we capture the company's history?

This involves asking some fundamental questions such as:

- what business are we in?
- what do customers really want from us, why do they buy our products?
- what are the factors affecting our market?
- where do we want to see our business go?

In some companies, these similar questions are regularly discussed, and a clear direction of the company is already set. Nonetheless, in most cases the answers to such questions will not be well known, even senior managers believe that it does not have a clear vision and strategy (Probert, 1997).

Answering the above questions could enable managers to monitor what management has accomplished to get where it is now. This should provide general background information about the company, such as owner, when established, location and so on.

5.1.2. Scope of the organisation

Why should we consider the scope of the organisation?

What is required is a careful balance between past and present capabilities and future aspirations in a dynamic environment. Baker (1992) acknowledged that *'while past failure and weaknesses may rightly be attributed to an over-emphasis upon existing business, there is a very real danger that too much concentration upon the future may result in a dangerous neglect of the existing resource base on which that future must be founded'*. Therefore, it is necessary to identify the scope of the company before moving on to the creation of company's direction.

How do we capture the information?

Scope describes the choice of products and services that the company offers and the customers it needs to serve. Some of the issues affecting scope and confronted by every business include (Fahey, 1998):

- Product and Service Scope: What products and services does the company want to provide?
- Activity Scope: What activity does the company provide?
- Geographical Scope: Where is the geographical region of the company's product?

5.1.3. Mission Statement

Why should we consider the company's mission?

Kaplan and Norton (2001) believe that *'strategy does not stand alone as a management process. A continuum exists that begins in the broadest sense, with the mission of the organisation. The mission must be translated so that the actions of individuals are aligned and supportive of the mission'*. The starting point of strategy management process, in Kaplan and Norton's view, comes from the organisation's mission. Thus, the first step in creating strategy management process is to reach a clear understanding of where the company is now, why it exists or how a business unit fits within a broader

corporate architecture. In short, the mission statement defines the current important issues of the company. The mission statement changes and varies from organisation to organisation.

How do we capture the information?

Certo and Peter (1990) considered several major topics addressed in a mission statement that include companies' product or services, market, technology, company objectives, company philosophy, company-self concept and company image. Still, there are some areas missing. Furthermore, in this list some areas can be jointed into one class. The following list was obtained from observing different company mission statements, which almost include the following areas:

- Field of Operation: This information defines where the company is in the industry sector
- Product and Service: This information identifies the goods and/or services produced, which the company offers to its customers.
- Market: Firstly, customer based information describes the customers of the organisation. Who these customers are and where they are located. Secondly, market based information describes the companies market position in the industry as compared with competitors by assessing their strengths, weaknesses, competition and ability to survive in the market place.
- Technology: This general information includes topics, such as the tools, machines, materials, techniques, and processes used to produce organisational goods and services. Discussion consists largely of a broad description of organisational innovations as the business computer and robots, technology has come to be emphasised within the strategic planning process of virtually every organisation.
- Enablers / Drivers (Competitive Criteria): This information contains the order winning criteria in the market place.
- Leadership: It includes the task of leadership, providing the framework, values, motivation of people, allocation of financial and other resources to set overall direction.

- People Management: It outlines how the company maximizes the ability of its employees to keep improving business.
- Resources: It observes the company's current resources as well as future potential resources.

Campbell and Yeung (1990) had seen the mission from both perspective, culture and strategy and also stated that 'a mission exists when strategy and culture are mutually supportive. An organisation has a mission when its culture fits with its strategy. Their model is depicted in Figure 5.5.

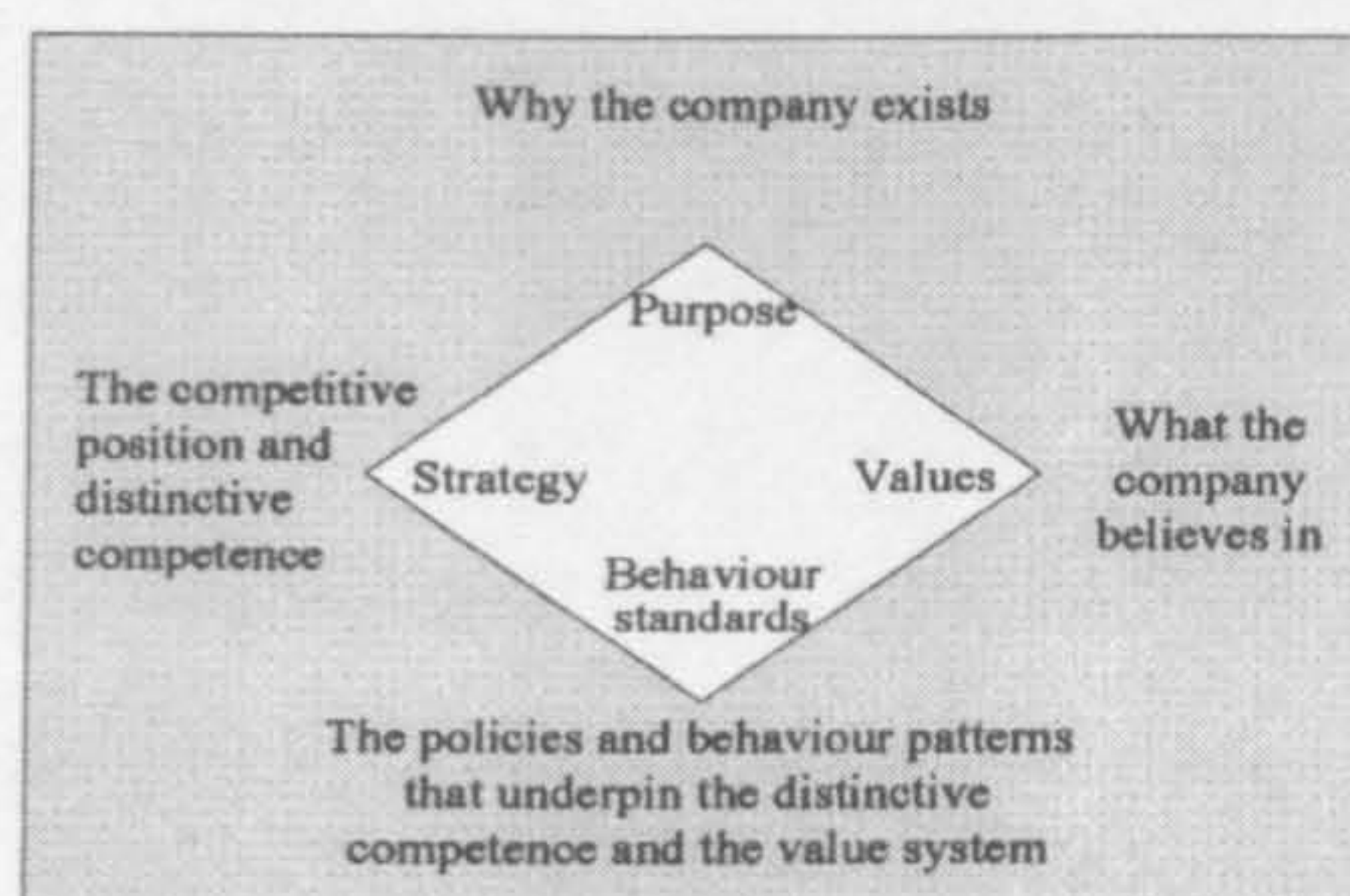


Figure 5.5. The Ashridge mission model (Campbell and Yeung, 1990)

Hence, the company's culture is a statement reflecting basic beliefs and values that should guide organisation members to define mission statement. Because of that, the next step that should be considered is the company's culture. Thomson (1997) defined 'the way in which people obtain, preserve, defend, pass on and relinquish power are important aspects of the culture'. Thomson (1987) gives an example of successful change in an engineering company utilising the seven key aspects of culture. In order to understand the company's current culture and desired culture, the researcher redesigned the format as illustrated in Figure 5.6. The left side of the questionnaire gives responses relating to how you would describe your company's current culture, the right side relates to desired culture (Please ✓). The Figure 5.6. aim's is to search surface of the culture by capturing manager's subjective opinion.

PART 1. COMPANY PROFILE		INPUTS	
Mission Statement The left side of the questionnaire relates to how you would describe your company's current culture. The right relates your desired company's culture			
Current Culture	Aspects of Culture	Desired Culture	
Change From Change To		Change From	Change To
Low High	*The extent to which the organisation is market oriented, giving customers high priority	Low High	
Close Open	*The Relationships between management and staff, manifested, for example, through communications and participation systems	Close Open	
Poor Committed	*The extent to which people are target oriented and committed to achieving agreed levels of performance	Poor Committed	
Isolate Need Understanding	*Attitudes towards innovation	Isolate Need Understanding	
Accepted with roughness Accepted	*Attitudes towards costs and cost reduction	Accepted with roughness Accepted	
High, as a means of survival Less loyal but more committed as fortunes improve	*The commitment and loyalty to the organisation felt, shown by staff	High, as a means of survival Less loyal but more committed as fortunes improve	
Cautious Improving	*The impact of, and reaction to, technology and technological change and development, including information technology	Cautious Improving	

Figure 5.6. Organisation culture

The result of the questionnaire should provide the managers with an explicit statement of the teams understanding its mission statement. An understanding of the current position of the company can be gained by the Mission Set approach. Teams should list the critical components of their Mission statement based on the current and desired culture, policies and company's behaviours.

5.1.4. Business Unit Definition

Why should we define the company's business units?

The mission statement is centred on combining important choices, which affect the future direction of the business. The purpose of each particular company's markets and their competitive requirements are also critical issues for strategic actions. Therefore, a number of logical or physical **Business Units** should be identified to provide focus for on goods and services to its market and generate wealth and fulfil the different market requirements. This is supporting one of the strategy management process requirements, which states that '*strategy management process should focus on business units*'.

Consequently, what really matters is to understand how the broad concept can be applied to a particular market. 'What is our focus?' is Porter's approach to Drucker's questions

'Who is our customer?' 'What does the customer value?' is Drucker's simple way of asking the question about the importance of different product attributes. The competitiveness of the company depends on its ability to make appropriate choices of corporate and operations objectives, based on its markets, and its ability to use its resources and processes to support the criteria that defines how orders are won. Hence, it is essential to consider the company's major customers and why they are buying from the company.

How do we define the company's business units?

Hill (1995) distinguishes two types of criteria, namely 'qualifying' and 'order winning' to understand a way of describing customer's behaviour. Order qualifier criteria means that '*companies need only to be as good as competitors*'. An order qualifier criterion defines that '*companies need to be better than competitors*' (Hill, 1995). In his discussion about order winners and order qualifiers, Hill (1995) was not very specific about the difference between managers and customer's view, which should be towards order-winning criteria on one-hand and order-qualifying criteria on the other hand. Moreover, in the manufacturing and business models, they are mostly limited to price, flexibility, quality, and delivery. The original focus of the business unit was to identify goods and services to provide to its market and generate wealth and fulfil different market requirements. Therefore, managers should define their order winning and qualifying criteria for each of their customers, according to their opinions by examining the factors included on the list, (Figure 5.7.) which provides examples of Order Qualifying and Order Winning Criteria (Published by the DTI and CBI, 1994)

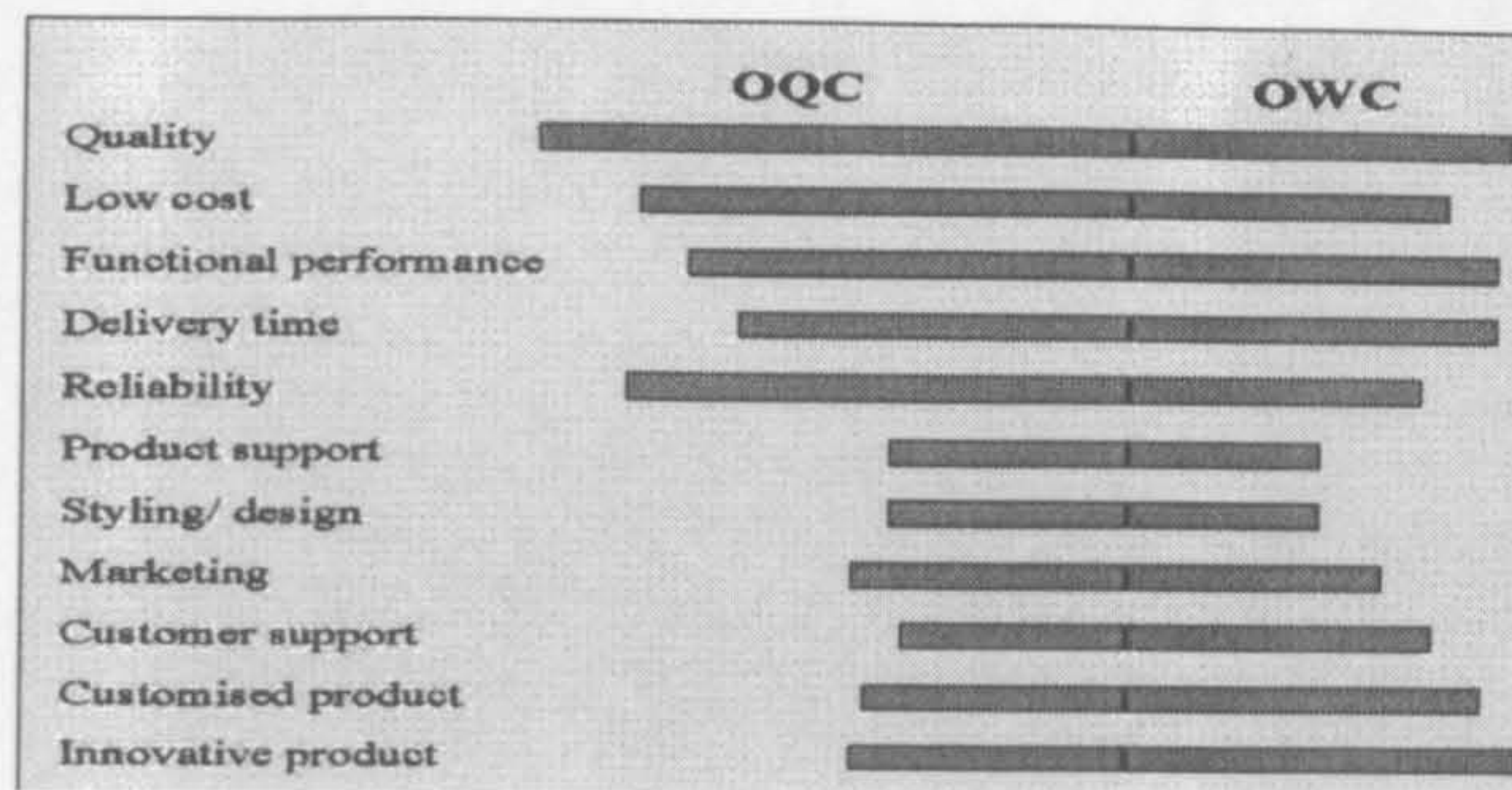


Figure 5.7. (Adopted from DTI and CBI, 1994)

Skinner (1974) argues that manufacturing systems cannot be good at everything and, therefore, managers must decide which performance objectives they want to be good at. So, two order winner criteria and three order qualifiers criteria should be considered. To create market groups, each customer group is evaluated against the various dimensions of supply competitiveness on which managers choose. While qualifiers showed the dimensions that are not an order-winner for the company, and other competitors may excel at, differentiators, that the company needs to be better than competitors, are identified and grouped. Different customers with same differentiator combinations are clustered and formed as a market group as shown in Figure 5.8.

Customer	Quality	Low Cost	Delivery Time	Product Support	Style/Design	Brand	Flexibility	Customer Support	Customised	Product Innovation	Product value for Money	Other	Number	Market Group
Garment- N. Europe	Q	D	D				Q	Q					1	N. Europe
Garment- N. America	D	D	Q				Q	Q					2	Garment- N. America
Garment- E. Meditem.	Q	D		D	Q			Q					3	Garment-Other
Jacket- Home Made	D		D				Q	Q			Q		4	Jacket- Trousers
Garment- Home Made	Q	Q	D				D	Q					5	Garment- Home Made
Trousers- N. Europe	D		D				Q	Q			Q		4	Jacket- Trousers

Figure 5.8. Market group

Order winning and order qualifying criteria will vary in importance with the type of product and associated market (Wainwright, 1995). As a result, upon creating the market

groups with existing product ranges of the company by different product types are associated with those markets and market-product profile should be established, as shown in Figure 5.9.

Market & Product Profile					
Product and Product Groups	Market Groups				
	Market Group 1	Market Group 2	Market Group 3	Market Group 4	Market Group 5

Figure 5.9. Product-Market profile

Bititci et al (1999) found that business units might be product oriented or purely market oriented. In a product oriented business unit, it is the design characteristics of the product or the product group, which determines how the product competes in that market sector. In a market-oriented business unit the same product may be subjected to different competitive pressures in different markets. Thus, it is necessary to consider the factors affecting the company’s market position, as well as product range. Puttick (1987) defined two problem areas: product complexity and market uncertainty

Product Complexity: Product complexity is about the number of different products, components, processes, sources of supply, etc., and can be affected by the following: (Puttick, 1987)

- Number of items per product
- Number of levels in the bill of materials
- Degree of commonality of parts
- Number of sequential operations in manufacturing routine
- Number of work-centres

Market Uncertainty: Market uncertainty is about the volume and stability of demand, the degree to which the product design is, or is not, able to be frozen, etc., and can be affected by: (Puttick, 1987)

- Product Variants; in a standard catalogue range of products it is not possible to know the mix of the demand
- Sales volume; even if everything else remains constant there will be some seasonal variation
- Quality
- Plant availability
- Life cycle- due to changing fashion or changing technology short product life cycles produce uncertainty
- Material supplies; cannot be guaranteed
- Process reliability; people and plant give rise to variation
- Modifications; for important customers, even with a standard range of products, modifications will be introduced

These two problem areas can be considered together in a matrix format. This matrix helps to outline market groups in order to understand homogeneity proposed by Puttick (1994). The intention of the matrix described is to represent whether the market group should split up into two or more market groups, or would combine some market groups into one group, according to each market group disagreeable positions. Here, relative market uncertainty of the each market group should be identified and plotted against the owner’s perceived project complexity for each market group (Figure 5.10).

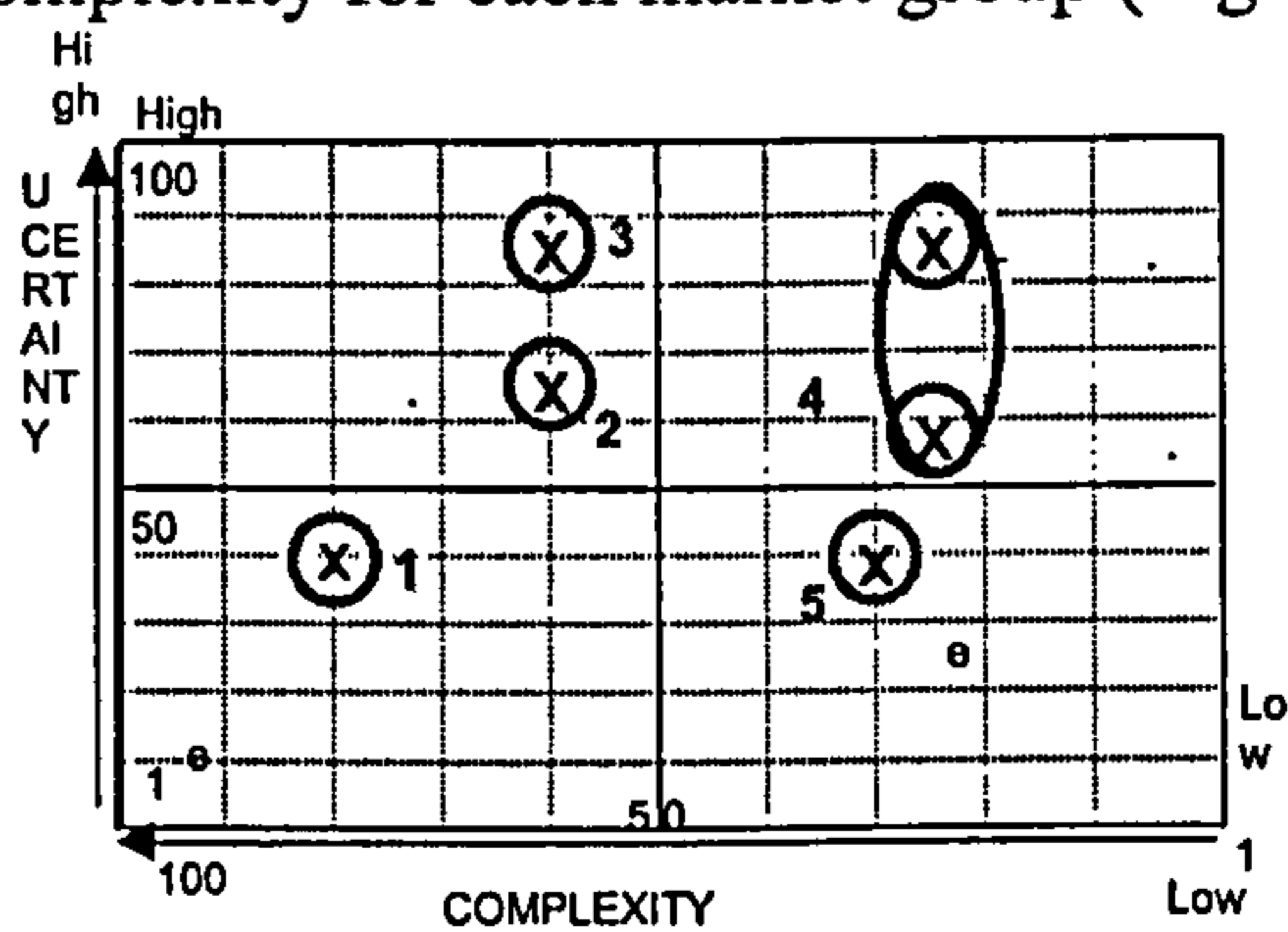


Figure 5.10. Market Groups Map

The problem can occur during the business unit definition in terms of different manufactured item process. Since it is impossible to use different processes for each item separately, the same process should apply some aggregate product groups that share common attributes. An advantage of operating a focused production process is that a business can concentrate on a relatively small set of operating goals and objectives (Hill, 1989). Hayes and Wheelwright (1979) proposed product-process life cycle matrix. This matrix positions each product line in a two-dimensional grid, as illustrated in Figure 5.11.

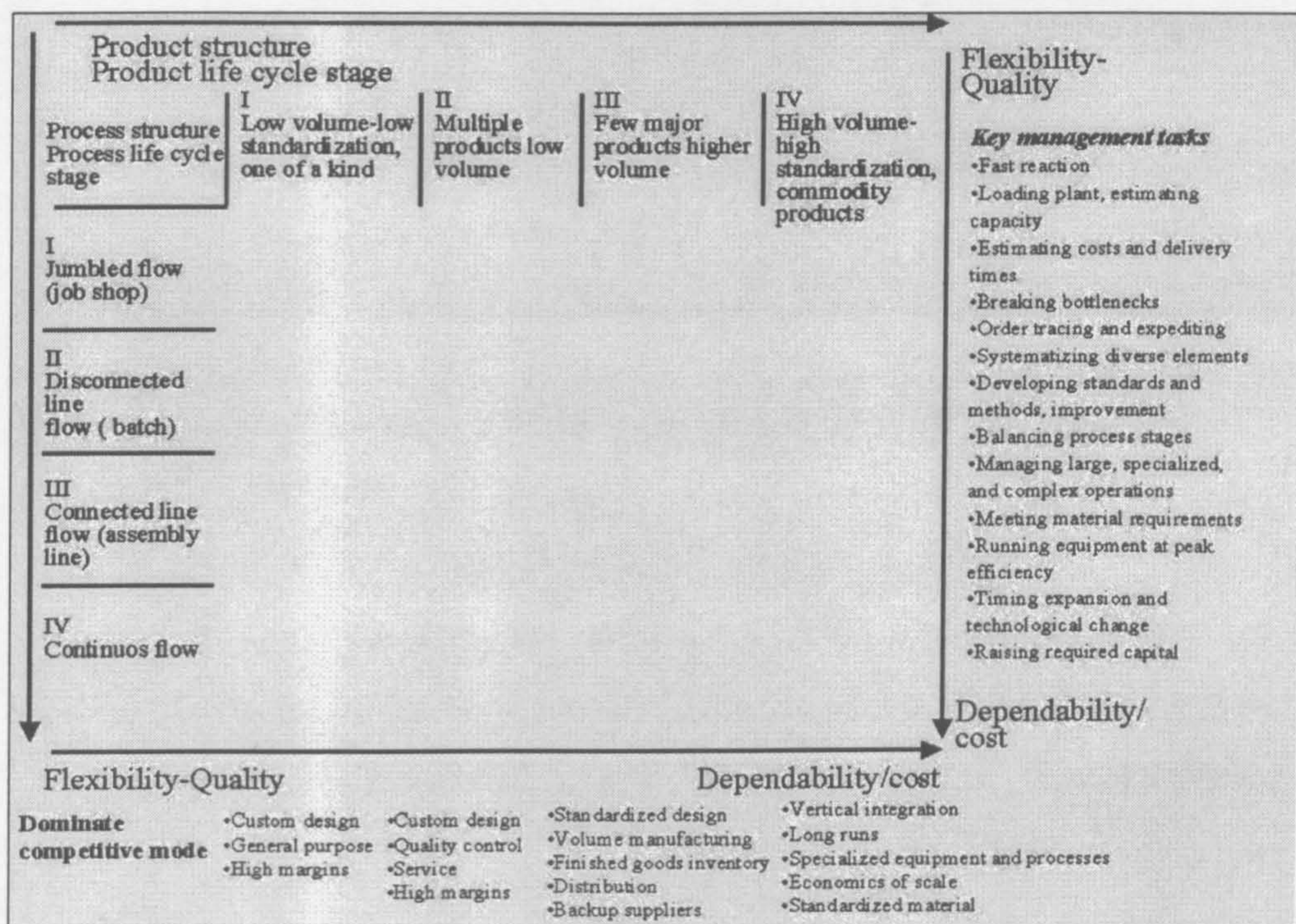


Figure 5.11. Product-process matrix (Fine and Hax, 1995, Hayes and Wheelwright, 1979)

Final market groups that are mapped in the product-process matrix are considered. Here, market groups are formed as the business units for the company. With a similar number of products from each product type with similar process variety (i.e. project type production, or job shop), all of those market groups indicated that these groups could be regarded as separate Business Units.

5.1.5. Financial Statement

Why should we consider the company's financial statement?

The future success of many businesses does not only mean providing goods and services to its markets and fulfil the different market requirements, but also depends on their ability to introduce innovative, custom designed, high quality products produced efficiently, in terms of manufacturing and management techniques, to satisfy 'niche' markets. This insight has led to related sets of developments:

- Managers should think about investments more in terms of their capability to build new capabilities (Hayes and Pisano, 1994)
- Finished-goods inventory is a sunk cost, not an asset (an economist's, not an accountant's term). This forced managers, both inside and outside the plant, to make manufacturing decisions as business decisions (Drucker, 1990)
- Evaluation of the financial balance as a part of the overall evaluation of the strategic initiative (Dyson and Berry, 1994)
- Investment in flexible manufacturing systems, including CAD/CAM, NC/CNC machine tools and robots, is shifting the emphasis from large-scale, repetitive manufacturing processes of standard products to a highly automated job-shop environment (Sizer, 1987)
- Companies are also making fundamental changes to their organisation in terms of manufacturing operations including Just-in-time scheduling, zero defect and zero inventory production systems and flexible manning arrangements (Sizer, 1987)

As a result, many businesses are appraising their financial information to identify how to cope with the company's activities, research, how well it is doing and whether the financial information produced still achieve the needs of stakeholders. These achievements can be assessed through a framework of financial management, e.g. profit

and loss account, because it is important to look at capabilities, gains or losses from the normal operations over a period.

What are the available approaches for the financial statement?

Fundamental to this level of understanding is the identification of three documents, which are:

- *The balance sheet*: The balance sheet can be looked on as an engine with a certain mass / weight that generates power output in the form of profit
- *The profit and loss account*: The profit and loss account measures the gains or losses from normal operations over a period of time
- *The cash flow statement*: Cash flows into the company when cheques are received and it flows out when cheques are issued, but an understanding of the factors that cause these flows is fundamental (Walsh, 1996).

That is why the sources of finance and the assets employed by a company are shown in a balance sheet and the income and expenditure generated by the utilization of the assets in the profit and loss account. Sizer (1987) showed the relationships between the balance sheet and the profit and loss account, under the traditional historical cost-accounting system, is illustrated in Figure 5.12.

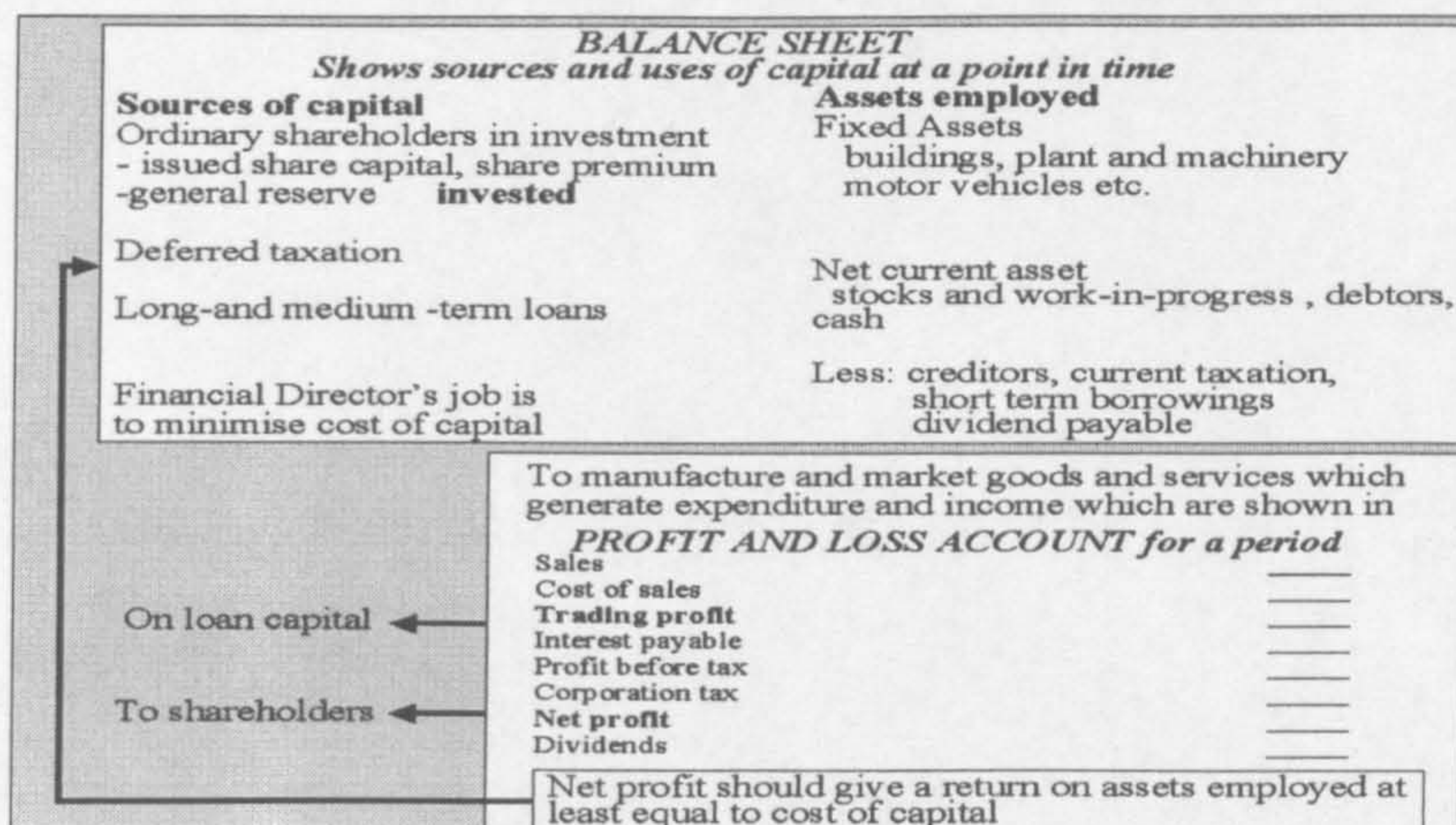


Figure 5.12. Relationship between balance sheet and profit and loss account (Adapted from Sizer, 1987)

On the other hand, the cash flows occur at different points of time. Dyson and Berry (1994) stated that ‘cash available in the current period can often be lent at a positive real rate of interest. Therefore, a cash amount available now is worth more than a similar amount available at some point in the future’.

Within the dynamic environment, companies should develop an appropriate strategy, seek out for appraise investment opportunities (long-term, e.g. investment in MRP), and make various operational decisions (short term, daily). The focal point between long and short-term decisions is time. Therefore, cash flow does not help to visualise a desired future profitability and growth.

Traditionally, strategy management approaches generally tend to be based on reference variables and ratios, which was in turn based on external and internal accounting data, which are obtained from profit and loss account and balanced sheet. (Botzel and Schwilling, 1999). Problems with traditional indicators are summarized in Figure 5.13.

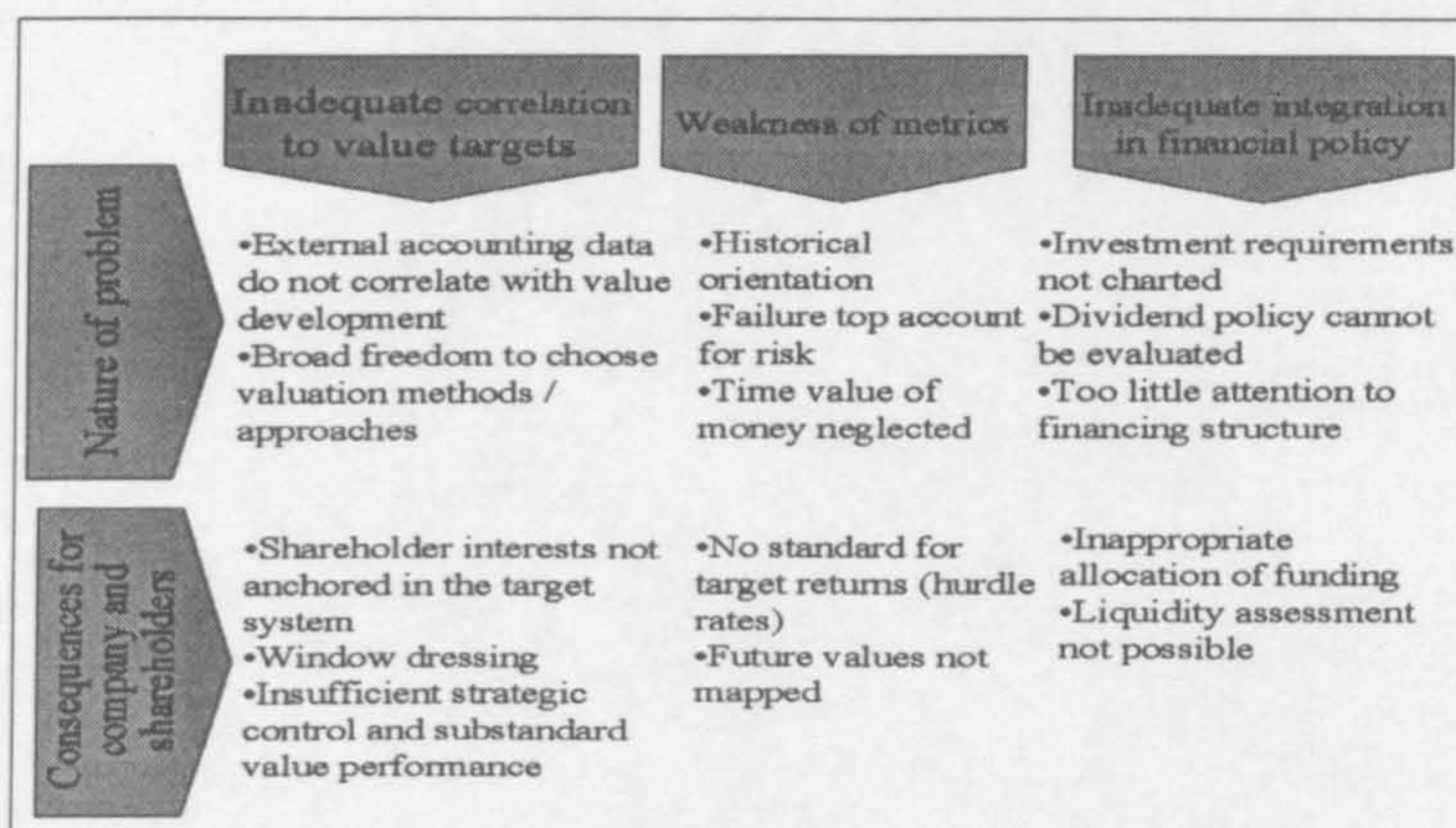


Figure 5.13. Problems with traditional indicators (Adopted from Botzel and Schwilling, 1999)

In dynamic strategy management development process, what has to be considered is how the investment and decisions in new technologies, actions, capabilities, changes in management affect the relationships between those items on the profit and loss account and on the balance sheet. In view of that, two different finance indicators can be

marshalled in support of profit and loss account. The profit and loss account should be designed to provide a measure of performance over an arbitrary slice of life of a firm, as well as value based.

Botzel and Schwilling (1999) confirm that *'the traditional performance indicators used in accounting could lead to inaccurate assessments of company performance. As such, they represent an inappropriate basis for management decisions... In some cases, the discrepancy between profit-base yield and economic, market value-based returns has been found to be very substantial. This can naturally result in poor strategic decisions and a misguided investment policy.* Kaplan and Norton (2001) supported the idea that *'in the 1990s, companies had extended the financial framework to embrace financial metrics that correlated better with stakeholder value, leading to economic value added (EVA) and value based management metrics'*. Even today, companies within the dynamic environment cannot correlate financial measures with so many different value based management metrics because of their strengths and metrics, as summarised in Table 5.1.

	<i>Calculation</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Recommended Application</i>
CFROI (Cash flow return on investment (%))	Internal rate of return on <ul style="list-style-type: none"> • Gross investment base • Gross cash flow • Service life of fixed assets • Residual asset value 	<ul style="list-style-type: none"> • Relatively easy to calculate 	<ul style="list-style-type: none"> • Correlation to market value is lower than for shareholder value or CROCI 	<ul style="list-style-type: none"> • Generally applicable if you can live with inherent inaccuracies
CVA (Cash value added)	Gross investment base multiplied by the difference between CFROI and the real cost of capital	<ul style="list-style-type: none"> • Relatively easy to calculate • Better calculation to value creation than EVA 	<ul style="list-style-type: none"> • Correlation to value creation is lower than for shareholder value added 	<ul style="list-style-type: none"> • Preference given to use of shareholder value added
CROCI (Cash Return on capital invested (%))	Corrects the return on equity to account for: <ul style="list-style-type: none"> • Debt • 'Invisible' capital • inflation • Depreciation • Growth 	<ul style="list-style-type: none"> • Correlates well to market value 	<ul style="list-style-type: none"> • Relatively easy to calculate 	<ul style="list-style-type: none"> • Correlates well to market value • Relatively easy to calculate

EVA (Economic Value Added)	Difference between operating profit and the product of capital outstanding and the weighted average cost of capital	<ul style="list-style-type: none"> • Relatively easy to calculate 	<ul style="list-style-type: none"> • Static; historical orientation • Cash flow includes depreciation 	<ul style="list-style-type: none"> • Can only be used as a supplement to forward-looking measures
MVA (Market value added)	Differences between the total value of the company (market capitalization + book value of debt) and capital employed	<ul style="list-style-type: none"> • Correlates well to market value • Relatively easy to calculate 	<ul style="list-style-type: none"> • Not applicable to business unit / lines • Influenced by share price fluctuations 	<ul style="list-style-type: none"> • Only suitable for top management and entire companies
Market Capitalisation	Current share price multiplied by the number of shares	<ul style="list-style-type: none"> • Reflects market value of the company • Easy to calculate 	<ul style="list-style-type: none"> • Affected by share price fluctuations which do not always reflect company performance 	<ul style="list-style-type: none"> • Only suitable for top management and entire companies • Useful when compared with market index and industry
Tobin's Q (absolute figure)	Quotient derived from market value of total capital (discounted free cash flows) and the gross investment base	<ul style="list-style-type: none"> • Establishes a ratio between shareholder value and capital employed 	<ul style="list-style-type: none"> • Difficult to calculate • Difficult to communicate as an absolute figure 	<ul style="list-style-type: none"> • Preference given to the use of other metrics
Shareholder Value added	Discounted cash flow less debt of capital plus non-essential operating capital	<ul style="list-style-type: none"> • Correlates well to market value • Forward-looking and dynamic 	<ul style="list-style-type: none"> • Bears no relation to current capital employed • Difficult to calculate • Difficult to communicate as an absolute figure 	<ul style="list-style-type: none"> • Only suitable for top management
Shareholder Value Return	Internal rate of return on total capital employed, future cash flows and residual value	<ul style="list-style-type: none"> • Correlates well to market value • Forward-looking and dynamic • Takes account of capital employed 	<ul style="list-style-type: none"> • Difficult to calculate • Assumes that free funds will be reinvested at the internal rate of return 	<ul style="list-style-type: none"> • Generally applicable
Final shareholder value return (%)	Transformation of quotients derived from value added and capital employed as period-specific premium / discounts on the cost of capital	<ul style="list-style-type: none"> • Correlates well to market value • Forward-looking and dynamic • Takes account of capital employed 	<ul style="list-style-type: none"> • Difficult to calculate 	<ul style="list-style-type: none"> • Generally applicable

Table 5.1. Value based management metrics

Consequently, it is essential to consider three different financial indicators;

- business specific indicators (presentation of typical operative control variables for parts of the company and business units)
- standard indicators (presentation of comparative results for parts of the company and business units)
- value metrics (presentation of comparative value results for parts of the company and business units) Botzel and Schwilling, (1999).

How do we capture the company's financial statement?

The company's financial indicators should be concentrated on three different time periods, examining financial measures for the company as a whole, as well as business units within the previous two years, current year, and the next three years. To accurately obtain business specific indicators (e.g. variable cost %), standard indicators (e.g. fix costs) and value metrics (e.g. economic value added - EVA), managers should be asked to define all parameters for their business's profit and loss accounts calculation and decide whether they want to use any value metrics, such as EVA.

Three time periods can be considered within the four different processes, as follows:

Profit and Loss Accounts History: History of the company's profit and loss accounts provide a broad overview of current financial position, and also how well capital is being employed to generate sales, and, in turn, profits as illustrated by Figure 5.14. Calculation can be obtained from Table 5.2. for the whole company.

Accounts		Definitions	Amount
	Sales / Turnover	The total amount of money received from customers during the period.	£
-	Direct Costs	The value of direct materials and services (material value, despatch, electricity, gas and water, indirect consumables, etc., etc....) at the end date of the measurement period.	£
=	Gross Profit	The sales added value show trading profit less overheads (useful for comparing divisions, products and markets)	■
-	Operation Costs (Variable Costs) / %	All expenses costs, which vary proportionately with output, e.g.. direct labour costs and material costs or example	£
-	Operation Costs (Fix Costs)	All expenses costs, which remain constant over the usual range of activity, e.g. Rent, rates and insurance, depreciation, other overheads	£
-	Interest on loans	The sales added value	£
=	Profit before tax / profit %	It is the figure resulting when interest charges have been removed	■

Table 5.2. Profit and Loss Account

PROFIT & LOSS ACCOUNTS				
1. Profit and Loss Accounts History				
£x 1,000				
	Current Year	Current -1	Current -2	
	Month	Month	Month	
	Year	Year	Year	
Sales / Turnover				
Direct Material Cost and Services Costs				
Cost of Sales				
Gross Profit				
Operating Costs (Variable Costs)		Variable %	Variable %	Variable %
Variable Total				
Other Expenses (Fix Costs)				
Fix Total				
Profit Before Tax / Profit %		%	%	%
Economic Value Adding (EVA)				

Figure 5.14. Profit and loss history

Breakdown in the company's Profit and Loss Accounts history for each Business Unit:

This section provides an in-depth financial overview of each Business Unit within the company as shown in Figure 5.15.

PROFIT & LOSS ACCOUNTS					
2.1. Breakdown Company Profit and Loss Account For Each Business Unit Current Year £x 1,000					
	Company	Business Units			
Sales/ Turnover					
Cost of Sales					
Gross Profit (Sales Added Value)					
Gross Profit Margin %					
Variable Costs					
Variable %					
Fix Costs					
Profit Before Tax					
Profit %					
Economic Value Added (EVA)					

Figure 5.15. Breakdown the company profit and loss account

Report of Profit and Loss Account for each Business Unit: the company's historical financial statement can now be used to build a report for each business unit, based on the outcome of the previous section.

Future Profit and Loss Accounts: The business P&L' can now be used to build an optimistic and pessimistic financial plan based on the outcome of the strategy setting, as shown in Figure 5.16. The management team now has to consider just four things; each of which should be viewed optimistically and pessimistically:

- What is the sales target;
- What is the cost of these sales;
- What impact does the resources required to achieve the target have on fixed cost;
- What impact does the resources required to achieve the target have on variable cost;

PROFIT & LOSS ACCOUNTS											
3 Future Profit and Loss Account For Business £x 1,000											
	Current Year Month	Current+1 Year		Current+2 Year		Current+3 Year					
		Optimistic	Pessimistic	Optimistic	Pessimistic	Optimistic	Pessimistic	Optimistic	Pessimistic		
		%	%	%	%	%	%	%	%		
Sales/Turnover											
Cost of Sales											
Gross Profit (Sales Added Value)											
Gross Profit Margin %											
Variable Costs											
Variable %											
Fix Costs											
Profit Before Tax											
Profit %											
Economic Value Added											

Figure 5.16. Future profit and loss account

These questions provide an insight for investigating the strategy statement actions. They do not, themselves, provide a strategic action forecast, but reliable answers to all of these questions would provide a sound basis for forecasting.

These four statements are not independent of each other, but are linked in the company. The same calculation can be used for each statement in Table 5.2. Together they give a full picture of the financial aspect of a business.

5.1.6. Business Objectives

Why should we consider business objectives?

Limitations of managing only financial numbers led many companies to start adopting quality and organising frameworks since the 1980s. Companies attempted to win national quality awards - Malcolm Baldrige in the United States, the Deming Prize in Japan and EFQM in Europe (Kaplan and Norton, 2001). Although these programs tried to replace pure financial measures, quality alone was not enough without setting objectives. Objectives are to be set out where the company wants to go in the medium and long terms, including financial targets. Therefore, it is essential to define the company's objectives, their importance, and describe seven major sections that exist in

the EFQM model, and later discuss different areas in which the company's performance should be formulated.

How do we capture business objectives?

Seven key areas in which the company objectives are normally set:

1. **Financial objectives:** Two key areas in which financial objectives should normally be set are:
 - **Growth:** A company's growth objective should indicate the position a company is aiming to achieve in relation to its competitors.
 - **Profitability:** Profitability objectives can be set to examine how well the money invested in the business is being used. Companies can have objectives indicating the level of profitability they seek.
2. **Customer Focus:** The customers are judges of product / service quality through customer loyalty. Therefore, an in-depth understanding of their needs is important.
3. **People Development and Involvement:** "The full potential of a company's people is best realised through shared values and a culture of trust and empowerment, which encourages the involvement of everyone."
4. **Public Responsibility:** It is better exceeding regulation standards and, as far as possible, ensuring that stakeholders concerns are addressed to gain long-term approval by society. The business helps to improve welfare of the society while it aims to reach company objectives.
5. **Partnership Development and Resources:** Companies find it in their interest to form long-term relationships with their partners, as this allows trust and a working knowledge of each other to be built up. Through the correct partnering, duplication of resources can be avoided.
6. **Leadership & Constancy Purpose:** "The behaviour of a company's leaders creates a clarity and unity of purpose within the company and an environment in which the organisation and its people can excel."(EFQM). Because both of these areas are

critical to the long-term success of a company, emphasising them by establishing and striving to reach related company objectives and performance are very important.

7. **Continuous Learning, Innovation, and Improvement:** Company objectives should maximise performance measures within the area of innovation that is being aimed at, and the result used within a culture of continuous learning, innovation, and improvement.
8. **Others:** A company can have other objectives, which drive the success of the business.

The above process defines company objectives, explains their importance, and describes seven major sections that exist in the EFQM model. The problem is that some objectives are about customer satisfaction, people and knowledge, partnership development and resources, which are not appropriate for the whole company. For example, improving delivery time objective might be more relevant to one business unit in terms of supplier delivery time, product delivery time and employee involvement than others. When the researcher wanted to agree on business objectives in the first case study, some problems had been seen, e.g. mixing up different level objectives. This caused the incompatible result of the process for Strategy Management Process formulation within Stephen Clark Ltd. A way of improving this would be to consider only financial objectives (e.g. growth, profitability etc.) and other objectives (e.g. move to new factory), which drive the success of the business as a whole.

Objectives become meaningful only when time frames and quantitative indicators of success are considered. Without performance indicators and time frames, managers cannot track improvement and evaluate their success in achieving objectives, as a learning and progress loop. This suggests that using performance measures, peoples' efforts can be focused to achieve the company's objectives. Without a performance measurement system, the process for achieving company objectives may not be managed and, therefore, the company objectives may not be achieved. Hence, in order to be actionable, relevant performance measures should be chosen against each objective as

shown in Figure 5.17. This improvement will enable managers to think about different business unit objectives, which contribute the business objectives.

DEFINE BUSINESS OBJECTIVES			
Key Performance Results	Business Objectives	Rank	Measured By...
•Growth			
•Profitability			
•Others			

Figure 5.17. Business objectives

5.1.7. Company's current and past strategy

Why should we consider the company's current and past strategy?

The importance of the learning aspect as an input during the strategy process formulation is defined both in business strategy and operations strategy literature (Mills et al, 1988; De Geus, 1988; Feurer and Chaharbaghi, 1995). Awareness of, and congruence with the organisation's past strategies are an important starting point within the organisation.

Use of past and current strategy mistakes is important for the alignment of strategies within the organisation and ensuring that all employees have the same understanding of the organisation's past experience / actions and their impact on the business and not to repeat the same mistakes in the future.

In short, the strategy chart is designed to

- increase the manager's understanding of their strategy and begin the shared identification of the choices available
- learn from the past actions / experience and their impacts on the business.

What are the available approaches to capture the company's current and past strategy?

At first, Boston Consulting Group (1968) examined the relationship between cost and experience by representing them in a graph as a curve. This framework's aim is to achieve market dominance in terms of all costs (including, e.g. R&D, selling, overheads, etc.) rather than simply production, as shown in Figure 5.18. This also provides linkage between market share and profitability. Business market domination in terms of achieving a high relative market share generates higher volumes than its competitors and enables the company to achieve a lower cost position. Lower cost advantages bring price to below the company's competitors and this, in turn, enables the business to increase its market share, thus become a virtual circle establishment (Swords and Turner, 1997).

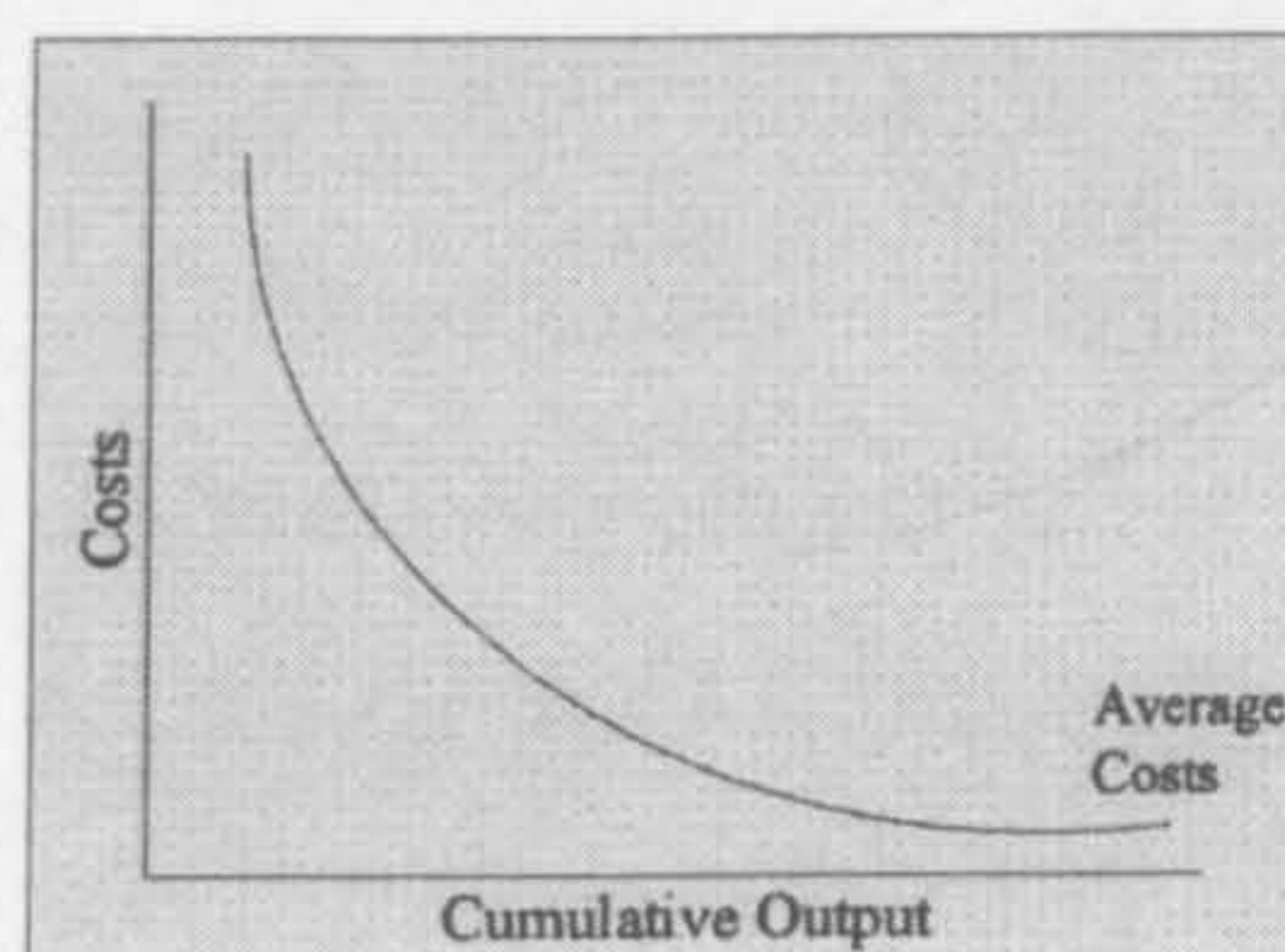


Figure 5.18. The Experience Curve

With the experience curve, companies can gain major advantages in terms of seeing investment early on in a particular product or process until a point. Swords and Turner (1997) explained the disadvantages of this framework as

“if the choice of technology is the wrong one or is not accepted by the market place (as was the case with the Betamax video format), if the learning effects are not proprietary and can easily be imitated by competitors who can then enter at a lower cost position; or if a newer technology can give competitors a steeper learning curve, then the experience curve will not secure a firm's competitive position” (Swords and Turner, 1997, p. 33)

As the business environment has been changing enormously in the last decade, experience curves have become less useful to review the coherence between different business units, providing insight into the company's different business unit's realised strategy and its strategy formulation process. It is essential to identify which of the many different sorts of general internal and external factors have influenced the past performance as a result of the strategy actions taken. Furthermore, how these adopted strategies had an effect on development of the organisation, along with some consideration as to which will occur in the future, will be discussed in the following paragraphs.

Mills et al (1998) proposed an alternative approach which called a strategy chart to describe a 'longitudinal picture of manufacturing strategy'. They argue that in practice, managers are often aware that current and past strategies are important to constrain or assist future strategy. Hence, considering the accessibility of current and past strategy might provide a rich source of learning when formulating an 'intended' strategy as shown in Figure 5.19.

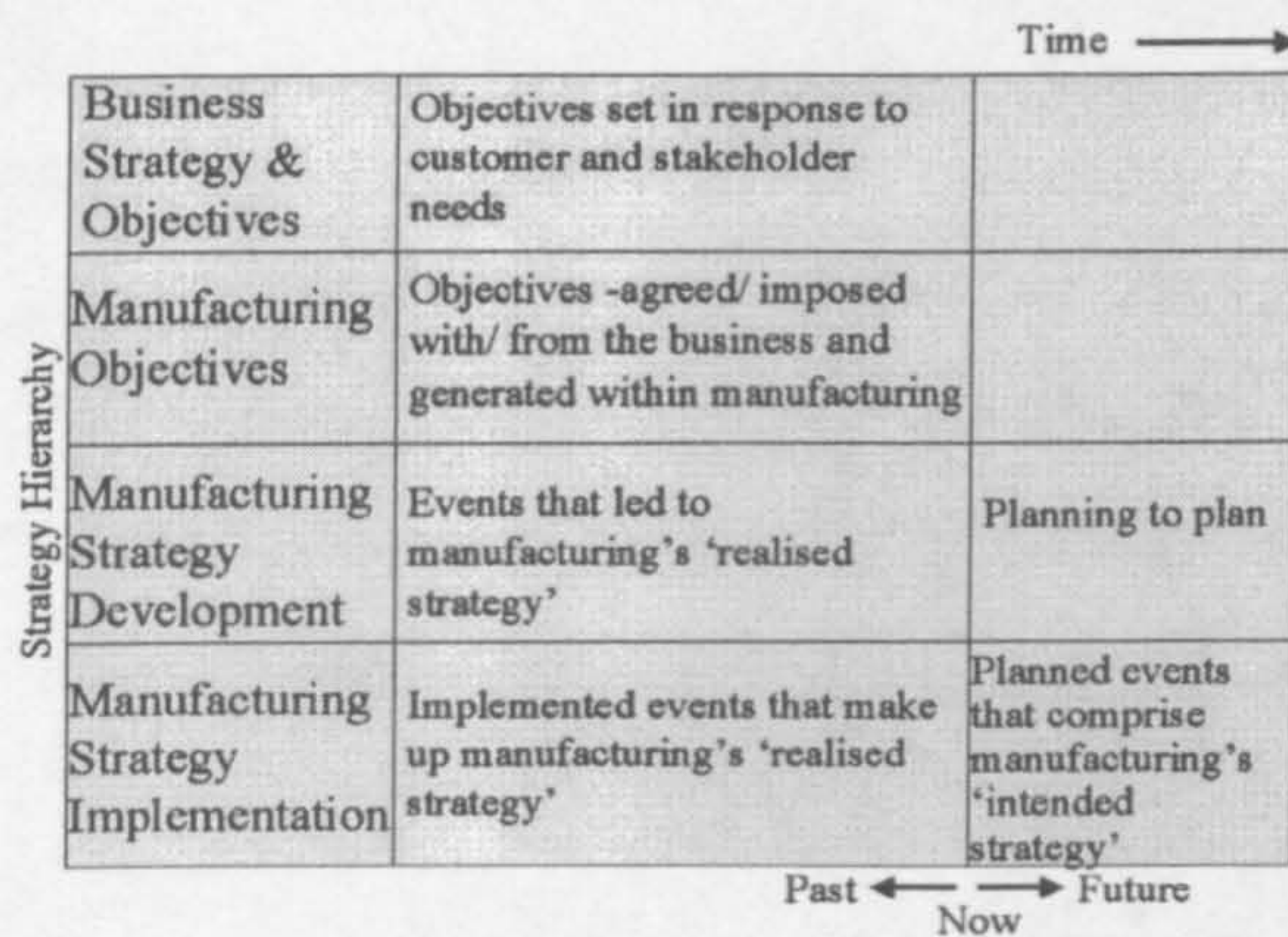


Figure 5.19. A Strategy Chart (Mills et al, 1998)

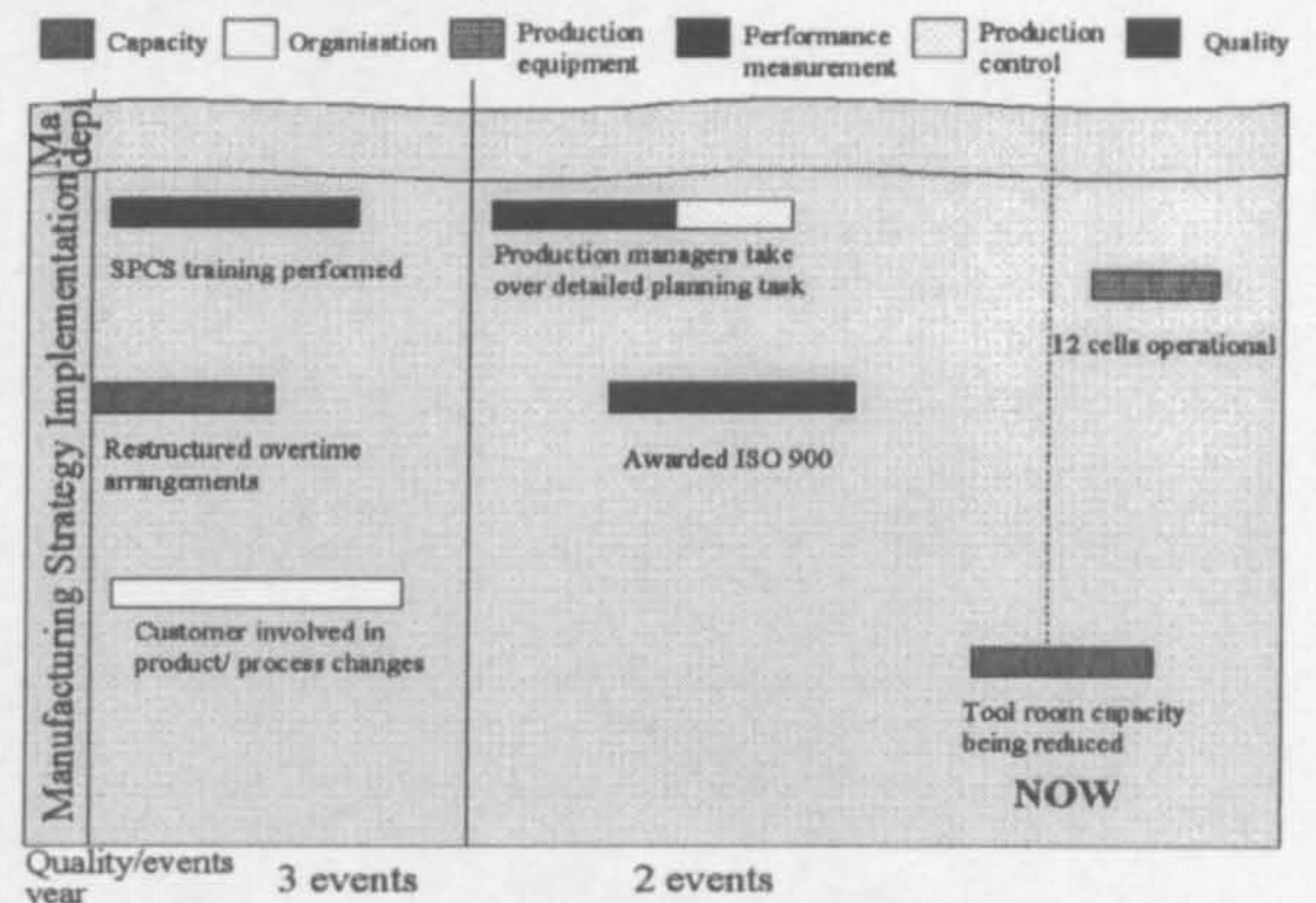


Figure 5.20. Implementation of a Strategy Chart

In their approach, they observed that 'patterns, sometimes associated with strategic data, can be more accessible from pictures than text. Pictures can be created and viewed by groups and may help develop a common understanding of a strategy.' Figure

5.20 shows how Mills et al. (1998) identified current strategy by depicting a series of actions from historical and planned actions.

Although this strategy chart is useful to

- show current strategy as actions and plans
- display strategy in an updateable form that allows it to be widely communicated
- increase the team’s understanding of its strategy and begin the shared identification of the choices available,

it does not explicitly define whether the intended strategy has achieved or missed the company’s different market requirements. For that reason, it is essential to modify the strategy chart design to show how effectively the company builds its strategy for each business unit in terms of its different market or product requirements. This would reveal the problems and challenges and also correct action if it has been missed.

How do we capture the company’s past and current strategy?

The strategy chart is designed to capture five years of the company’s strategy, as illustrated in Figure 5.21.

The first column is used to record the description of what was to be done or accomplished and will be done or expected success. The second column is used to record the time period for each action. The third and fourth columns show a simple “signal” to indicate if the action has been met or not.

Actions	C-3	C-2	C-1	C	C+1	C+2	Met	Not	Results / Outcomes

Figure 5.21. Current and Past strategy

Finally, the last column provides the summary of what the planned action was / will be or was /will not be met.

So far, the input stage has been concerned with the collection of relevant information to facilitate the strategy formulation. The following section will explain briefly the

formulation of PROPHECY and a more detailed consideration of the chosen tools and techniques and the reasons behind them.

5.2. Formulation

To use any strategy management process formulation effectively, requires an understanding of the particular organisation's situation (Pearson, 1999). Skinner (1969) introduced the notion that, in order to compete successfully, a company requires a good understanding of its business (i.e. well defined mission statement). Given a particular competitive stance (i.e. creating a strategy for each business unit), an operations strategy should ensure that the right competences are developed. Skinner's original article was headed with some important trade-off decisions in manufacturing - or 'you can't have it both ways'. In a similar vein, Porter (1980) alerts against the danger of being 'stuck in the middle' by trying to compete on too many fronts at once. The different types of focus are depicted in Figure 5.22.

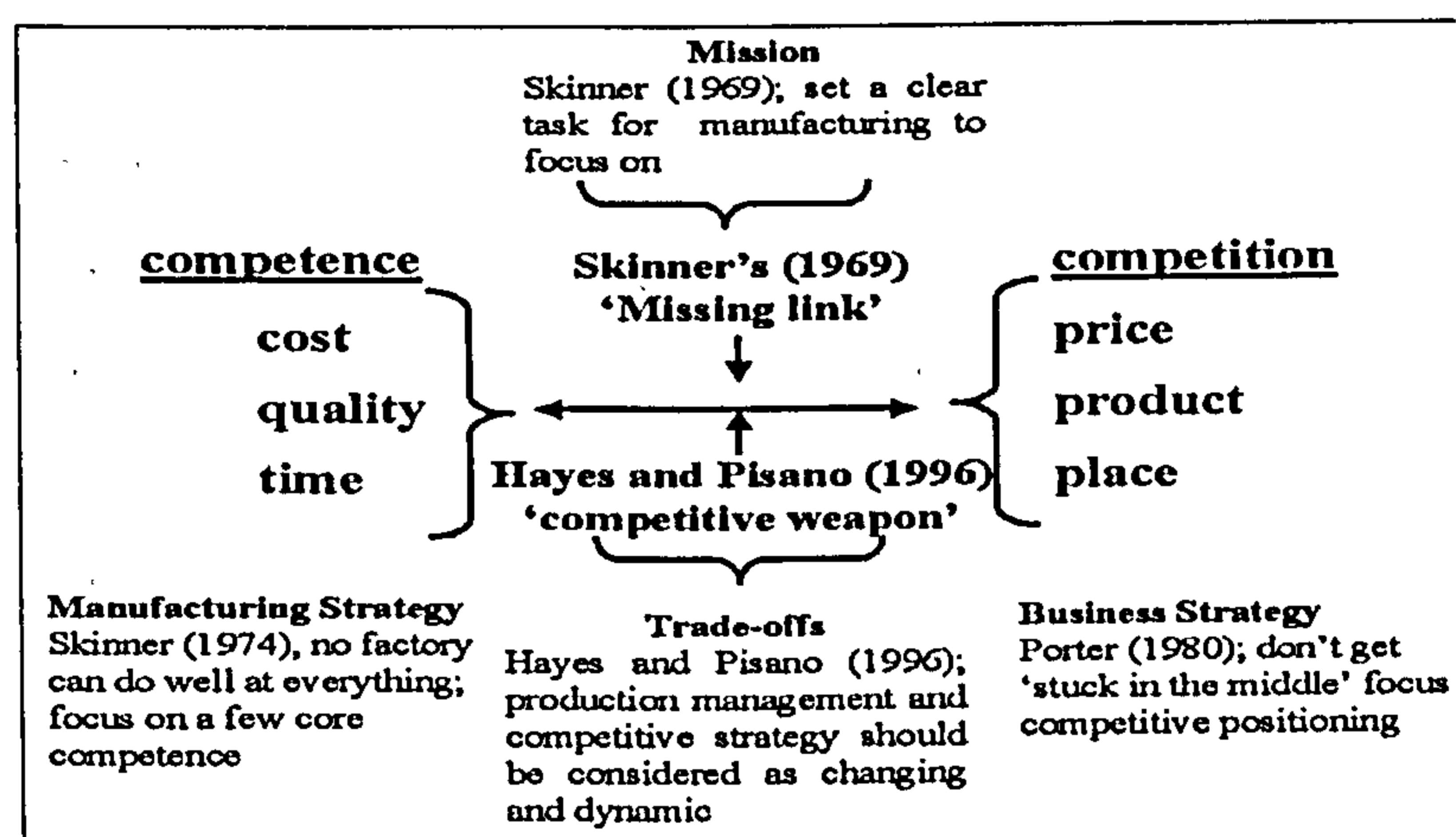


Figure 5.22. Types of Focus in Strategy Formulation Process (Adopted by Corbett and Wassenhove, 1993)

In other words, companies, when trying to compete within different markets, should consider the business unit's situation, to build up each business unit's own competitive

advantage instead of considering the company as a whole. Therefore, the formulation stage starts with consolidation of all the key business unit data into a business unit fact sheet.

5.2.1. Business Unit Analysis

Why should we analyse business unit?

The way in which a company relates to its business units, in terms of its markets or products, is one of the most important aspects of strategy management process formulation (Campbell et al, 1999).

The formulation strategy is concerned with matching the capabilities of the company (internal environment) with its environment for its each business unit. Much of the confusion that surrounds the different strategy alternatives can be removed by clearly distinguishing between internal measures of competence and external measures of competitiveness. The whole task of business unit analysis, and, therefore, of the manager, can then be formulated as ‘to link the stakeholders’ requirements challenged internally and the competitiveness required in the market. Consequently, the boundaries, internal and external analysis of each business unit represent a key starting point for the formulation strategy, and provide a basis for measuring competitive performance.

The way an enterprise has operated in the past is usually the starting point to determine where it will go and where it should go. In other words, top executives wrestle with such fundamental question as:

- what is our business?
- who are our customers?
- what do our customers want?
- what should our business be? (Weihrich, 1982)

These, and similar questions, should provide answers about the basic nature of the business unit, its products and services, its competitive position and its values for each

business unit. Therefore, the company needs to answer the following questions in order to analyse the business unit externally and internally:

- what is the business unit's profit and loss account?
- what is the business unit's market position?
- what are each business unit's stakeholder requirements?
- what is the products life cycle within each business unit?
- what are business units' strengths, weaknesses, threats and opportunities?

What are the available approaches?

The available operations and strategic management' tools and techniques to answer the above questions, as well as analyse business units internally and externally, can be explained in Table 5.3. There is a much wider range of choices for business analysis in strategic and operations management literature than those discussed in the above table, but which are not particularly well suited for business unit analyses questions.

How do we analyse business unit?

Although some tools and techniques in Table 5.3. fulfil the listed questions suggested by the approach, it is necessary to address each of the questions and align the current approaches to fulfil the requirements.

- What is the business unit profit and loss account?

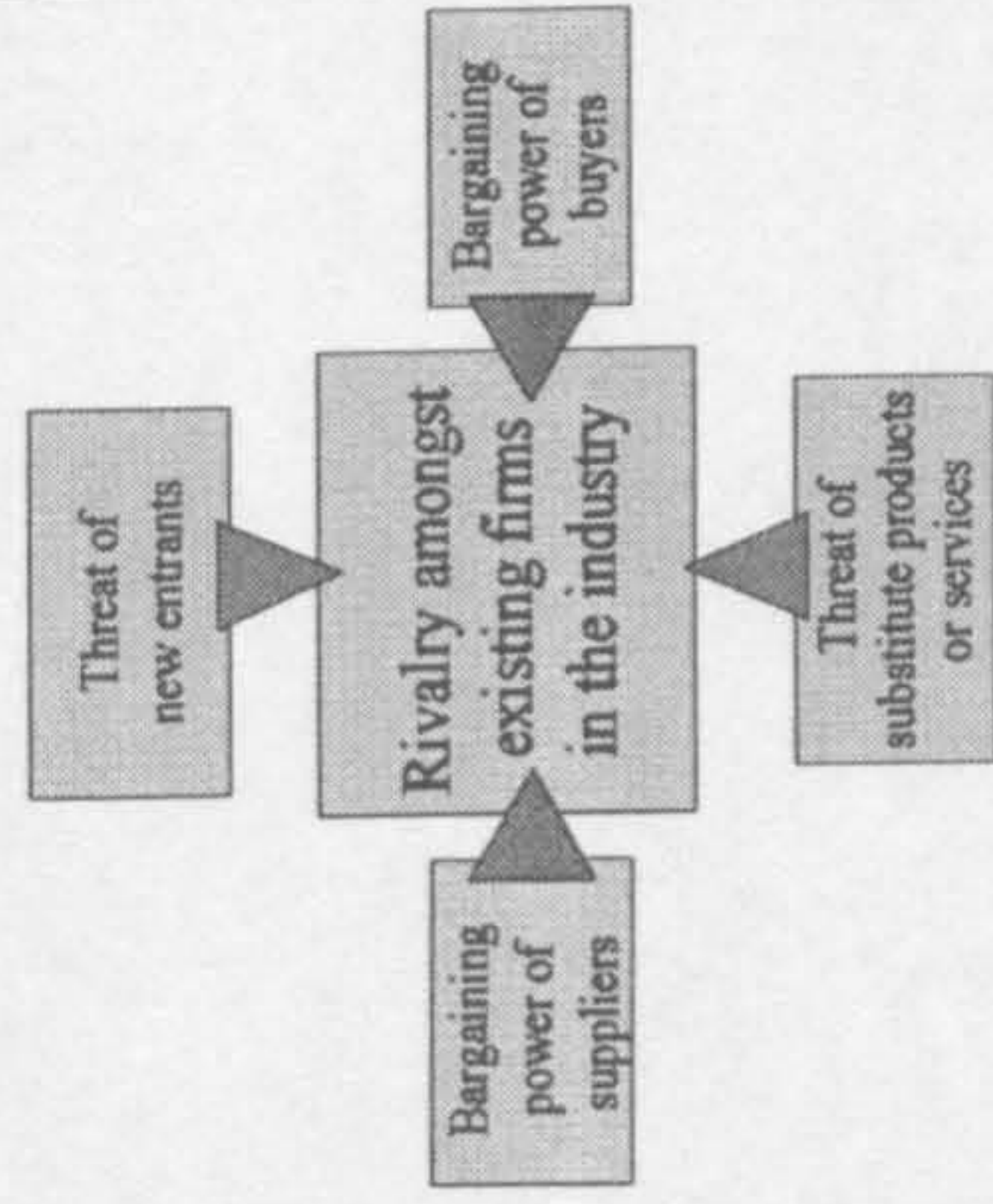
Profit and Loss accounts are used to evaluate the company's financial performance. This report can be obtained from the profit and loss account section (Figure 5.23)

	Current Year	Current Year -1	Current Year -2
Sales/ Turnover			
Cost of Sales	/	/	/
Gross Profit / %	/	/	/
Variable Cost / %			
Profit Before Tax			

Figure 5.23 Profit and loss account

Tools and Techniques

Porter's 5



Description

The threats of entrance: determine the possible barriers to entry, the role of government policy, and the likelihood of deterrent actions by established competitors,
 The Intensity of competitive rivalry: measure the level of product differentiation, switching costs and concentration in the industry,
 The threat of substitution: examine price positioning, functional alternatives, changes in technology, and the likelihood that buyers will switch purchasing behaviours,
 The bargaining power of suppliers: analyse the presence of substitute inputs, the concentration and capacity utilisation in the supplier's industry, and the impact of the inputs on the total cost of the product,
 The bargaining power of buyers: consider the concentration of firms in the buyer's industry, the buyer's volume, the availability of substitutes and the switching costs or incentives that the buyer may have to purchase from one firm to over (Strategic Leadership Form, 1995)

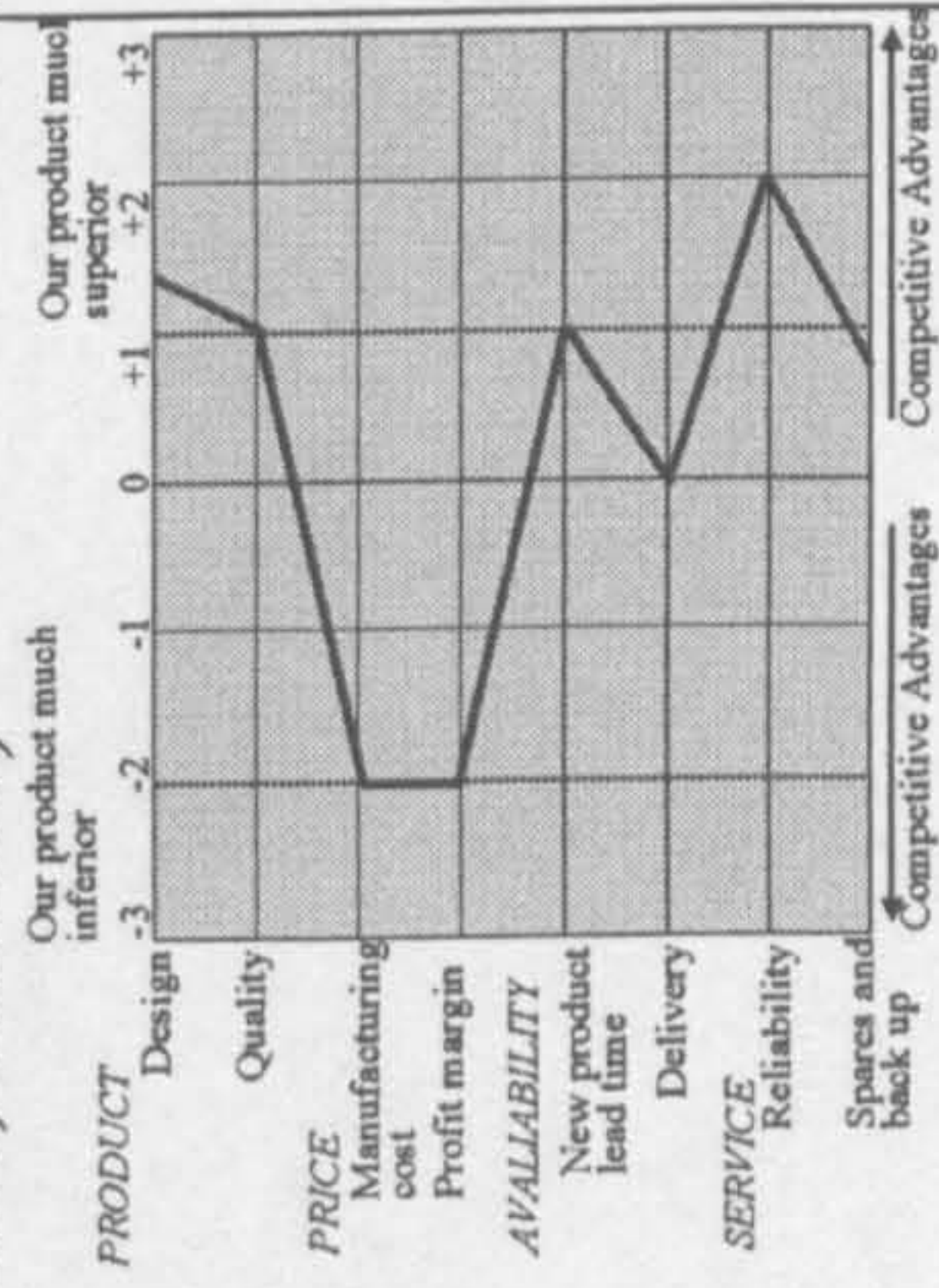
Strengths

- Less mechanistic and perspective that other methods
- Provide clear analysis
- Linking strategy with proposition that market growth is important factor in determining industry attractiveness

Weaknesses

- It may not apply to all business in terms of their scope

Competitive positioning analysis (Skinner, 1969; Platts and Gregory, 1990, DTI 1991)



Shows that the company's product is competing effectively in respect to design quality and service, but not in terms of price

- Very simple to apply
- Reflects competitive position of the company

- It only compares product characteristics
- Unable to show how companies fulfil stakeholder requirements comparing to the competitors

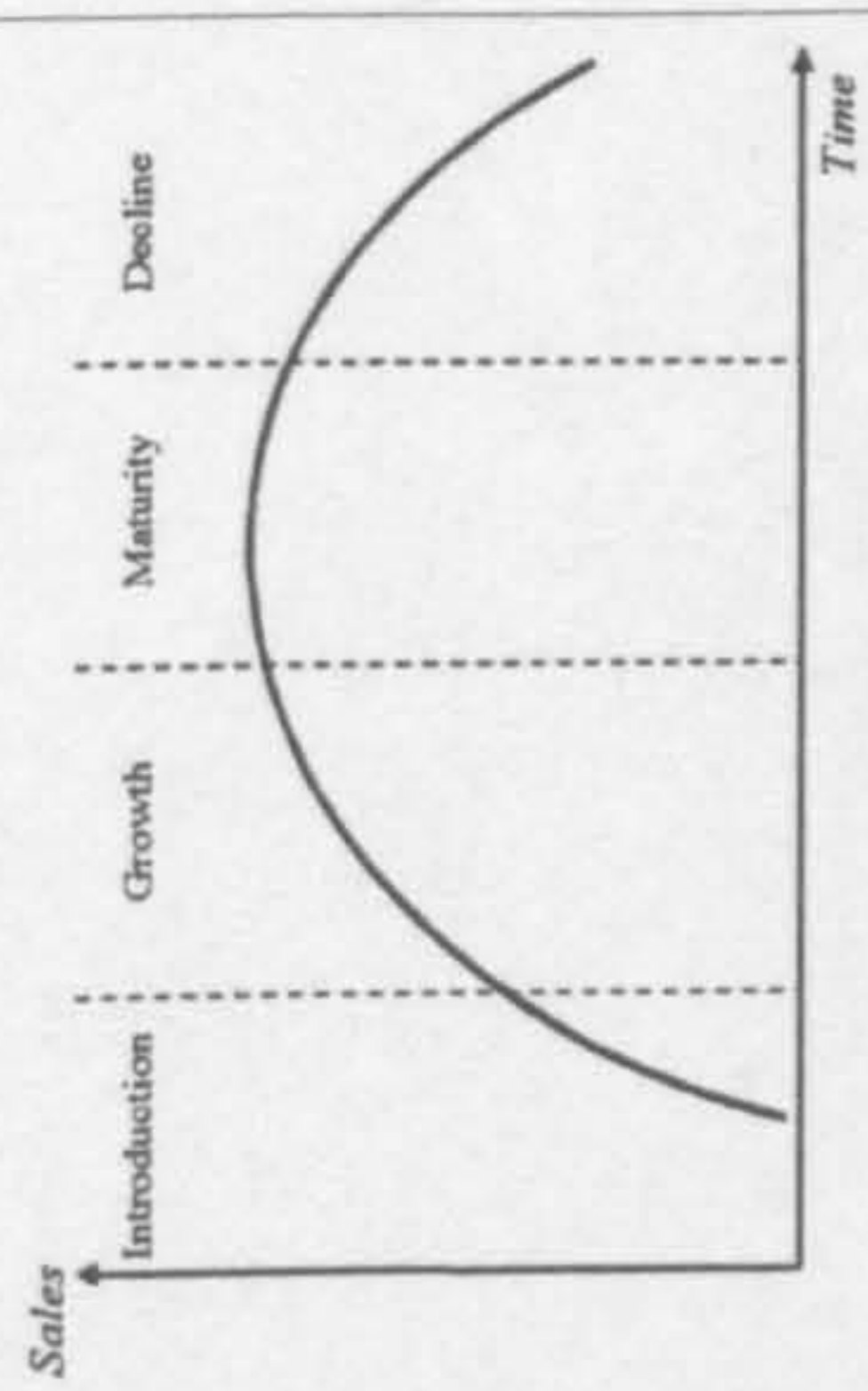
Tools and Techniques

Description

Strengths

Weaknesses

Life Cycles Frameworks

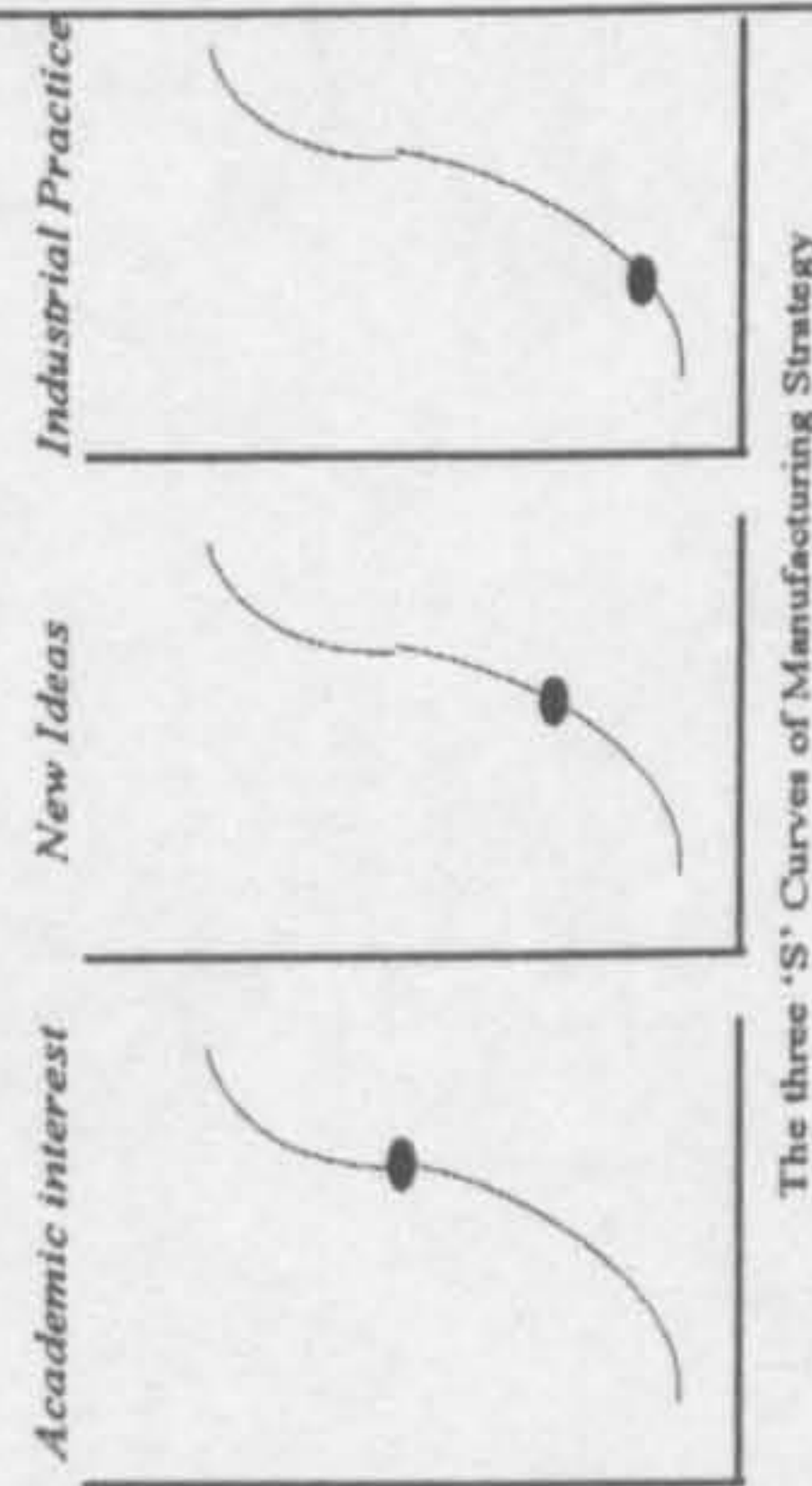


- underlines the inevitability of change
- makes change an evolutionary part of a self-sustaining (Baker, 1992)
- provides strategic situation viewpoint to understand where applicable, as well as facilitate appropriate strategy decisions (Pearson, 1999).

- very simple to apply
- allows useful generalisations to be made about the main characteristics of the product without considering current position via the whole product life cycle time

- looks at company's strategic process rather than broadly, insight and understanding of the organisation and set the detail action plan

S Curve (Skinner, 1996)

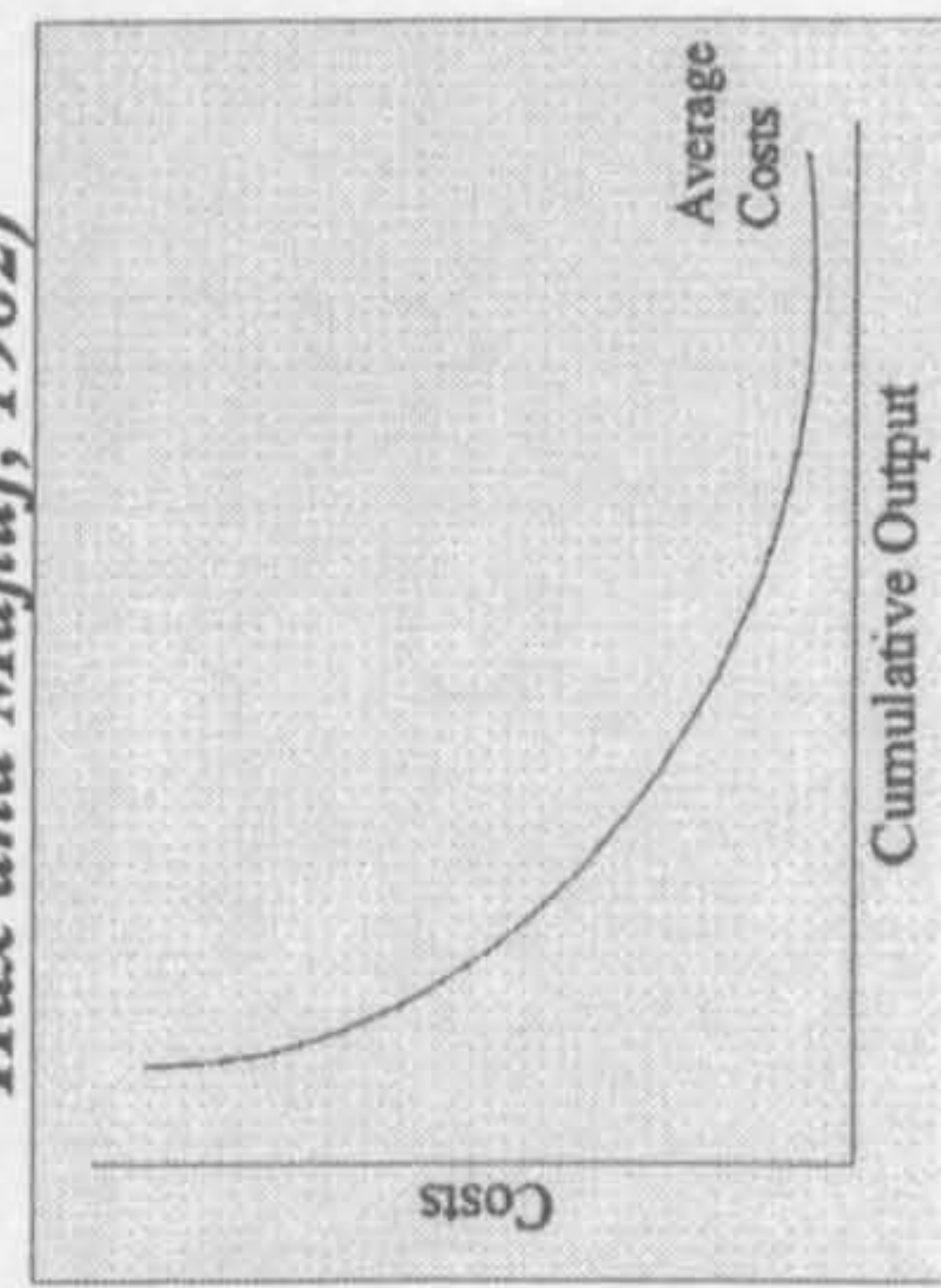


Manufacturing strategy (technology) progress along the lines of an S curve (Skinner, 1996), as can be seen with hindsight

- Enables a manufacturing system to be focused on a key competitive task

It is not always possible to tell where the current technology is on its S curve, where its limits lies and what alternative technologies might succeed and when.

Experience Curves
(Boston Consulting Group, 1968;
Hax and Majluf, 1982)



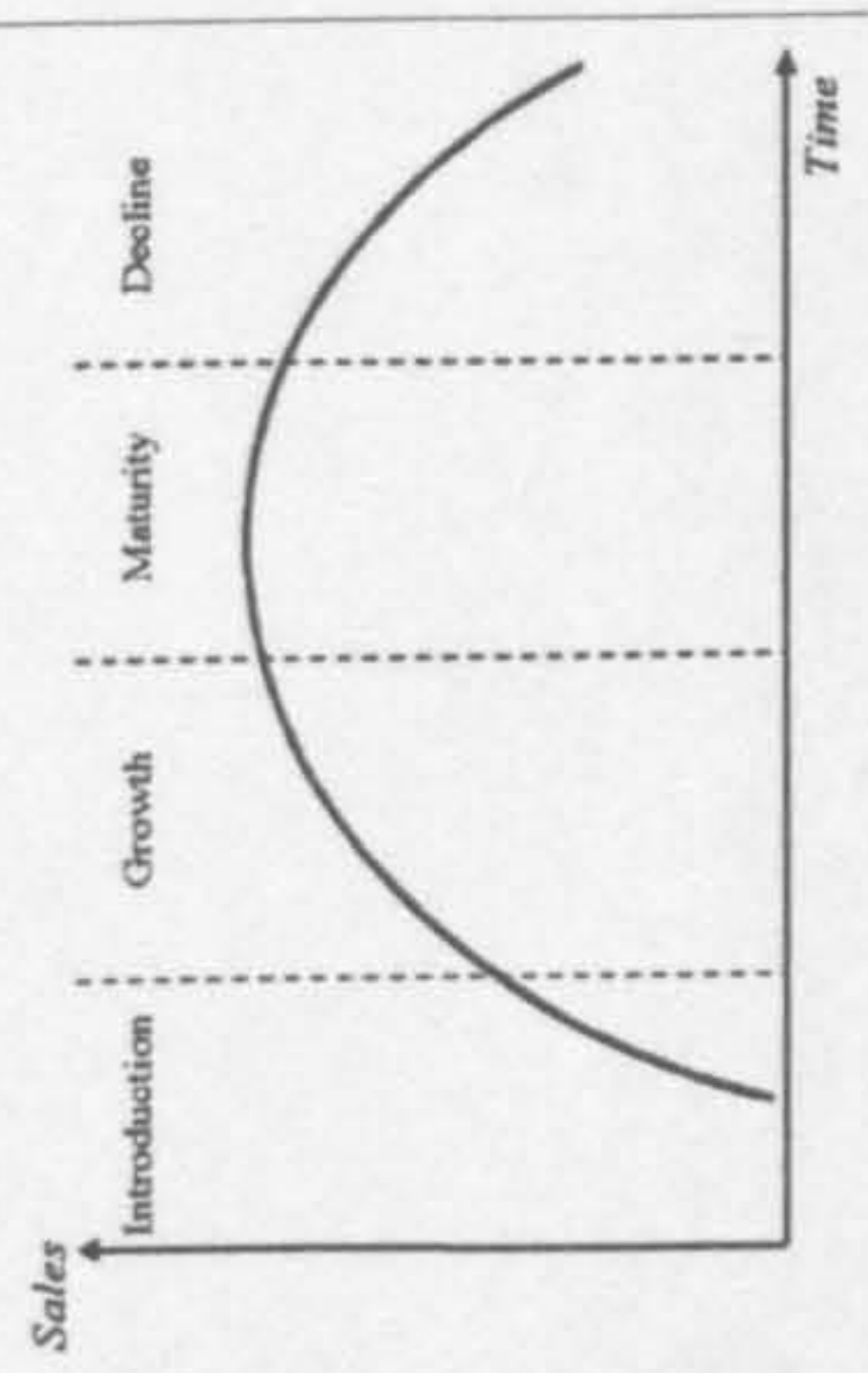
Examines the relationship between cost and experience by representing it in a graph as a curve. It provides linkage between market share and profitability

- seeing investment early on in a particular product or process until up to a point

Can easily be imitated by competitors, who can then enter at a lower cost position if

- the choice of technology is the wrong one or is not accepted by the market place (as was the case with the Betamax video format),
- a newer technology can give competitors a steeper learning curve, then curve will not secure a firm's competitive position

Life Cycles Frameworks

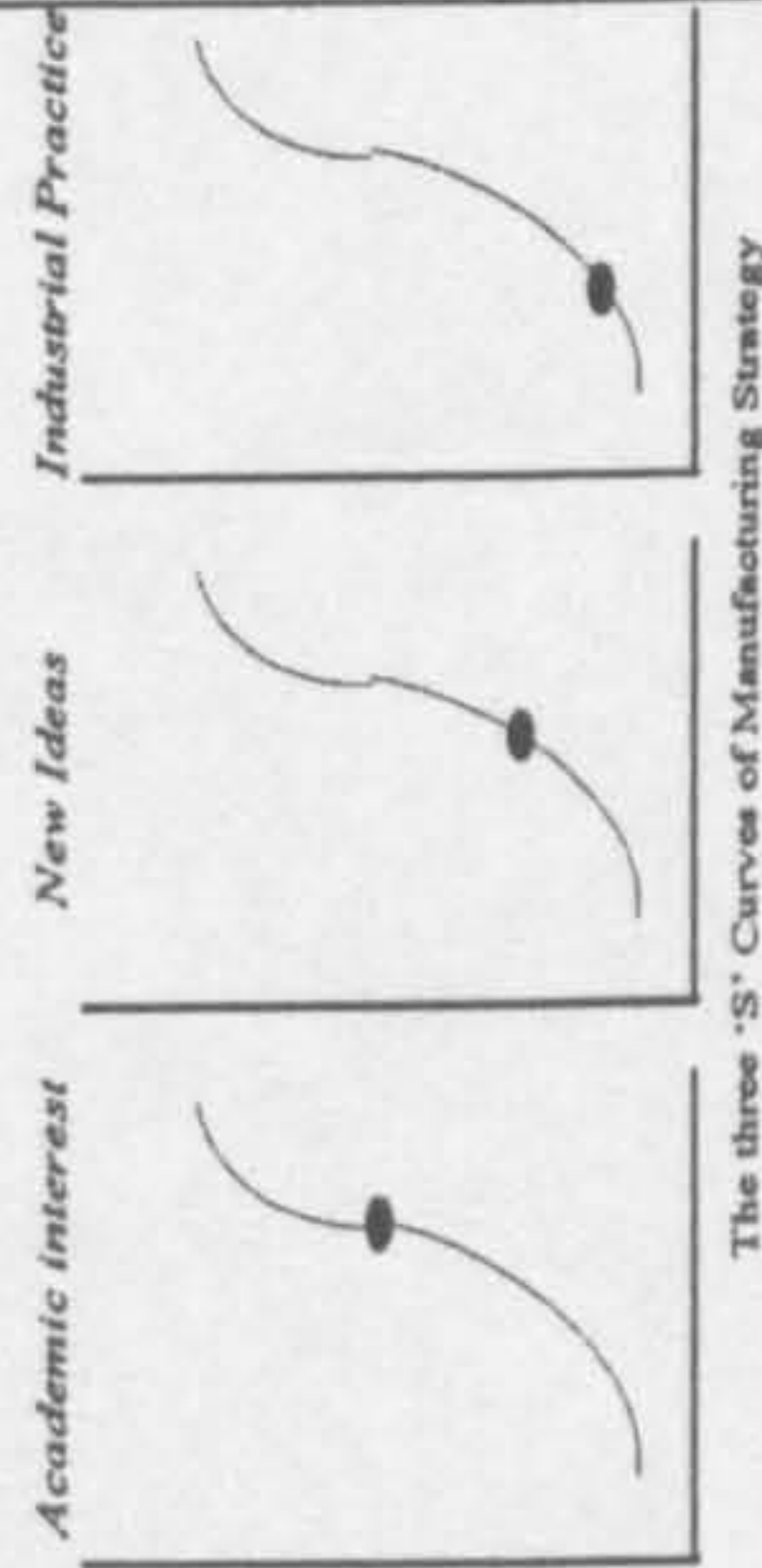


- underlines the inevitability of change
- makes change an evolutionary part of a self-sustaining (Baker, 1992)
- provides strategic situation viewpoint to understand where applicable, as well as facilitate appropriate strategy decisions (Pearson, 1999).

- very simple to apply
- allows useful generalisations to be made about the main characteristics of the product without considering current position via the whole product life cycle time

- looks at company's strategic management process very broadly, rather than providing insight and understanding of the organisation and set the detail action plan

S Curve (Skinner, 1996)

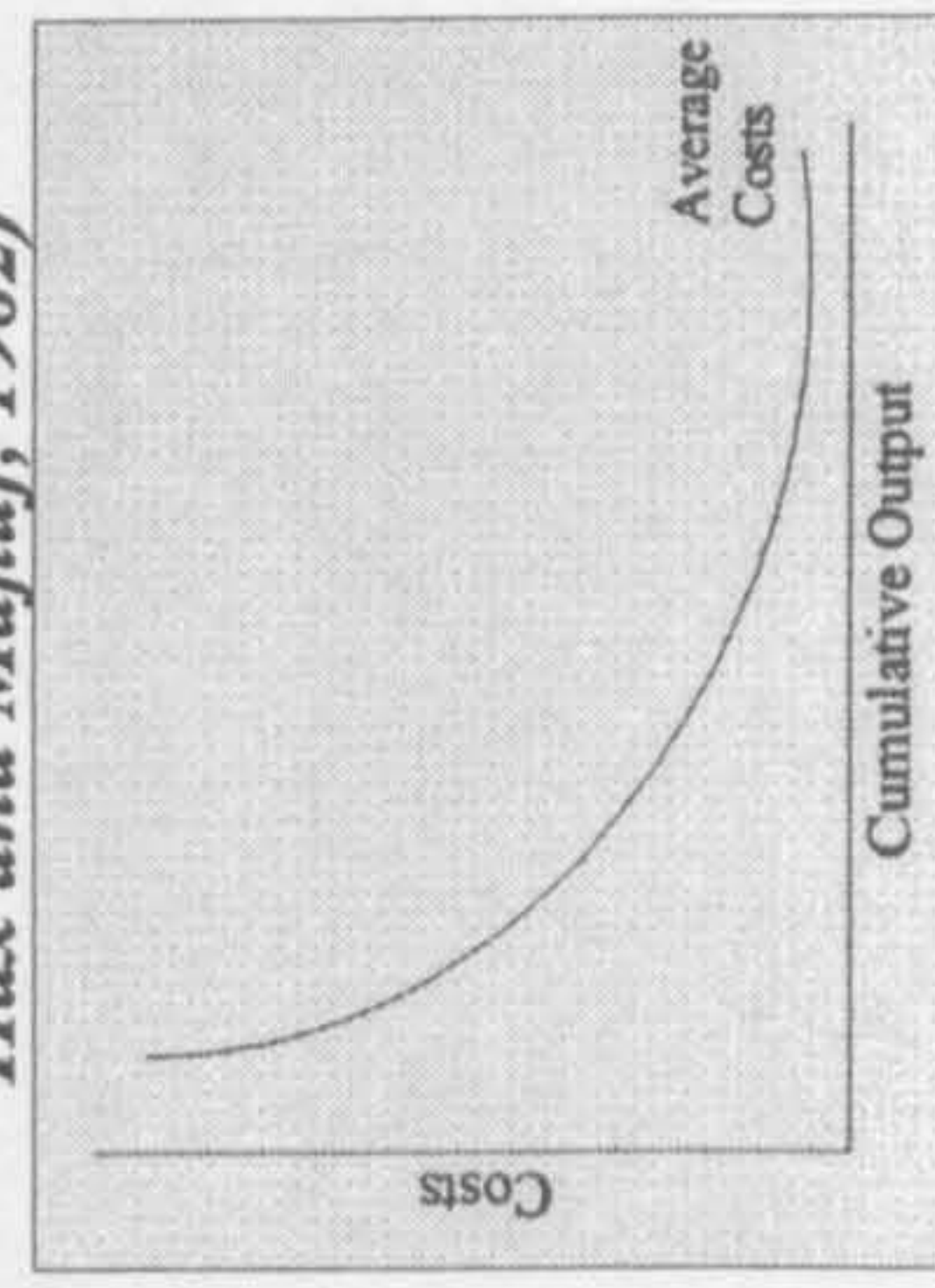


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- a newer technology can give competitors a steeper learning curve, then curve will not secure a firm's competitive position

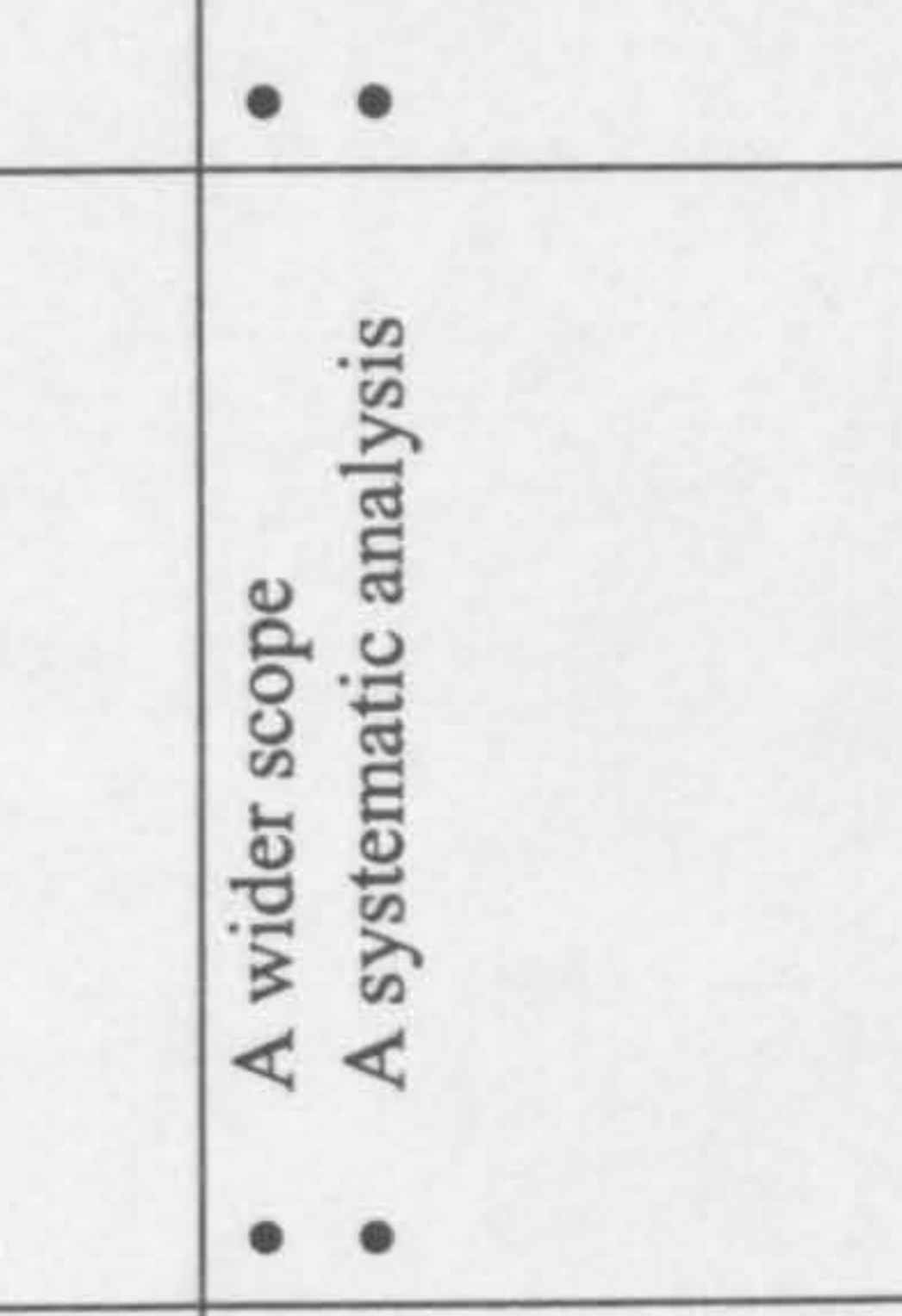
Tools and Techniques	Description	Strengths	Weaknesses
<p>Shareholder Value Analysis (Day and Liam, 1990; Stern, 1993)</p>	<p>Shareholder Value Analysis consists of three analyses:</p> <ul style="list-style-type: none"> determining the actual costs of all investments in a given business, discounted to the present, using the appropriate cost of capital for that business estimating the economic value of a business by discounting the expected cash flows to the present determining the economic value of each business by calculating the difference between the above analysis 	<ul style="list-style-type: none"> enables to evaluate how decisions affect the net present value of cash to top shareholders. 	<p>requires a through understanding of each business unit in order to determine accurately the amount of investment and the expected profit that these investments will yield</p>
<p>TOWS Analysis (Wehrich, 1982)</p>  <p>The diagram is a 2x2 matrix. The top-left quadrant is labeled 'Internal Factors' and contains steps 1 through 7. The bottom-left quadrant is labeled 'External Factors' and contains steps 1 through 4. The top-right quadrant is labeled 'SO: Maxi-Maxi' and 'WO: Mini-Maxi'. The bottom-right quadrant is labeled 'ST: Maxi-Mini' and 'WT: Mini-Mini'. Arrows indicate relationships between the quadrants.</p>	<p>Correlates the environmental threats and opportunities with the company's weaknesses and its strengths.</p>	<ul style="list-style-type: none"> A wider scope A systematic analysis 	<ul style="list-style-type: none"> Not dynamic Difficult to analyse all the company's internal and external factors with one sheet
<p>SWOT (Strengths, Weaknesses, Opportunities and Threats)</p>	<p>Correlates the environmental threats and opportunities with the company's weaknesses and its strengths</p>	<ul style="list-style-type: none"> A systematic analysis 	<ul style="list-style-type: none">

Table 5.3. External-Internal Analysis Tools and Techniques

- What is the business unit market position?

Business fails or succeeds in the market place according to the company's market share versus market growth (Figure 5.24.). Therefore, Cambridge University considered market growth against market share (Platts et al, 1996).

	Market Growth	Business Unit Market Share
Growing Rapidly		
Growing		
Static		
Declining		
Declining Rapidly		

Figure 5.24. Market position

- What are the each business unit' stakeholder requirements?

A business will fail or become successful in the market place as a result of how well defined it is, how it tackles stakeholder requirements and how competitors are performing against the key stakeholder requirements. Although competitive positioning (Platts and Gregory, (1990) shows that the company's product is competing effectively with respect to design quality, and service, it does not consider stakeholder requirements for each business unit. A stakeholder is any group or individual who affects, or is affected by, the performance of the organisation at any level. Every stakeholder has one or more requirements on the company that have to be understood.

The first task is to identify the company's three most important stakeholders and their requirements. At this level the stakeholders should include, but not be limited to:

- Shareholders / owners of the business
- Society
- Environment
- Employees / people
- Government and other agencies

Customers can be considered to be one of the stakeholders. It is particularly important to determine customer requirements and selected requirements are considered. Two differentiators (the company needs to be better than its competitors) and three qualifiers (the company needs only to be as good as its competitors) are registered against

customer requirements in Figure 5.25. This information (differentiators and qualifiers) should be transferred from 5.1.4.

Following the list of requirements of stakeholders, the position of the Company against the competitors and best practices in the market for each requirement are also evaluated.

Competitor Position: An understanding of how competitors are performing against the key stakeholder requirements.

Best Practices: World-class manufacturer realises that an understanding of products, manufacturing and services requirement, and an understanding of manufacturing process capabilities can be used to define competitive advantages

Stakeholders	Requirements	O/D	Competitive Position					Best Practices		
			Much worse	Worse	Same	Better	Much Better	World Class	Near World Class	Below World Class
A. Customers	A1. Quality									
	A2. Low Cost									
	A3. Delivery Time									
	A4. Product Support									
	A5. Strong / Deman									
	A6. Brand									
	A7. Customer Support									
	A8. Customised Product									
	A9. Innovative Product									
	A10. Value for Money									
B.	B1									
	B2									
	B3									
C.	C1									
	C2									
	C3									

Figure 5.25. Competitor position

- What is the products life cycle within the each business unit?

Product life cycle is an important tool during the strategy development process. It offers the two following issues:

1. It underlines the inevitability of change
2. It makes change an evolutionary part of a self-sustaining (Baker, 1992)

A product life cycle distinguishes four main phases: embryonic, growth, maturity, and decay. It is also important to notice that dividing a product life cycle into four distinct phases enables useful generalisations to be made about the main characteristics of the product without considering current position via the whole product life cycle time. Therefore, each products life cycle within the business unit is captured in Table 5.4.

Product Life Cycle		
Product	Current Position	Time from start to decline

Table 5.4. Product life cycle

- What are business units' strengths, weaknesses, threats and opportunities?

A useful technique here is a SWOT (strengths, weaknesses, opportunities, and treats) analysis to derive the principle strategic issues facing the business. This approach attempts to balance the internal strengths and weaknesses of a company with the opportunities and threats that the external environment presents.

A SWOT analysis is carried out in a workshop. During the workshop, managers should consider all possible business unit issues in each area, identified under the headings found in Figure 5.26. with reference to the question, "other?" which is to be found, under each heading: company / industry specific topics/issues should be considered.

<p>Strengths A distinctive competence? Adequate financial resources? Good competitive skills? Well thought of by buyers? An acknowledged market leader? Well-conceived strategies? Access to economies of scale? Insulated (at least somewhat) from strong competitive pressures? Propriety technology? Competitive advantages? Product innovation abilities? Proven management? Other?</p>	<p>Weaknesses No clear strategic direction? A deteriorating competitive position? Obsolete facilities? Lack of managerial depth and talent? Missing any key skills or competencies? Poor track record in implementing strategy? Vulnerable to competitive pressures? Falling behind in R&D? Too narrow a product line? Weak market image? Competitive disadvantages? Below-average marketing skills? Unable to finance needed change in strategy? Other?</p>
<p>Opportunities? Enter new market or segments? Add to product line? Diversify into related products? Add complementary products? Vertical integration? Ability to move to better strategic group? Complacency among rival firms? Faster market group? Other?</p>	<p>Threats? Likely entry of new competitors? Rising sales of substitute products? Slower market growth? Adverse government policies? Growing competitive pressures? Vulnerability to recession and business cycle? Growing bargaining power of customers or suppliers? Changing buyer needs and tastes? Adverse demographic changes? Other?</p>

Figure 5.26. Environmental Analysis

In summary, the Business Unit can be analysed by considering the following concerns:

- market position against market growth
- product life cycle
- stakeholders' requirements in terms of competitive position and best practices
- profit and loss account summary
- strengths, weaknesses, threats and opportunities

5.2.2. Business Unit Positioning

Why do we need to give a decision on each business unit's future?

As soon as a company has more than one Business Unit, it becomes necessary to allocate resources between them. An important tool to achieve this is provided by portfolio planning matrixes.

What are the available approaches?

Available matrices are summarised in Table 5.5. Almost all of them make no contribution to the reflection of current or past strategy, as well as the multiplicity of factors (e.g. profit and loss account, product life cycle, strengths, weaknesses and so on) that present to the strategic positioning of the Business Unit. Although it could be argued that some of them, e.g. the growth and share matrix itself is an indicator of profitability of the Business Unit, it is not an assessment in the sense of a model, which consider all Business Unit analysis. In addition, current approaches cannot consider the declining business growth as well as business gain.

How do we position business units?

A way of improving current approaches would be to consider the new matrix with which business shares growth against gain to examine the possibility of growth in existing products for each Business Unit, as shown in Figure 5.27. By focusing on market growth, company gain (in terms of products, profit and loss account, competitive position, strengths and weaknesses and current strategies) and recognising these as an

indicator of profitability, the technique would have a impact on objective setting, performance measurement and selection.

Matrix	Dimensions	Allocation Rules
Growth share	Market growth rate Relative market share	<i>Cash cows</i> : milk off cash <i>Starts</i> : push heavily for growth <i>Wildcats</i> : double or quit <i>Dogs</i> : divest or harvest
Growth gain	Market growth rate SBU growth rate	<i>Cash cows</i> : grow at market rate <i>Starts</i> : grow slightly faster than the market rate <i>Wildcats</i> : either grow at a much faster than the market rate or divest
Frontier curves	Annual growth rate in profits Cash use as percentage of earnings	<i>Cash cows</i> : slow growth and net cash generators <i>Starts</i> : moderate growth rates and cash users <i>Wildcats</i> : either high growth and net cash use or low growth and cash generation <i>Dogs</i> : low growth and in cash balance
Growth return	Business growth rate Return on assets	<i>Milk</i> : high return, low growth <i>Hold</i> : high return, high growth <i>Manage or quit</i> : low return, high growth <i>Divest</i> : low return, low growth
Directional policy	Business strength Industry attractiveness	<i>Leader</i> : strong capability, attractive sector <i>Growth</i> : strongest capability, attractive sector <i>Cash generator</i> : strong capability, unattractive sector <i>Phased withdrawal</i> : weak capability, average sector, or average capability, unattractive sector <i>Custodial</i> : average capability, average sector <i>Double or quit</i> : poor capability, attractive sector <i>Divest</i> : poor capability, unattractive sector

Table 5.5. Portfolio planning matrices compared (Robinson, 1986)

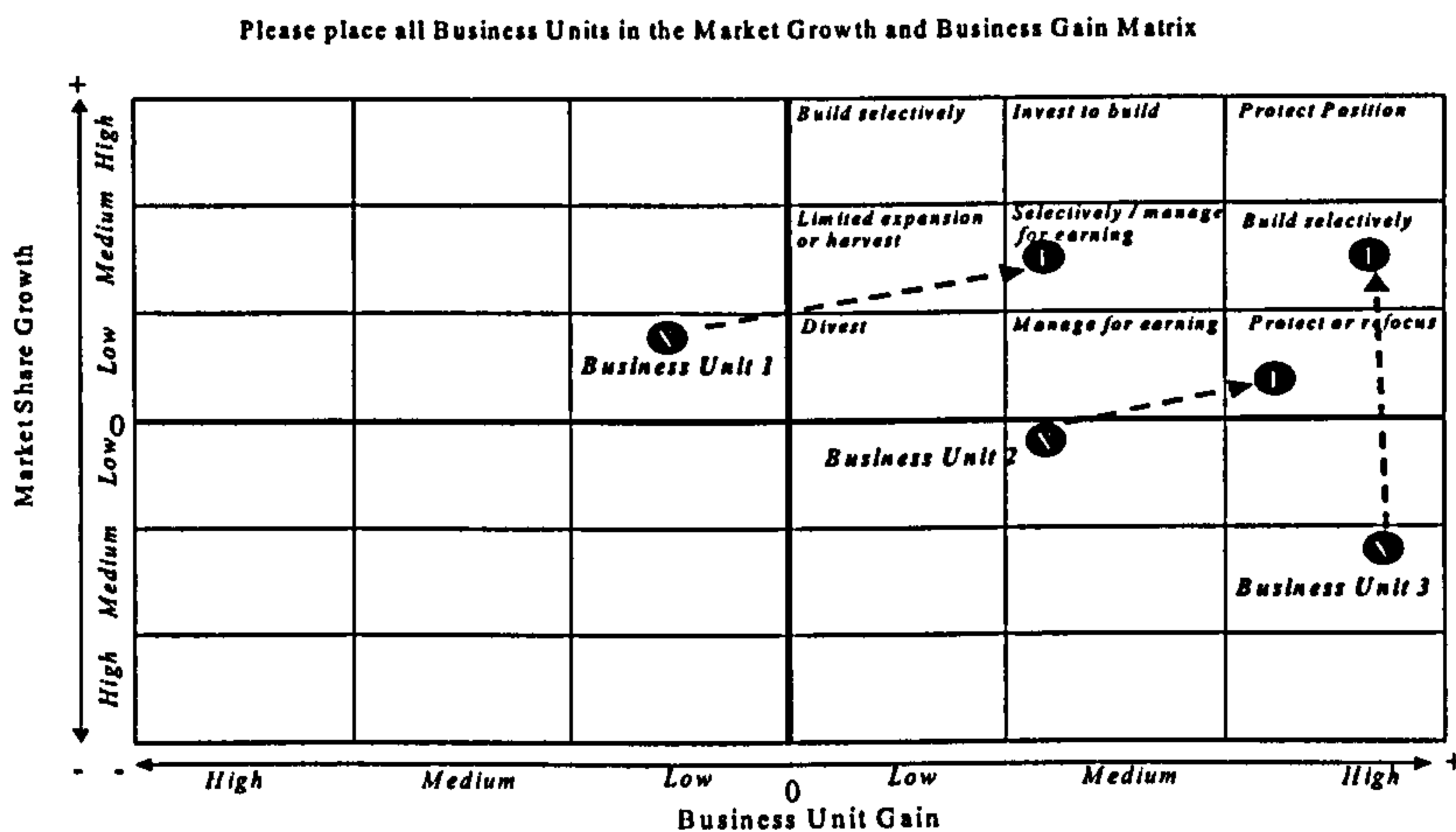


Figure 5.27. Business unit gain / Business unit market share growth

5.2.3. Business Unit Performance and Value Proposition

Why should we consider it?

Business needs a balance between short-term profits and long-term added value for each market. On the principle that what you cannot measure, you cannot manage (Kaplan and Norton, 1996), it is very difficult to sustain long-term added value without some measurement and change of it. At this point, managers need to determine how they are going to achieve their target place in the business unit and business gain matrix. Up to this point, the discussion about business unit objectives is not very different from many other classical strategic planning processes. They all expect managers to agree on business objectives and make sure that everybody understands their objectives. Dynamic, effective strategy management process, however, takes the process a little further. Clear ownership and performance measures need to be defined.

How do we measure it?

During the business unit positioning in the portfolio matrix, each business unit objectives and their performance measures are captured to monitor their track progress and the anticipated value of the performance measures. The first is to document the actual current performance. It should be as specific as possible, with reference to numbers or events. Then, managers should agree on improvement targets for each Business Unit objective.

The final step in the process is to identify all the constraints, which exist and will be relevant for each Business Unit objectives, as shown in Figure 5.28.

The individual constraints will be particular to the Business Unit but can be listed as follows (Probert, 1997):

- Requirements for financial return (ROI, EVA etc)
- Cash limits
- Stock targets

- Headcount limits
- Company commitments to particular markets, products, locations
- Environmental and political factors
- Implications for skill and training
- Mutual impact of transfer of technologies, subsystems and parts families in/out of the business (viability of what is left)
- Implications for a new product development

ANALYSE BUSINESS UNIT Business Unit Title				
Monitor Business Unit Performance				
Business Unit Objectives	Measured By	Current Performance	Target	Constraints
1				
2				
3				
4				
5				
6				
7				
8				
9				

Figure 5.28. Business Unit Performance

5.2.4. Business Unit's Value Proposition

Why should we consider each business unit value proposition?

Companies need some specific measure of the progress of their value propositions to build into their control systems, for what a company chooses to control explicitly is what its people will focus their attention on (Bungay and Goold, 1991). Hence, Treacy and Wiersema's (1993) proposed three value propositions. There are: *'Operational excellence, Customer Intimacy, Product Leadership'*. They suggested that the success of many industries leaders has been due to their redefinition of customer value achieved through focus on one of three value disciplines as summarized in the following Figure 5.29.

Customer Intimacy	Product Innovation	Operational Excellence
<ul style="list-style-type: none"> • Capture knowledge about customers • Understand customer needs • Empower front-line employees with information they need • Ensure that everyone knows the customer • Make company knowledge available to customers 	<ul style="list-style-type: none"> • Reduce time to market • Commercialise new products faster • Ensure that ideas flow (e.g. from customer service to R&D) • Reuse what other parts of the company have already learnt 	<ul style="list-style-type: none"> • Reduce cost • Improve quality • Move know-how from top-performing unit to others

Figure 5.29. Value Propositions (Copied from O'Dell and Grayson, 1999)

How do we define value proposition?

Value proposition for each business unit can be identified by considering business unit analysis (e.g. competitor factors, strengths, weaknesses etc.). During the audit session managers should think about their business units value propositions.

5.2.5. Business Objectives Deployment

Why should we deploy business objectives to the each business unit?

An organisation can only focus strategically on a small number of 'breakthrough' objectives for each business unit at one time. All other activity must be relegated to a status of routine (daily) management and incremental improvement during this time (Cowley and Domb, 1997). Furthermore, planning must be done using verifiable facts and objectives where possible and appropriate. This leads to the question of which business unit objectives contributed to the overall business objectives.

What are the available approaches?

The basic deployment tools will be combined with the management and planning tools to perform the analysis and implementation of the first improvement (business unit strategy-value proposition), and to initiate continuous improvement of the processes.

Quality Function Deployment is a set of powerful product development tools and procedures, which are carried out by a team (Koure & Akao, 1983). Nowadays, many researchers, e.g. Crowe and Cheng (1995), or Sullivan (1988), used QFD as a means to translate company objectives into the means to achieve these objectives with different business units. The Quality function deployment (QFD) technique draws a set of decision-making tools, which are often referred to as the 'Seven Management, and Planning Tools' or the 'Seven New Tools'. They are a combination of creativity tools (brainstorming, the fish diagram) and analytical tools (flowcharts, check sheets and Pareto charts, run charts, variable and attribute control charts, histograms, scatter plots) (Cowley and Domb, 1997). These tools originate from Total Quality Management applications, such as value engineering and review techniques. Cowley and Domb (1997) created a shaped matrix diagram relating to the seven tools, as shown in Table 5.6. They compared the tools with the stages of the process (left side of matrix) and the intent of the process (right matrix). They used 'X' to indicate moderate use and 'XX' to indicate more suitable use.

What to do	How to do it	Review	Stage	Use	Creativity	Analysis	Consensus	Action Planning
			←	→				
			Tool					
X	X	X	Matrix Diagram			X	X	XX
X	X		Affinity Diagram		XX		XX	
X			Relations Diagram			XX	XX	
X		X	Radar Chart			XX	X	
	X	X	Tree Diagram			X	X	XX
	X		PDPC		X		X	XX
	X		Activity Network Diagram			X	X	XX

Table 5.6. Seven management and planning tools

Crowe and Cheng (1995) defined the application of a four-stage approach (illustrated in Figure 5.30) in a procedure to formulate a manufacturing plan within a U.S. powdered metals manufacturer.

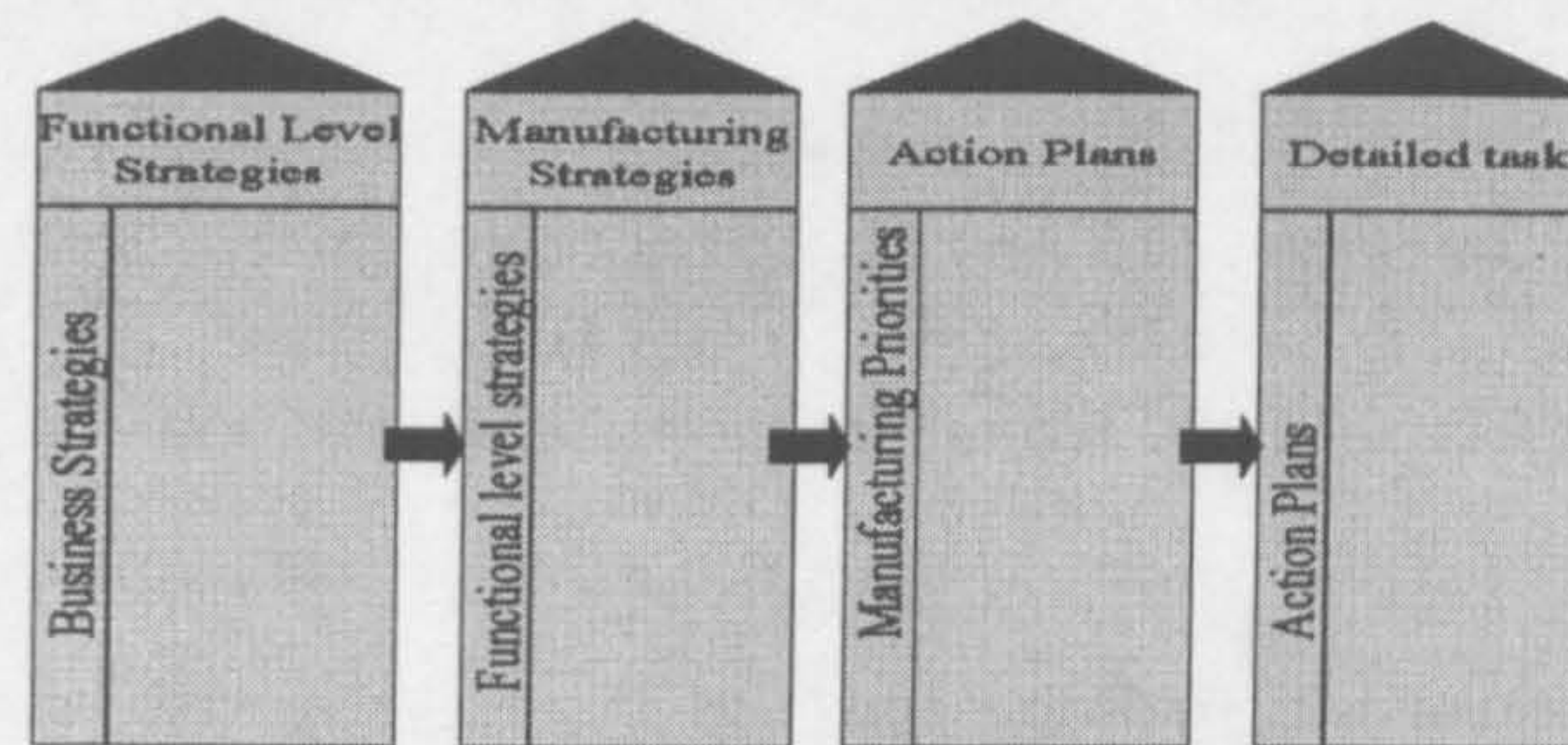


Figure 5.30. The four stages used by Crowe & Cheng (1995) for manufacturing strategic planning

A brainstorming session assists in planning company direction and developing real world strategies. Therefore, in general, brainstorming sessions are used to translate a company's objectives, and deploy their objectives into business units' objectives to create a set of logical hypotheses to connect all levels of a business. Cowley and Domb (1997) stated the 'rules' of brainstorming as follows;

- Write the topic explicitly
- Let ideas flow
- Record all ideas
- No criticism (positive or negative) during idea generation
- Build on other ideas
- After all contributions have been recorded, evaluate the list. Remove duplicates, combine related ideas, and decide how to use the list.

How do we deploy business objectives to business unit?

The most powerful way to deploy business objectives into the Business Unit objectives is, firstly, to communicate the commitment of the board to the managers by placing the Business Unit objectives against the business objectives.

The starting point is copying Business Objectives and their importance (rank) for the business from the input stage. The second step is to identify stakeholder requirements for the Business Unit. The next step is to list the Business Unit's objectives that should be stated to contribute some of the business objectives and also assured to meet the stakeholder requirements. Figure 5.31. depicts a basic matrix that is the starting point of building a QFD (Quality Function Deployment). On the left-hand side, the business objectives and stakeholder requirements for the Business Unit are listed with their rank within their classification. Horizontally, at the top the Business Unit contribution to each business objective (Business Unit Objectives) are shown, and the middle refers to the relations (S-Strong, M- Medium, W-Weak) between both business objectives and Business Unit objectives or stakeholder requirements and Business Unit objectives as shown.

The following step is to define performance measure for each Business Unit objective, since the output will be controlled and compared to objectives target. At least one performance measure should be noted, specially the one addressed in the Business Unit objective. After that, an importance rating for each Business Objectives is done to highlight overall contribution in business objectives.

The last step is to understand gaps between business objectives / stakeholder requirements, if there are. This means identifying the characteristics of Business Unit Objectives that have a weak contribution to stakeholder requirements or business objectives. If stakeholder requirement is essential for the Business Unit, then the Business Unit's objectives have to be met. If they cannot be met it should be stated in the last column (identified gaps), then particular attention has to be paid to this requirement relating to Business Unit objectives.

5.4. Checking Business Objectives Against Business Unit Objectives:										
Business Objectives	Rank	Business Unit Objectives								Identified Gaps
1										
2										
3										
4										
5										
6										
7										
8										
Stakeholder Requirements										
1										
2										
3										
Measured By										
Rank										

Figure 5.31. Objectives deployment

5.2.6. Business Processes Definition

Why should we define Business Processes?

Business Processes are vital for the Business Unit. In reality the decision on whether to carry out a particular Business Unit strategy statement in the business, and whether to buy or continue using existing manufacturing tools and techniques in the Operate Processes, Support Process to sustain the Operate Processes, are thoroughly connected. To reduce diversity and complexity of a company procedure, Business Process should be classified.

How should we define Business Processes?

The individual Business Processes will be particular to the Business Unit but can be categorised as follows (AMICE, 1997):

- **The Operate Processes:** Each business unit, in turn, consists of a number of business processes, which represent the operations of each business unit. These processes are the processes that generate value for the Business Unit. Value is provided if activities lead directly to the fulfilment of customers' requirements (Childe et al, 1995). The CIM-OSA standard (AMICE-ESPRIT, 1989) has subdivided Operate Processes into four main categories "Generate Demand, Develop Product, Order Fulfilment, Product Support". These categories can be applied as

a guideline for any manufacturing company. During strategy formulation, every company tends to develop specific business processes to fit its specific situation and culture. As a starting point for the first time user, generic categorisation is used to define business processes. For the most part, the generic category can be modified to meet the company's specific needs, but there are general headings (operate and support processes) that should not be modified.

Operate process categories are explained by Maull et al (1995) and are depicted in Figure 5.32., as follows:

1. **Get Order:** This contains activities performed by humans and machines. Its principal transformations are to transform a concept of a product into a customer order, to translate customer requirements into a form meaningful to the other processes and including the use of market data to identify potential requirements for new products. It includes the flow of information that is required to satisfy a customer by providing information to the customer and to the other Operate Processes. The process constantly seeks to ensure that customers' requirements are met and that there are sufficient orders of the correct type to meet the stakeholder requirements.
2. **Develop Product:** This process contains activities performed by human beings and machines. Its principal transformation is from knowledge into the specification of a product that can be produced to meet customer requirements. It includes the flow of information to enable the development of the specification of a product that can be manufactured and the development of product concepts that may fulfil future customer requirements. The process constantly seeks to provide specifications for products that will meet the requirements of customers whilst balancing stakeholder requirements.
3. **Fulfil Order:** This process contains activities performed by human beings and machines. Its principal transformations are product orders into products and enquiries into specifications. It includes the flow of both the material and the information that result in the fulfilment of the external customer order or enquiry.

The process constantly seeks to fulfil customer requirements whilst balancing stakeholder requirements.

4. **Support Product:** This process activity performed by humans and machines. Its principal transformation is a need for support into a product that continues to meet the requirements of a customer. It includes the flow of the resources and information that are required to meet the customer's support requirements. The process constantly seeks to fulfil the customer's support requirements whilst balancing stakeholder requirements.

- **The Support Processes:** Support Processes exist to support the Operate Processes. Operate and Manage Processes are customers of the Support Processes (Bititci et al, 1999). They include the Financial Management, Human Resources Management, and Information Systems Provision (Child et al. 1994, 1995; Bititci 1999; AMICE, 1989).

5.2.7. Business Unit Objective Deployment to Business Processes

Why should we deploy business unit objectives to business processes?

Cowley and Domb (1997) found that *'an important of the strategic approach, e.g. Hoshin is to identify high-leverage areas for special, breakthrough focus. But, in any organisation, the day-to day running of the business will usually occupy most of the time of most employees.*

With Hoshin planning techniques, top-level strategies become lower level objectives. Each business unit's strategy owner treats their strategy as an objective and deploys it down to one level (business processes), as shown in Figure 5.32.

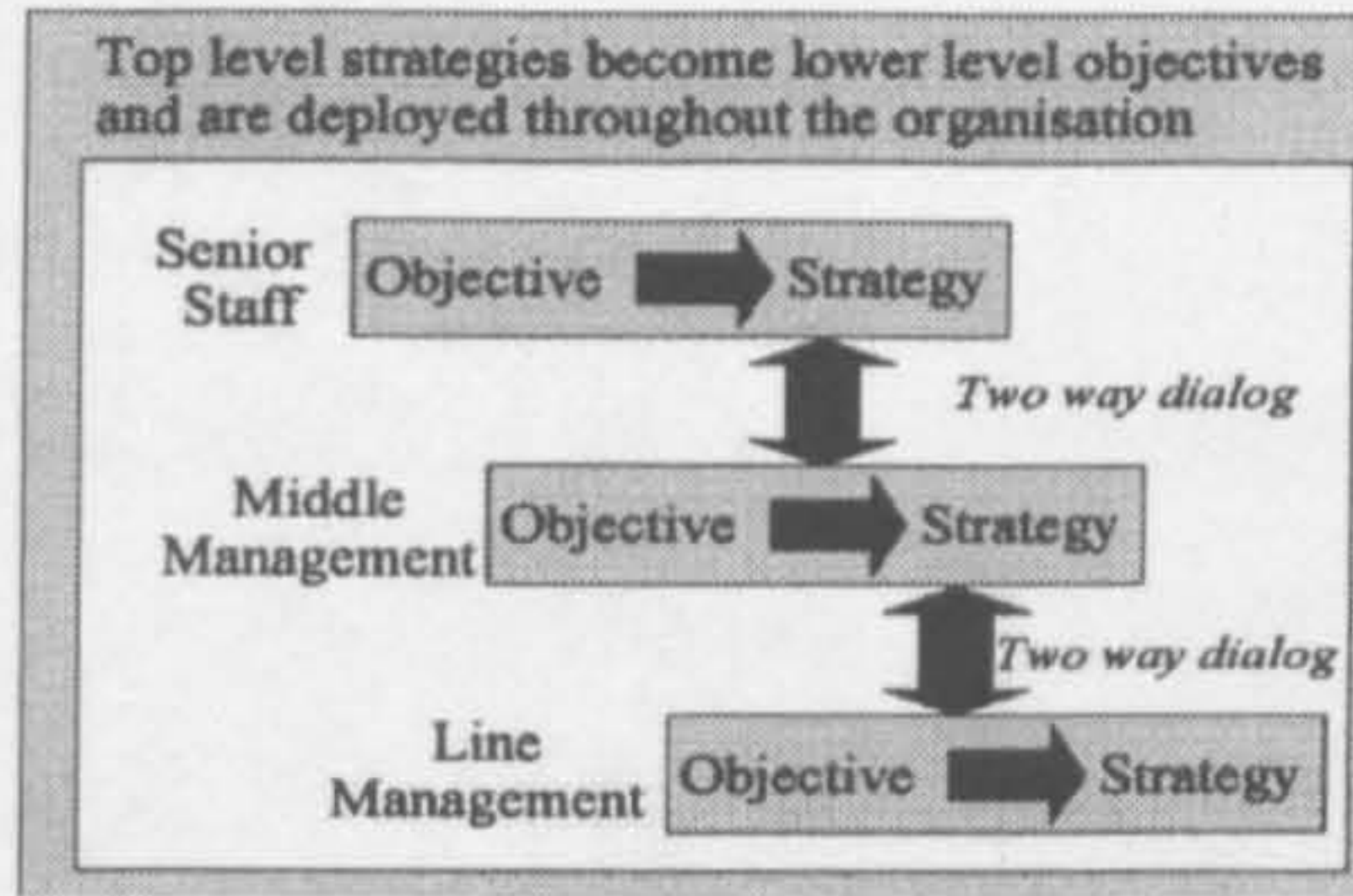


Figure 5.32. Hoshin strategy deployment process (Babich, 1999)

Therefore, it is necessary to understand how each Business Process can contribute to Business Unit objectives.

How do we deploy objectives?

The starting point is copying Business Unit Objectives. Although Business Unit objectives are already available from the previous section, it should be checked to make sure it is appropriate. The second step is to list Operate Processes (e.g. Generate Demand, Develop Product, Order Fulfilment and Product Support) objectives that should be stated to contribute to some of the Business Unit’s objectives. The next step in the process is to identify the company’s support processes if there is more than has been identified (Support processes: IT, finance, HRM). If the organisation that has not been relevant to Business Processes as such, CIMOSA Architecture do exist, and the assumption processes can normally be made (Figure 5.33).

Business Unit Title								
Business Unit Objectives	Operate Processes				Support Product			
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Finance	Human Resource	
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								

Figure 5.33. Business Unit objectives deployment

5.2.7. Business Processes Performance

Why should we consider business processes performance?

To be actionable, the performance measures could be agreed upon by assessment alongside the objectives' category. The next step is to define performance measure for each Business Processes objective, since the output will be controlled and compared to objectives target. At least one performance measure should be noted, especially the one addressed in the Business Process objective.

How do we measure it?

The following step is to document the actual current performance. It should be as specific as possible, with reference to a number or events. Then, agree on the improvement targets for each Business Process objective and by when this improvement should have been achieved. The following step in the process is to identify all the constraints, which exist and will be relevant for each Business Unit objectives. The information gathered in the efforts will be used to assess the present business unit objectives and performance. The managers need to digest it and extract elements of special importance to the organisation (Cowley and Domb, 1997). Therefore, the final step is to consider Business Processes strengths and weaknesses. The strengths and weaknesses comprise of what may be called an internal scan of organisation (Cowley and Domb, 1997). The business process analysis is shown here (see Figure 5.34).

ANALYSE BUSINESS PROCESSES					Business Unit Title
Define Process Performance Measures and Strengths & Weaknesses					
Business Process Objectives	Priority	Measured By	Current Performance	Target	Constraints
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					

* If Operate Processes are self-contains, you do not need to prioritize.

Figure .5.34. Business Process Analysis

5.3.Implementation

Wheelen and Hunger (1992) stated that strategy implementation is the process by which strategies and policies are put into action through the development of programs, budgets, and procedures. This process might involve changes within the overall culture, structure, and / or management system of the organization.

Although choice of implementation method should depend on

- the size of the company
- the degree of diversification
- the degree of geographical dispersion
- the stability of the business environment
- the managerial style currently embodied in the company's culture (Bourgeois and Brodwin, 1983)
- action plans and short term budgets
- management information systems (Thomson, 1996).

Hence, its necessity for an integrated view of implementations of knowledge for the theory and practice of strategy implementation (Hrebiniak and Joyce, 1984).

The problem areas associated with the successful implementation of strategies are:

- the failure to predict the time and problems which implementation will imply (Alexander, 1985)
- other activities and commitments and distract attention and possibly cause resources to be diverted (Alexander, 1985)
- at any time, strategy and structure need to be matched and be supportive of each other (Owen, 1982; Chandler 1962)

- inadequate evaluating the adaptive changes and reporting through information and communications systems can leave the managers not fully aware of what is happening (Owen, 1982)
- implementing strategy involves changes and, in turn, implies uncertainty and risk (Owen, 1982)
- the bases upon which the strategy was formulated changed, or were forecast poorly, and insufficient flexibility has been built in (Alexander, 1985)
- management systems, such as communication systems, compensation schemes that operate within the structural framework may not be ideal for the changes, which are taking place currently, and it is difficult to modify them continually (Owen, 1982).

What are the available approaches?

Hrebiniak and Joyce (1984) developed a strategy implementation model based on planning and organisational design, which is illustrated in Figure 5.3.5. In their model, strategy formulation is a starting point for the implementation actions. Firstly, they broke the strategies into smaller elements and short-term objectives because strategy applies to the overall organisation. Secondly, long-term objectives are cascaded to short term operating objectives and control mechanisms are established to ensure consistency of individual and organisational rationality. Then, to achieve bounded rationality, operating units are created in terms of given decisions about primary structure. Finally, managers should make decisions about the specific structure of the major components of the organisation. These units lead to successful implementation of strategy.

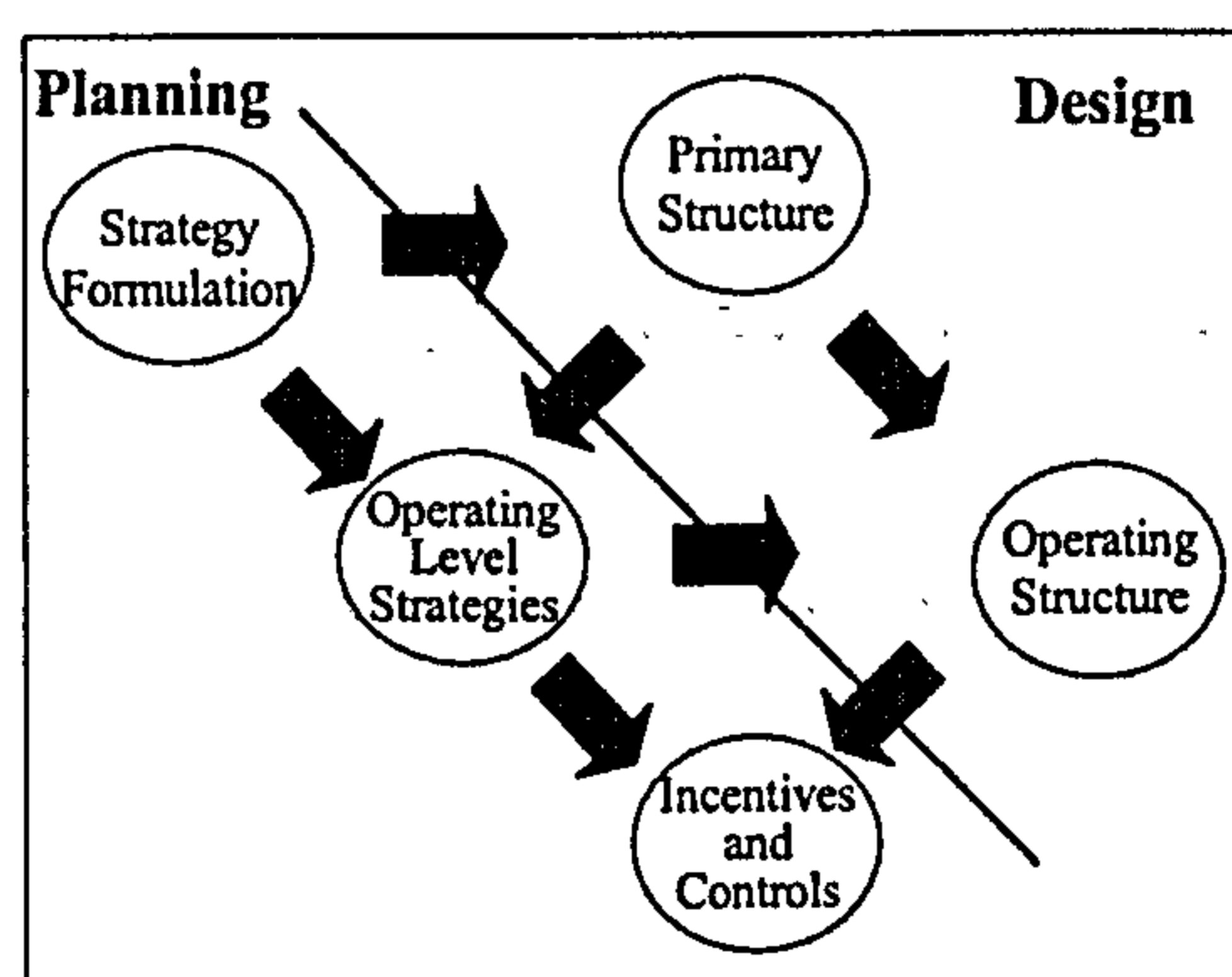


Figure 5.35. Strategy Implementation Model (Hrebiniak and Joyce, 1984)

Hrebiniak and Joyce (1984) provide a conceptually rich account of strategy implementation. It recognises the complexity of the strategy process, and the need for different perspectives and techniques at different stages (planning, design). At the same time, however, its extreme complexity means that it cannot be easily adopted for practical implementation in the firm. Except when such drastic corporate-wide changes are needed, however, the implementation of strategy is typically conducted by middle and lower-level managers with review by top management. Sometimes referred to as operational planning, strategy implementation often involves day-to-day decisions in resource allocation. Therefore, it is necessary to develop a strategy implementation process, which enables a company to define and state business processes possible actions effectively and link them into all levels of business objectives (business objectives, business unit objectives, business processes objectives). These can be added (mapped) on Figure 5.35., as illustrated in Figure 5.36.

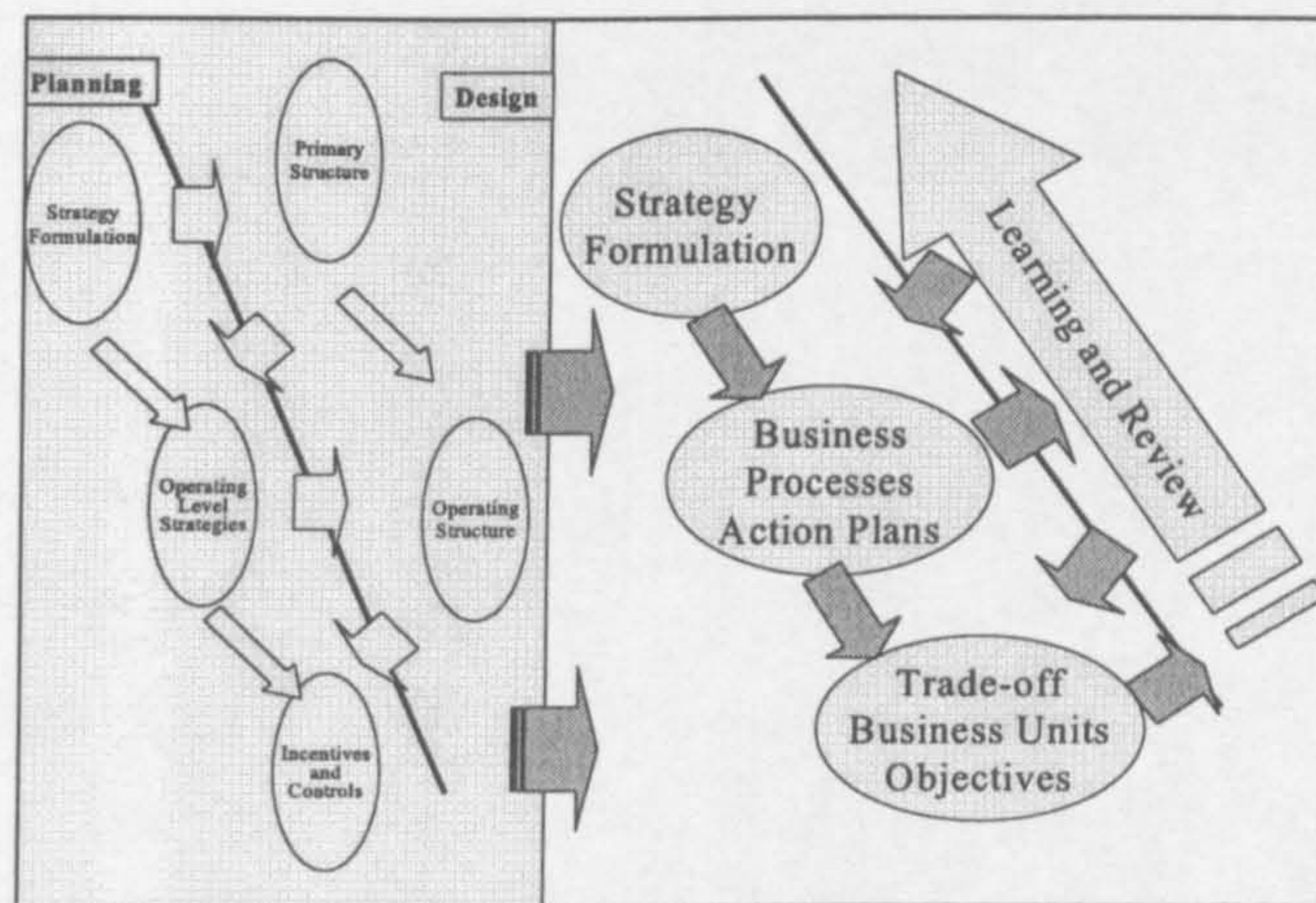


Figure 5.36. Strategy implementation processes

The following sections are structured based on Figure 5.36.

Business Process Strategy Statement

Why should we consider each Business Process Strategy statement?

It is necessary to document all of the activities to achieve the Business Unit's objectives. In the light of conclusions drawn from Business Process situation analysis, managers should now set down those issues, which have an important bearing upon the achievement of the company's Business Unit's objectives. In the case of each factor / objectives, it should be that managers state their working assumptions as the basis of developing action plans to move the company from where it is to where it will be in the future, as illustrated in Figure 5.37. These meetings begin an interactive communication process, of passing draft business processes objectives / action statements, suggestions and possibilities, and finish with reaching agreement on plans.

Business Unit Title		
Create Business Process Strategy Statement: Please write down your strategy statement against each business unit objectives		
Business Units Objectives	Business Processes Name	Business Process Strategy Statement
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____
_____	_____	_____ by _____ by _____

Figure 5.37. Business processes strategy options

The first step is copying Business Unit objectives from part 5.2.5. The second column represents Business Processes, which contribute to Business Unit objective. The strategy section documents the more detailed activity necessary to achieve Business Unit objectives. Only key, i.e. critical path strategies, should be noted. The sum result of all the key strategies should ensure the achievement of the Business Unit objectives.

Business Process Strategy Action Plan Sheet

Why should we consider Business Process Strategy action plan sheet?

Strategies have to be practical and manageable to be achievable and consideration of a good strategy is that it meets its objective's needs only. Therefore, each business process recommended actions to implement strategies should be identified and planned by considering structural and infrastructural classification. Then, responsibilities, time scales and cost estimations should be allocated for each recommended action. Furthermore, the measures should include targets to monitor the progress of the individual strategies, and these normally include dates and timelines designed to show if a strategy is being achieved. Each strategy will have a named individual who will take ownership for its review and progress.

How should we design Business Process Strategy Action Plan Sheet?

The action table is shown in Table 5.7. . Headings used to summarise suggested actions are:

Recommended Action: (*ideas* brought forward from objectives and options). This column documents the more detailed activity necessary to achieve Business Unit and Business Processes objectives. Each task should be a stand-alone activity that is specific and moreover the actual time of accomplished task should be predictable and reasonable. Some task and activities can be linked to others or some of the process objectives can be taken as an action. Some tasks are linked to others. When this occurs, the implementation plan should show that linkage.

Priority: how great is the need (H-High, M-Medium, L-Low)

Man-Days: This section describes man's total days' accomplishments that are expected to be completed during the implementation period. (effort by directors and / or managers)

Cost: (in £; excluding director and / or manager time) This column is used to show the implementation cost.

Application Plan (what is a realistic time?): This section is used to lay out the tasks with respect to time. It shows the relationship of one task to another and enables the overall Business Unit objective actions to be viewed. Although most planning cycles are done annually, the time frame should be selected by managers (e.g. annually, monthly, yearly, quarterly, etc.)

Owner: who has the responsibility (GM-general manager, SM-sales manager, FM-finance manager...)? The person who is responsible for recommended action achievement could be noted in this column. It is better to state only one person for each task.

Business Process Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate £	Application Plan										Owner
1.	H M L													
2.	H M L													
3.	H M L													
4.	H M L													
5.	H M L													

Table 5.7. Business Processes' action plans

Table 5.7. shows that for each level of employee within the company taking a policy/process objective, and working out a limited number of strategies and measures to achieve the objective. Process level's strategies and measures will influence the objective derived at business unit level.

Business process actions / objectives validation

Why do we need to validate actions / objectives?

Businesses need a balance between managing for short-term profits and for long-term strategic position (i.e. future profits) (Bungay and Goold, 1991). On the assumption that when you cannot visualise the potential success of selected strategies and their impact to the business profitability, you cannot manage. People can only commit themselves to a strategy, if they believe in it. In order to believe in the strategy, people must be convinced that as a result of pursuing the strategy they will achieve the business objectives and desired future profit and loss accounts in the future. Therefore, companies need to anticipate how their selected process strategy / objectives will affect their business and their profitability. This would also help to

- establish the credibility of the proposal across the business
- provide both long and short-term (tactical) guidelines for business process / operations decision-making as part of the overall company strategy
- check whether the business objectives and future profit & loss accounts developed in input stage needs an adjustment

This takes into account things that people expect to do anyway, as well as the state of available resources (often with existing budgeting allocations).

How should we understand selected objectives / strategies valid?

At this stage in the methodology the realistic business process objectives / actions options are beginning to become clear. They develop from the initial business processes analysis, the more detailed action plan by considering cost through future profit and loss account. Having established the validation criteria, the next task is to scan through all the business processes objectives / strategies against the future profit and loss account. This approach can be thought of as filtering the objectives by considering their performance measures, cost, although a final conclusion is not possible until all the

effects are taken into account. This is a useful way of visualising the individual process objectives and their interaction in the whole business (Figure 5.38).

Operate Objectives Validation					
Business Process Objectives	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)

Figure 5.38 Business processes objective / strategies validation

Trade-off and Consolidation of Business Unit objectives

Why should we consider trade-off and consolidation of Business Unit objectives?

Campbell and Goold (1988) examined whether business units perform better as a part of the corporate portfolio than they would as independent companies. The same question also arises in comparing different business units. The issue is often not only whether a business unit would be better off as part of a company than as an independent business unit consideration strategy, but also whether the business unit would prosper more in one unit than another. The company might use the same employees and machines for its different business units. Therefore, it is necessary to identify and eliminate (if possible) conflicts between the different business unit's objectives in order to assess the comparative importance of business unit objectives to the business and their competitiveness with which they are deployed, indicating any known development.

Furthermore, strategies and measures must be manageable. This requires strict priorities to keep the number of strategies to a minimum, so that responsibilities and activities do not mushroom out of control. There is a need on the part of management to ensure people work to short timescales to complete action plans in reasonable time.

How should we design trade-off and consolidation of Business Unit objectives?

In order to compare each business unit objective within one page, a matrix format is used. Each business unit's objectives should be taken into account and it should be checked whether it stimulates any behaviours, which are in conflict with those stimulated by any other business units' objectives. If any current or potential conflicts and positive relationships are identified, these should be written in the appropriate cell in the matrix as illustrated in Figure 5.39. The essential aspect to emerge from this step is the understanding of the overview of each business unit objectives importance, with the associated ranking in terms of a resource and employee allocation priority.

Please compare all Business Unit Objectives in the matrix according to C - conflict, PC possible conflict, ++ positive relationships

		Business Unit 1..... Objectives			Business Unit 2..... Objectives			Business Unit 3..... Objectives			
		BU1O1	BU1O2	BU1O3	BU2O1	BU2O2	BU2O3	BU3O1	BU3O2	BU3O3	
Business Unit 1..... Objectives	BU1O3				PC						
	BU1O2					PC				++	
	BU1O1										
Business Unit 2..... Objectives	BU2O3										
	BU2O2								C		
	BU2O1										

Figure 5.39. Trade-off and consolidation of Business Units' objectives

The dependencies between the business unit objectives (e.g. positive relationships) will be made explicit, leading to the identification of some viable combined options which could be implemented.

5.4. Learning and Review

Wheelen and Hunger (1992) define evaluation and review as the process in which corporate activities and performance results are monitored so that actual performance can be compared with desired performance.

Why should we consider learning and review?

Review of the strategy provides the opportunity to achieve management validation of the data and reasoning, and most importantly, ownership of the conclusion and actions, with commitments to move onto the next stage. Hence, it is essential to examine values to the level of achievement of strategic objectives / actions subjectively. Where this is necessary it should be undertaken as part of the strategy review process where performance against organisational objectives / action plan schedule is reviewed. Assignment of a value to the level of objectives / actions achievement will force a debate regarding progress made or missed against the agreed time schedule for each action.

How should we review adopted strategies?

Effective reviews are scheduled (Babich, 1999). Therefore, a planning calendar is a good way to document when a review is to occur. Babich (1999) stated that people need to know that a review always occurs and that they are expected to participate and review status compared to expectations. He defined effective reviews characteristics as follows:

- conducted on a regular basis
- come as you are. Fancy presentations are not required
- use actual performance data, not options or anecdotes
- an open, honest and supportive atmosphere is maintained
- review business fundamentals first, followed by status of breakthrough activities.

Analysis should include comparison of the level of review achieved at different organisational levels, as well as in different business units or business processes within the business unit of the organisation. This will identify how well the strategic objectives

/ actions are communicated to different areas and levels of the organisation. It will also assess the execution of the appropriate strategies review in all areas of the organisation when it is necessary. In summary, there should be multiple entry points in review mechanism as explained in Chapter 2 (i.e. Business Unit; Business processes). This leads managers to define necessary actions, which might take the organisation forward to the appropriate direction.

Figure 5.40. is designed to document the review and learning process of the company's strategy. This form should be completed by the strategy action owner and reviewed linked with business objective. This would enable keeping track of 'lessons learnt' and 'expected business impact within the next period'. Each column is explained as follows:

Action: These items should be copied verbatim from the business process strategies' action plans with their time scales.

Lessons Learned: This block allows for reflection on the lessons learned during the review period.

Expected Business Impact: Describes the deliverables, business impact that are expected to be found in the future. This column also allows for reflection on the lessons learnt during the implementation period.

REVIEW										Business Unit Title
Actions	Time Scale					Period	Rate	Lessons Learned	Expected Business Impact	
	C-2	C-1	C	C+1	C+2					

Figure 5.40. Learning and review mechanism

5.5. Conclusions

The various approaches to strategy management process presented in Chapter 3 share a general structure but differ in detail, in the emphasis of their analysis by using operations and strategy management tools. None serves adequately as a general solution to the strategy management process requirements, but they all generate particular insights and have particular strengths and uses. On the other hand, each of the approaches has particular weaknesses and shortcomings. Therefore, this chapter compares and contrasts different operations and strategy management tools that have been used to assist strategy development so far and traces their common components as well as their strengths and weaknesses in use. There are many similarities among tools and techniques. The many parallels and similarities between these various tools and techniques that it may be more useful to regard them as a single strategy management approach (PROPHECY), which fulfils the dynamic strategy management process requirements. This singular approach has developed various improvements during its evolution.

Table 5.8. summarises the approaches, tools and techniques adopted at each stage of the PROPHECY process and alternative approaches and the reasons for decisions.

Stage	Approaches tools / Adopted	Alternative Approaches	Reasons for decision		
<i>Input</i>	Company's history Scope of the organisation	Questions			
	Mission statement	Modification of Ashridge mission model	None	No other alternative step by step approach	
	Business Unit definition	Order winning / order qualifier criteria Product complexity / market uncertainty matrix Product process matrix Profit and loss account	Focus strategy management group defines business units based on company's product and competitive criteria	No alternative method to define business units in terms of products, markets and processes	
	Financial statement	Profit and loss account	Balance sheet Cash flow statement	Best representation as well as balance sheet and cash flow do not correlate with value development	
	Business objectives	Questions			
	Company's current and past strategy	Strategy chart	Experience curve	Provide rich source of learning	
	<i>Formulation</i>	Business unit analysis	Summary of profit and loss account Company's market growth against market share Company's competitor position Product life cycle SWOT analysis	Easy to use and convenience	
		Business unit positioning	Business unit gain/business unit market share growth	Shareholder value analysis TOWS analysis S curve Experience curve Porter's 5	some approaches, e.g. market growth rate / relative market share matrix were tried but they caused some problems, e.g. not distinctive
				Market growth rate / relative market share Market growth rate / SBU rate Annual growth rate in profits / cash use as percentage of earnings Business growth rate / return on assets Business strength/industry attractiveness	

		<i>Strategy Implementation</i>			
Business unit / processes performance and value proposition	Mixture of available approaches design e.g. Hoshin, Cambridge performance measures, IPMS	Hoshin Cambridge University Performance Measures IPMS	Best fit		
Business unit's value proposition	Treacy and Wiersema's value proposition	None	No alternative method		
Business/business unit objectives deployment	Quality Function Deployment / Hoshin Planning Tools	Seven Management Tools (e.g. affinity diagram, tree diagram etc.)	Best fit, easy to use		
Business process definition	CIM-OSA standards	None	No alternative methods		
Strategy implementation	modification of Hrebiniak and Joyce's strategy implementation model	None	No alternative methods		
Strategy action plan sheet	Hoshin planning techniques	Other strategic management process action plans' designs	Convince and easy to use		
Business process objectives / actions validation	Objectives validation by connecting future profit and loss account	None			
Trade-off and consolidation of objectives	Trade-off and consolidation matrix	None	No alternative method		

Table 5.8. Summary of Tools and Techniques

This chapter explained the evolution of the PROPHECY approach through its four stages, Inputs, Formulation, Implementation and Review. Each stage can be summarised as follows:

The Input stage is concerned with the collection of relevant information to facilitate strategy formulation. Throughout the Input stage information is collected on company profile, products and market profiles to define the appropriate business units and corresponding competitive criteria. Information on the past and present financial profile of the business is also collected in the form of profit and loss accounts. This company-wide financial information is then broken down into Business Units' specific profit and loss accounts. At this stage management is also asked to visualise a desired future profit and loss account as well as specifying measurable business objectives that would facilitate the achievement of the future desired profit and loss account. This stage is completed by capturing the strategic history of each business unit using the strategy map similar to that developed by Mills and Platts (1998).

The Formulation stage starts with consolidation of all the key business unit data into a business unit fact sheet. This enables managers to assess and compare the past, current and potential future performance of each business unit together with its competitive position, product life-cycle positions and its strengths and weaknesses. Managers are asked to use Business Unit Gain / Market Share Growth portfolio matrix to measure each business unit against other. This leads to a strategic decision on the future of each business units, such as invest, buy, sell, milk, etc. This process also facilitates the formulation of a value statement for each business unit, which is embedded within the strategy statement of each business unit.

Up to this point the process is applied to the business as a whole. From this point onwards the process is applied to each business unit to formulate strategies for the business processes within each business unit. Hoshin (Babich, 1999) techniques are used to deploy business unit objectives to business processes using operational performance

measures and targets. Further analysis of each business process, in a similar manner to that for business units as described above, leads to a prioritised development plan for each business process.

The strategies devised for each business process are then cross-checked to ensure that any potential conflicts are identified, prioritised and trade-off decisions are made. This leads to the development of a consolidated operations development plan, i.e. operations strategy for the business. However, before implementation, the selected strategy is tested against the desired future profit and loss account by linking operational performance measures to financial results by asking questions such as “*what % increase in market share will be expected as a result of improving delivery performance from 73% to 98%?*” Although this is a qualitative linkage between operational performance measures and financial results, the researcher experience is that it is well received by the managers and promotes ownership of the chosen strategy.

As a result of this analysis, the chosen strategy is either accepted as it is or modified until a desired level of business performance is achieved. Once a particular strategy is accepted it is then implemented using normal project management practices. The Learning and Review stage is concerned with the monitoring of the operational and financial performance and the impact of the chosen strategy on the selected performance measures. Leading indicators are used to provide early feedback on the performance / effect of the chosen strategy, allowing the PROPHECY process to restart if, and when, intervention is deemed necessary. Therefore, the final PROPHECY process can be depicted in Figure 5.41.

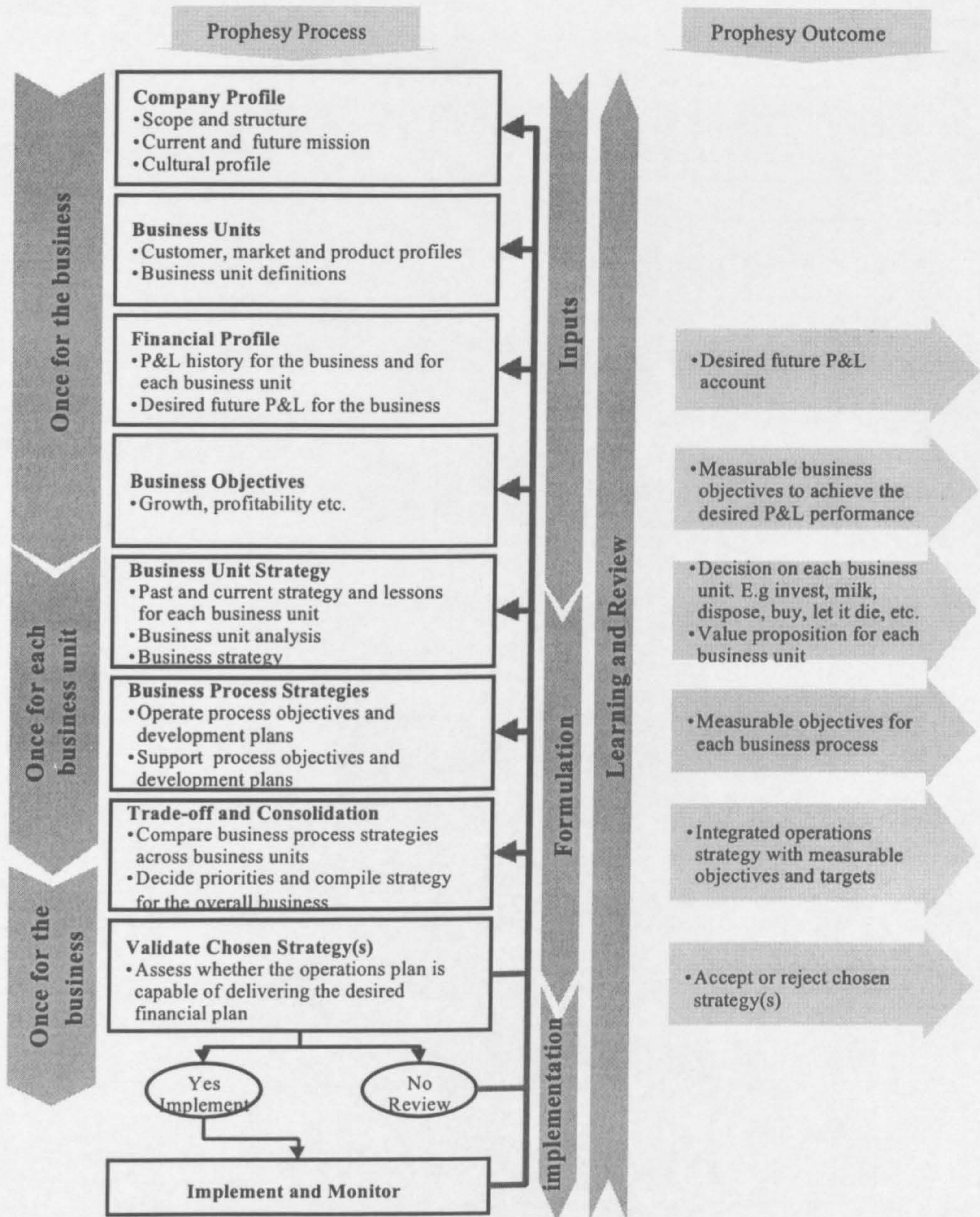


Figure 5.41 PROPHECY process

Table 5.9. shows how PROPHECY process fulfils the strategy management process requirements by design of the process.

<i>Requirements</i>	<i>Fulfilled by Section...</i>
1. Strategy management should be viewed as a key business process, i.e. Strategy Management Process (SMP)	All process
2. SMP should be continuous	5.4.
3. SMP should provide a closed loop control system	5.4.
4. SMP should have an event driven trigger mechanism, i.e. external monitor.	5.4., 5.2.1.
5. SMP should focus on business units	5.1.4.
6. SMP should focus on its competitive strategy and customer value proposition for each business unit	5.2.4.
7. SMP should consolidate various business unit strategies, taking into account of various conflicts and trade-offs to develop operations strategy	5.3.4.
8. SMP should integrate a multiple levels of hierarchy	5.2.1., 5.2.5.
9. SMP should be flexible with multiple entry points to facilitate rapid review and redeployment of strategy	5.2.1., 5.4.
10. Operations Strategy for each business unit arises at business processes level	5.2.6.
11. SMP should critically review the company objectives and deploy top-level objectives through all levels	5.2.5., 5.2.6.
12. Continuation of requirement 7, operations strategy should consolidate various business process strategies taking into account various conflicts and trade-off for each business unit	5.3.4.
13. Traditional strategic decision areas in operations strategy should be applied at business process level	5.3.2.
14. Performance measurement should arise at two levels: External and Internal	5.2.3.
15. External performance measures should provide an input to strategy management process	5.2.1.
16. SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers / market) performance measures	5.1.5.
18. SMP should make the link between a chosen strategy and expected operational benefit clear. Therefore, people can develop a good strategy well if they can see, in advance, the potential results.	5.3.3.
20. SMP should result in a good documentation with a clear and detailed plan, including clear responsibility for actions	5.3.2.
21. SMP should facilitate learning from experience	5.4., 5.1.7.

Table 5.9. Dynamic Strategy Management Requirements

Fully analysed results of case studies and the arising outcomes will be demonstrated in the following chapter.

Chapter 6 - Broad and Shallow Testing

6.1. Introduction

In chapter 2, the dynamic strategy management process requirements are identified. In chapter 3, all strategy management frameworks, models and processes are reviewed against the set of requirements. In chapter 5, these factors are used to design a dynamic strategy management process (PROPHECY). The PROPHECY process is tested using two alternative approaches: 1. broad and shallow, 2. deep and narrow. First, broad and shallow testing is conducted by using a structured and close-ended questionnaire, followed by a series of workshops to develop a better understanding of the adopted strategy performance and also PROPHECY's process performance. Therefore, the objective of this chapter is to show the acceptability of the PROPHECY process through questionnaires and workshops before showing practicability of PROPHECY through case studies.

6.3. Structured and Close - Ended Questionnaire

Chapter 2 showed that strategy management requires considerable resources and effort in terms of managerial time with increasing pressures for innovation, sharing of knowledge and co-operation. However, the judgment about the resulting strategy, although seen to be important, is largely neglected. One could argue that the available approaches to assess strategy performance are more than descriptions of the strategy management process.

All the traditional models of strategic planning are hierarchical following either a top-down (e.g. Mintzberg, 1978; Hill, 1993) or bottom-up (e.g. Lewis, 1995; Mills et al., 1999) approach. . Similarly, managers have different view of success according to their learning styles. Detailed comparison of the main characteristics of learning styles is given in Table 6.1.

<p>Top-Down</p> <ul style="list-style-type: none"> • Emphasis on general principles rather than focusing in on specific aspects of the topic • Able to bring together a wide range of information • Emerged from lead plants or R&D centres • Start by obtaining an overall understanding of the big picture. Gain an insight into the general principles behind the topic before attempting to learn specific aspects 	<p>Bottom-Up</p> <ul style="list-style-type: none"> • Emphasis on detail • Prefer to remain tightly focused on the topic under study • Knowledge acquired from local experimentation by non-experts who often are users • Start with specific facts and try to understand general concepts only after acquiring a detailed grasp of fundamentals
<p>Visualiser</p> <ul style="list-style-type: none"> • Picturing ideas to assist learning and conceptualising • Make use off all kinds of images e.g. flow charts, diagram, graphs, photographs, etc. • Visualise the information 	<p>Verbaliser</p> <ul style="list-style-type: none"> • Prefer to listen, debate, argue, read, write and work one-on-one with the other person. • Discuss any problems and ideas with colleagues • Verbalise the information

Table 6.1. Overview of Learning Styles

Based on the discussion so far, this research assumed that managers with bottom-up learning styles prefer bottom-up approaches and managers with top- down learning styles prefer top-down approaches.

In conclusion, the precise relationships between, strategic approaches (top-down v. bottom-up), managers learning styles (top-down v bottom-up; visualiser verbaliser) and strategy performance have not been conclusively demonstrated. A general relationship between learning styles and assessment of strategy is theoretically attractive and may hold statistically.

Following on from the above discussion a set of requirements can be reconsidered from Chapter 2 (Table 2.9., see page 56- 76.) with to define the active measurements for the assigned strategy performance.

All requirements (23 in total) are tested in two ways, as follows:

- Subjective - which requirements are tested by management (Requirement 17, 19, 20, 22 and 23)

- Objective - which requirements are fulfilled by application of PROPHECY process (design of the process) (Requirement 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20 and 21)

In order to test the validity of these requirements, a set of factors for active assessment of strategy performance is defined. Then a two parted, structured and closed-ended questionnaire is devised. Part one of the questionnaire is based on a personal learning style model (Lewis 1999) introduced earlier in this paper (Appendix D). Part two of the questionnaire has been designed to test some of the requirements (requirement 11, 16, 17, 18, 19, 20, 21, 22) outlined in Chapter 2. The questionnaire was completed by 20 managers based in Scottish operations of various organisations, through detailed face-to-face interviews and 26 managers from Alcan through workshops. The result of the questionnaire led to a quantitative analysis of the responses received.

In part one of the questionnaire, respondents were asked to use a dichotomous scale to indicate their preferred options. Questions 1 to 8 explored the serialistic (bottom-up) versus the holistic (top-down) learning styles. If the manager scores a majority of 'a' response, the manager is holistic, otherwise the manager is serialistic. Questions 9 to 16 explore the extent to which managers are either visualisers (more 'a' and 'b' responses ticked) or verbalisers (more 'b' than 'a' responses ticked). The results of these interviews are summarised in Table 6.2.

	Top-Down	Equal	Bottom – Up
Visualiser	19	1	10
Equal	1	-	3
Verbaliser	6	2	4

Table 6.2. Summary of part 1 of the questionnaire.

Within the second questionnaire, respondents were asked to select one of three options, i.e. agree, disagree and unsure. Table 6.3. shows the results achieved for part two of the

questionnaire and illustrates the structure of the questions using qualifications, which relate each question to one or more hypotheses, as well as to a learning style.

Hyp.		Questions	Learning Styles Top-Down(TD)/ Bottom-Up (BU)	Results No (%)	
Subjective	Objectives			B	TD
✓		The strategy could be judged a success if it facilitates...			
	✓	... change by motivating people	Both	80	100
	✓	... a shared understanding of strategic objectives and priorities at all levels	TD	90	100
✓		... achieving a general level of agreement	Both	90	75
✓		... open lines of communications	TD	90	100
✓		... education of all people on the importance of a company's strategy	TD	40	87
	✓	... awareness of strengths and opportunities to exploit them	Both	70	100
✓		... minimising vulnerability to threats	Both	90	75
✓		... confidence that the business is more successful as a result	Both	50	87
	✓	... understanding of the strategic priorities of top management	TD	30	50
✓		... involvement of staff in decision making, taking into account their ideas to let them feel they have a say in their future	BU	90	100
✓		... effective change in management avoiding overlapping and conflicting development	Both	80	87
	✓	...development of awareness, not only of the industry in which you operate, but also of competitors	TD	60	87
✓		...self-criticism, i.e. strengths, weaknesses, opportunities and threats	Both	80	75
	✓	...awareness of shareholder requirements to improve their satisfaction	TD	30	75
	✓	...awareness of key problem areas	Both	90	87
	✓	... understanding of changes in the external environment such as market, technology	Both	90	75
	✓	... initiatives to improve supplier's performance	Both	70	87
	✓	...decision making through effective and adaptive process	Both	60	75
	✓	...the maintenance and understanding of changing organisational processes and procedures	BU	90	63
	✓	... adaptation of technology to help strategic change	Both	70	87
✓	✓	... development of a good document e.g. accurate, simple to understand	Both	60	87
	✓	... development of a clear plan with clear responsibilities	Both	80	87
	✓	... development of a detailed plan	BU	60	63
	✓	... the use of threats to exploit opportunities	TD	80	100
	✓	... redesign of the goal of the company	TD	70	87
	✓	... co-ordination and flow of objectives, measures and actions from high level to low	TD	90	100
	✓	... trading-off of strategic choices to optimise business performance	Both	80	87
	✓	... learning from experience	Both	90	100

Table 6.3. Questions and Results

The results presented in Table 6.3 suggest that the learning style have some degree of influence on the preferred measurement determinants. Top-Down learning style managers support the top-down strategy approaches, as well as Bottom-Up learning style managers support the Bottom-Up learning approaches (See percentages). Thus demonstrating that Hypothesis 'personal learning style of managers will affect strategy performance' seems to be valid.

6.3. Workshops

A quicker means of validating the methodology is to seek feedback on the methodology from 'potential users - managers'. Therefore, serial workshops are taken not only to apply two parts of the questionnaire but also to validate PROPHECY process and understand managers' eagerness to the approach, as well as see the practicability of its usage in the company.

Three sequential workshops were held, with a total of 40 Alcan managers attending. At this workshop, research was drafted into augmenting a team of three or four managers from each company (From Glasgow division or Rogerstone division). Beginning of first workshop, managers asked to complete open-ended questionnaire.

Table 6.4 below illustrates the results from interviews and workshops to support each subjective requirement (some of requirements are considered subjective as well as objective), which also demonstrates that all the requirements are valid.

<i>Requirements</i>	<i>Top-Down</i>	<i>Bottom-Up</i>	<i>Results from interviews/workshops</i>
1. Strategy Management Process (SMP) should maximise the feasibility of the strategy. Therefore, people involvement in strategy formulation and implementation is a key factor in determining strategy performance	Strong	Strong	81%
2. SMP should make the link clear between a chosen strategy and its expected operational benefit. Therefore, people can develop a good strategy well if they can see the potential results in advance	Strong	Medium	77%
3. SMP should integrate internal (e.g. financial, operational) and external (e.g. Customers/ market) performance measures	Strong	Strong	75%
4. There is need for a formal, well defined, understandable, adaptable and flexible process to facilitate strategy management	Medium	Medium	72%
5. SMP should critically review the company objectives and deploy top-level objectives through all levels	Strong	Medium	82%
6. SMP should result in a good documentation with a clear and detailed plan, including clear responsibility for actions	Strong	Medium	73%
7. SMP should facilitate learning from experience	Strong	Strong	95%
8. SMP requires significant integration between strategic thinking and strategic planning	Strong	Strong	75%

Table 6.4. Requirements validity

Furthermore, after completing the open-ended questionnaire, managers were asked what a successful strategy meant to them, and comments they made were taken on board, when it came to validate methodology at the end of each workshop. This was intended to make them feel that they were taking a part in the project, and the results would, therefore, be of more relevance and interest to them.

Following this, each stage of the PROPHECY process was explained in terms of the reasons behind the section and how it could be used. In the first workshop attendees were prompted to agree on a mission statement, business unit identification, business objectives, current and past strategies. Hence, reference to one or two business units within Glasgow and Rogerstone, managers were asked effectively to perform business unit analysis. The following workshops followed each other by continuing from where the previous managers could manage to complete. At the end of each workshop, managers were asked to score what they felt about the PROPHECY process against each

points they raised for the successful strategy at the beginning of the workshop, as summarised by comparing with the requirements in Table 6.5.

<i>The strategy could be judged a success if it is...</i>	<i>Results (Managers eagerness to PROPHECY)</i>
Achievable and realistic (same as Requirement 18)	9 / 10
Flexible (same as Requirement 18)	8 / 10
Clear and specific (same as Requirement 18)	7 / 10
Efficiency and effectiveness	8 / 10
Monitorable, testable and review able (same as Requirement 11, 18)	8 / 10
Awareness, comfort	8 / 10
Measurable (same as Requirement 14)	9 / 10
Understandable (same as Requirement 18)	7 / 10
Clear direction (same as Requirement 18)	8 / 10
Commitment from different levels (same as Requirement 17)	9 / 10
Ownership at all levels (same as Requirement 17)	9 / 10
Covers all stakeholders needs	8 / 10
Benchmark and review	7 / 10
Consider all levels of the organisation (same as Requirement 8)	10 / 10
Focus on processes (same as Requirement 18)	10 / 10
Communicable to workforce	8 / 10
Deploy business objectives to business processes (same as Requirement 11)	9 / 10

Table 6.5.Strategy Management Process performance

6.4. Discussion and Conclusions

Having discovered PROPHECY process applicability, its acceptability is resorted to carrying out questionnaires and workshops. The questionnaires set out some key factors to evaluate strategy performance. Workshops added more issues to assess strategy performance. Questionnaires and workshops answered some of the strategy management process requirements, which were stated in Chapter 2.

The results from the questionnaires encouraged the researcher and demonstrated that

- there was an interest in the PROPHECY process
- PROPHECY process fulfilled the strategy management process requirements
- Research could not only make a contribution to the academic literature, but it could also make a practical contribution by encouraging and facilitating discussion and agreement between managers from different departments

Table 6.6. shows how the PROPHECY process fulfils the subjective strategy management process requirements which were tested by management.

<i>Requirements</i>	<i>Results from workshops/ interviews</i>
17. SMP should maximise feasibility of the strategy. Therefore, people involvement in strategy formulation and implementation is a key factor in determining strategy performance	81%
18. There is need for a formal, well define, understandable, adaptable and flexible process to facilitate strategy management	72%
22. SMP requires significant integration between strategic thinking and strategic planning	75%
23. SMP should encourage innovation through providing managers with all business options, strengths and weaknesses, therefore making them creative	75-80%

Table 6.6. Subjective strategy management process requirements

Although according to these results, it can be concluded that the PROPHECY process is acceptable by the managers, further investigation was required in the form of deep case studies to understand PROPHECY's usage better in real companies to answer all research requirements fully.

Chapter 7 - Case studies

7.1. Introduction

In chapter 2, the dynamic strategy management process requirements were identified. In chapter 3, all strategy management frameworks, models and processes were reviewed against the set of requirements. In Chapter 5, these factors were used to design a dynamic strategy management process (PROPHECY). From this process (PROPHECY), a series of workshops were held to develop better understanding of the adopted strategy performance and also PROPHECY process performance. The deep and narrow testing method (action research methods in case studies) was then used through implementation of the methods in various case studies within four manufacturing companies. These case studies were used to validate the PROPHECY process as a first step in developing better understanding of how companies formulate, implement and review their strategy dynamically. Therefore, the objective of this chapter is to show the case studies.

First, and most important in all cases, has been the use of action research methods. As a facilitator to strategy management process to the managers and other personnel have been carried out in each of the four companies, this allows the researcher to obtain first-hand, up-to-date information.

Documentation, such as profit and loss accounts, is provided by the companies themselves. In all four cases, the company has been required to approve the description of the case study as it is included in this report, to keep certain information as confidential. In that sense, in two of the cases the companies' profit and loss accounts are not showing it in detail.

All case studies (also chapter 8, 9 and 10) has been structured as follows:

- Case study definition and description, which describes the general PROPHECY process (general information about the company, managers' choice to develop their

strategies, managers' strategic thinking in the beginning of the process, time scale for PROPHECY application in the company) application to the company.

- *Problems encountered during the case study*, which includes not only problems acquired based on the company's nature, e.g. its culture or industry, but also PROPHECY process requirements acquired during the process application
- *Key lessons, overall analysis / discussion of case study and conclusions*, which gives a brief overview on how each case study fits into the overall organisation of the project, and summarizes the lessons obtained from the each case.

In this chapter, the first PROPHECY process application to the company will be explained. Then, it will go further by stating how the PROPHECY process has been modified after this application.

7.1.1. Case Study Definition and Description

The case studies are intended to show how Strategy Management Process (PROPHECY) issues are actually considered in reality by companies from different sectors and with very different characteristics. The content of the workbook were complemented in the following way:

- One case study (Sun Microsystems Ltd.) shows the use of the PROPHECY process in only one department instead of the whole company. Therefore, this case illustrates how PROPHECY process steps and tools need to be adapted to the particular situation of the department applying it
- The other three case studies are more focused on how companies approach PROPHECY as a whole.

The development of the case studies has been done in an adaptable way, due to the very different nature of the whole set of cases (they differ in terms of the sectors involved, the size of the companies, the focus of the technology management activities, etc.). PROPHECY tools have been applied with minor modification.

Nevertheless, a common overall structure has been followed as a general guide to both the collection of information and the drawing up of the cases which are stating in Appendix E, F, G, H.

- ***Input Stage - Company profile***, with the description of the origin and current situation of the company, its business unit, its competitive environment, and, in fact, all data, which helps to transmit and understand a picture of the company.
- ***Formulation Stage - the context*** in which Strategy Management- PROPHECY takes place in the company, which should reflect how things were being done before. This part makes less sense in every case study, as in some of them that context was non-existent (e.g. Stephen Clark and Meyer & Burger, which are very traditional companies, have never had written a strategy statement). The PROPHECY interviews and workshops carried out, will form the core of the case study. Nevertheless, the level of detail achieved in this point also varies significantly.
- ***Results and validity of PROPHECY*** obtained either from the application or from the overall management of objectives and innovation, including both the immediate impact of the activities and the final impact (if known) at the overall level of the competitiveness of the company (the profit and loss account within the next two years, overall business, e.g. sales, market share etc.). Some cases are based on the description of the company at present and the results are not always known (e.g. Meyer & Burger Ltd.).

Each case study was structured in the following way:

- The integration between strategic thinking and planning was highlighted as one of the main factors for assessing strategy performance (section 2.5). The managers, who were involved in the research, had a different strategic view (eg clear objectives, strategies) at the beginning of the case studies. Some managers already had clear objectives and direction about where they want to see their company in the future before getting involved in the research. Others, although they had some uncertainty about their objectives, were not clear about how to reach their undefined

objectives. Therefore, managers' 'strategic thinking in the beginning of the process' was stated.

- Because of each company's unique characteristics (eg products and processes complexity and its competitive position in the market, etc.), the PROPHECY process application period change depends not only on company's characteristics but also on management availability. As a result, time spent and meeting times taken to apply the PROPHECY process to the company were also considered.
- People's involvement and commitment to strategy development were an important issue. Bourgeois and Brodwin (1983), distinguished the strategy management process implementation into five categories, whose main characteristics are compared in Table 7.1.

The Chief Executive Officer (CEO)'s Strategic Questions		CEO's Role	Key characteristics
Commander Approach	How do I formulate the optimal strategy?	Master planner	Concentrate on formulating strategies, giving little thought to how the plan will be carried
Change Approach	I have a strategy in mind- now how do I implement it?	Architect of implementation	After formulating strategy, consider how to put plan into action by redesigning the organisation structure, personnel assignments, information systems, and compensation scheme
Collaborative Approach	How do I involve top management in planning so they will be committed to strategies from the start?	Coordinator	Extends strategic decision making to the organisation's top management team
Cultural Approach	How do I involve the whole organisation in implementation?	Coach	Extend collaborative approach to involve people at middle and sometimes lower levels of the organisation during the formulation and implementation stage. This would lead to change in management style; it will involve much more interaction where subordinates will be seen as planners.
Crescive Approach	How do I encourage managers to come forward as champions of sound strategies?	Premise setter and judge	Addresses strategy planning and implementation simultaneously. Instead of strategy being delivered downward by top management or a planning department, it moves upward from the doers (salespeople, engineers, production workers etc.) and lower middle level managers.

Table 7.1. Five ways companies implement strategy

Managers' choice to develop their company's strategy is an important issue to implement selected strategy successfully in terms of their company's culture and structure. Therefore, '*managers' choice to PROPHECY implementation in the company*' was considered in each case study.

In any case, although the above-mentioned structure forms the implicit backbone of the cases, each case has made its own adaptation of it.

The following section describe the PROPHECY process for each of the four companies.

7.2. Stephen Clark Ltd.

Stephen Clark Fabrications was founded in 1947 and is one of the UK's leading sheet metal and enclosure manufacturers. Located in Scotland, they currently supply products to companies in over 40 countries throughout the world. Stephen Clark offers a complete service from design through to delivery.

Although managers in Stephen Clark have clear objectives, vision, and performance measures before involving the research, they have rough idea about how to reach their objectives as well as have not thought about company's business units and business processes.

PROPHECY process facilitation took six months (total of 15 meetings approximately 3 hours) in Stephen Clark. Managing director use collaborative approach for applying PROPHECY process. The detail of case study is explained in Appendix E.

7.3. Problems Encountered during the Case Study

This section serves to represent the PROPHECY process requirements acquired during the process applications. This helps to improve results and the PROPHECY process application.

Problem 1: The objectives set out where a company wants to go in the medium and long term and including financial targets. The current process defines the company's objectives, explains their importance, and describes seven major sections that exist in the EFQM model. The problem is that some objectives about customer satisfaction, people and knowledge, partnership development and resources are not appropriate for the whole company. For example to improve delivery objective is more relevant to the Enclosures and Cubicles business unit, in terms of supplier delivery time and product delivery time, than other business units.

Suggested Solution 1: A way of improving this would be to consider only financial objectives (e.g. growth, profitability etc.) and other objectives (e.g. move to new factory), which drives the success of the business as a whole. Moreover, in order to be actionable, relevant performance measures should be chosen against each objective. This change will make managers think different business unit objectives, which contribute to the business objectives.

Problem 2: Business Unit objectives agreement is essential to transform business unit weaknesses to the business objective opportunities. In the beginning, the PROPHECY process was designed firstly to define business unit objectives and then analyse business units. Managers in Stephen Clark Ltd. defined similar objectives for each business unit, although each business unit has different strengths, weaknesses, opportunities and threats. They had difficulty differentiating each business unit's competitive factors.

Suggested Solution 2: A solution to this problem is to change the sequence of the process. For each Business Unit, before defining objectives, analyse the Business Unit by looking at current and past strategy, strengths, weaknesses, and product life cycles, a competitive position against competitors and then decide what the company is going to do with this Business Unit. Decisions can be invest, improve production or even close this Business Unit because it is not really profitable and products are dated. Based on Business Unit analysis, the Business Unit objectives can be defined more accurately and objectively than the previous process offered.

Problem 3:As soon as the company has more than one Business Unit, it becomes necessary to allocate resources and prioritise between them. An important tool for achieving this is provided by Growth-Share matrix. Growth and Market Share matrix makes no contribution to the reflection of current or past strategy as well as multiplicity of factors (e.g. profit and loss account, product life cycle, strengths, weaknesses, etc., etc.) that present to the strategic positioning of the Business Unit. Although it could be argued that the growth and share matrix itself is an indicator of profitability of the Business Unit, it is not an assessment in the sense of model, which considers all Business Unit analysis.

Suggested Solution 3:A way of improving this would be to consider a new matrix with growth and gain to examine the possibility of growth in existing products for each Business Unit, as shown in Figure. By focusing market growth, company gain (in terms of products, profit and loss account, competitive position, strengths and weaknesses and current strategies) and recognising these as an indicators of profitability, the technique would have an impact on objective setting, performance measurement and selection.

7.4. Summary and Conclusions

In this chapter the first application PROPHECY process has been summarised and presented. Furthermore, PROPHECY process in a real company raised a number of

issues relevant to the future application of the PROPHECY process, which was explained in section 7.3.

The company involved in this case, namely Stephen Clark Ltd has a range of products, competitive environments, market conditions and innovation. In all of these issues, the PROPHECY process used in Stephen Clark has successfully developed strategies for its different market. The use of PROPHECY at different levels (e.g. business unit, business processes) of the company has provided a new insight, which has highlighted a number of issues. By focusing on business units, making the link between market requirements and business processes (operational) capabilities, the level of relationship provided by the objectives deployment from business to business processes level.

Some valuable **key lessons** were obtained during the facilitation process, which are:

- Stephen Clark's case study was presented to researchers and industrialist. During the presentation, some people noticed that there was a discrepancy between the business unit's competitive position and SWOT analysis (e.g. delivery time is worse than competitors and also one of the business unit strengths). As a result of this experience, it can be suggested that PROPHECY made emergent strategies auditable by practitioners / researchers, who understood the process but were without in-depth knowledge of the business.
- Stephen Clark managers already had some objectives and strategies before being involved this research. While applying PROPHECY process, they added new objectives to the existing objectives and developed performance measures for these objectives. Hence, this experience suggests that the PROPHECY process assists the development of new strategic decisions, objectives and performance measures.
- At the beginning of the process, Stephen Clark managers defined four different business units, namely Fabrication and Repeat, Specification, Inter Company and Enclosures and Cubicles. After comparing each business unit's objectives, Stephen Clark realised that Fabrication and Enclosure and Cubicles business units have similar objectives (Appendix E Figure 7.2.). After finding similar objectives, the

two business units considered again and managers found that both business units have the same competitive factors. This finding suggested that Fabrication and Enclosures and Cubicle business units should be combined into one business unit. When the Fabrications Business Unit actions have taken place, these actions automatically would apply to Enclosure and Cubicles unit. Therefore, processes like PROPHECY should be used for all Business Units of the organisation in full detail because the complementary or conflicting nature of selected strategies / actions do not become clear until the process is applied to the whole company

- Stephen Clark is structured around functions (e.g. sales, operations, and marketing). Stephen Clark successfully developed its three-business units' strategy and become clearer about its market, product and processes. They started thinking about its business units and processes instead of functions. This experience suggests that PROPHECY helped the management to generate a better understanding of the value-adding business units and processes of the company.

The resources, effort and costs, have only been estimated. As this plan will largely be executed by management, the researcher suggests that, after approval by the Board, the managers be charged with implementation by developing detailed budgets and man-day estimates. Performance measures (e.g. profit and loss accounts and others) should become part of the continuous planning process. Each business process' plans within each business unit should consider their timescales.

The chosen strategy can be summarised in Figure7. 1.

PART 7: STRATEGY IMPLEMENTATION

7.3. Consolidate Operations Strategy

Business Objectives: *Growth by 15 % annually in real terms (by increasing sales to inter company divisions in particular)*
Improve profitability from 4% in 3 years
•invest in modern factory using state of the art equipment
•New investment 20% (now ROI = 10%)

It will action this through:

Strategy Statement for Inter Company

Introducing new products to existing markets (mainly incubators) by offering functionality and by improving customer support

Strategy Statement for Specialist

Introducing new products to existing markets at low price and improved delivery time

Strategy Statement for Enclosures & Cubicles and Fabrications

Reducing cost by increasing volume through responsiveness, flexibility, ability (skills) and by working on the cost base and outsourcing sub-assemblies

Figure 7.1. Consolidation of Strategy

The combination of strategy and operations management techniques used in PROPHECY has provided new insight giving a new view of clarifying company's key issues and market. The management in Stephen Clark Ltd was able to formulate its strategy through PROPHECY facilitation. This facilitation provided managers to think more proactively than they used to do and also gave ownership of the selected strategy (see Appendix E).

Chapter 8- Case Study 2- Meyer & Burger's Strategy

8.1. Introduction

Chapter 7 presented a detailed description of PROPHESY's first application in the company, including all changes made during the case study, and lessons learnt from this case study. This chapter gives a detailed description of the application in another company, based in Switzerland to illustrate some other issues highlighted during the facilitation approach used.

The detail of case study is explained in Appendix F. Although a detailed report was prepared for the company, the full the PROPHESY process application has been not included in Appendix F. Almost all the included stages for PROPHESY, however were necessary. This chapter is structured in three sections as chapter 7. Firstly, it will state a general information about the company. A discussion is then presented on the difficulties encountered while using PROPHESY in this case and finally the chapter concludes key lessons learnt from using this process in Meyer & Burger.

8.2. Company Profile

Meyer & Burger (M & B) was established in 1953 in Switzerland. Products manufactured on M&B machines are in demand wherever maximum precision is at a premium: in communications and computer technology, in the engineering and optical industries, in power generation and space travel.

As managing director new in the company, he has fairly clear objectives without considering performance measures before involving the research.

PROPHESY process facilitation took 3 weeks (total 5 meeting approximately 5 hours) in Meyer & Burger. Managing director use cultural approach (try to involve the whole organisation in implementation).

8. 3. Problems Encountered during the Case Study

Meyer & Burger has got a new enthusiastic managing director. He has well-developed interpersonal skills. He joined the company only four months before becoming involved in this research. The origin of some of the problems encountered during the facilitation process is as follows.

As he is still learning some issues about the company everyday, the researcher explained prior to each meeting about the meeting's aim, content and also gave an example from other companies about how they performed. This solution helped the managing director to think about the company's issues in advance and allow time to discuss and find out some information about the company, which he has not known.

As managing director, he is a Swiss German speaker, and had to look at the dictionary several times to explain the company's issues during the facilitation.

The researcher was in Switzerland for only one month. During this period, the Meyer & Burger case study was carried out. At the first meeting, the research was scheduled and length of meeting was explained to the managing director, and meeting dates were agreed. Meanwhile, Meyer & Burger decided to buy one of its competitors, which is based in Switzerland. Due to this new condition, only five meetings were held (approximately 6 hours each).

Since the beginning of 1980, the internationalism of Swiss SMEs has been enhanced in terms of both imports and exports, reflecting a certain fall in the relative advantages of Switzerland (Country Studies, 1997). However, the functions of management, finance, and R& D remain the prerogative of Switzerland (Country Studies, 1997). Same structural issue (Functional, finance, R&D) apply to Meyer & Burger. Although the managing director wishes to change the company's structure from functional to process, it was difficult for him to define its business processes because the company structure

had not been changed since it was established

8. 4. Summary and Conclusions

This chapter summarised and presented PROPHECY application in Meyer & Burger. Meyer & Burger defined three business units. Only two business units were considered. Meyer & Burger successfully developed it's two-business units' strategy and it became much clearer about its market, product and values.

Some valuable **key lessons** were obtained during the facilitation process, which are:

- The process made emergent strategies auditable by individuals who understood the process but without an in-depth knowledge of the business
- In the beginning of the process, Meyer & Burger manager would like to work alone to develop strategic options. After defining business units, managers had difficulty in making a decision about where he wants to see Meyer & Burger and develop some objectives for each business unit because he is new to the company. He had to take some assistance from the management team. Therefore, this experience suggests that to use the PROPHECY process more efficiently, teamwork is required. In short, the PROPHECY process generated an understanding of the importance of participation and involvement in order to be successful
- PROPHECY's process helped management team
- elucidate and clarify business development needs
- the collaboration with institutes and suppliers to offer full solutions to its customer
- the necessity of a new company lay-out for better flow and resource usage
- necessity of better brand image

Consolidation of chosen strategy can be summarized in Figure 8. 1.

Although objectives and action plans were defined, managers could not manage to visualize the selected strategy business impact because of the company's new situation (trying to buy one of its competitors). Therefore, the resources, effort and costs have not yet been estimated. As the manager will largely execute this plan, the researcher suggested that, after approval by the board, the managers are charged with implementation by developing detailed budgets and man-day estimates. Performance measures (e.g. profit and loss accounts and others) should become part of the continuous planning process. Each business processes plans within each business unit should consider its time scales.

never done

PART 7: STRATEGY IMPLEMENTATION

7.3. Consolidate Operations Strategy

Business Objectives:

1. Growth by 27,5 Million CHR (17% more) within 2001
40 Million CHR within 2005
2. Improve profitability by 10%
3. Incorporate new functions that do not exist in the machine available on the market. (e.g. washing, dyeing, delivering etc.)
4. Looking for new niche market.

It will action this through:

Strategy Statement for Semiconductor Market
Product Leadership- customising product to existing markets by offering improved quality of machine (precision) by improving customer support service.

Strategy Statement for Photovoltaic Market
Product Leadership/ customer intimacy- introducing new products by offering better, machine functionality (full solution co-operation to markets and improved delivery time

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Figure 8. 11. Consolidation of Strategy

Chapter 9 - Case Study 3 - Applecross Ltd.

9.1. Introduction

This chapter presents details of the application of the PROPHECY process in Applecross Ltd. This chapter is structured as chapters 7 and 8. Although the management team in Applecross defined three business units, they wanted to analyse two business units (attractive) and focus on one business unit's process analysis. Therefore, a detailed account is given only for the application of two companies' business unit analysis and one business unit's processes applications. The full the PROPHECY process application has been not included in Appendix H.

9.2. Company Profile

Applecross Ltd. was established in 1979 and has been building quality homes in and around Edinburgh's most sought after locations. Over the years, they have built an enviable reputation for creating highly desirable homes.

The commitment to individually design each development to suit its surroundings and to improve the overall quality of an area is one of the main reasons for Applecross' continued success. Commitment to traditional values and consistently exceeding the most stringent planning and building requirements provides a home with unique standards.

Such is Applecross' reputation, clients on its mailing lists reserve many of the properties from brochures. Indeed a number of their developments have been sold prior to, or very soon after completion. Distinctly different, their homes serve as a testimony to the many qualities, which make Applecross a simply superior choice. Applecross' developments and their locations are illustrated in Figure 9.1.

9.3. Problems Encountered During the Case Study

Since Applecross was relatively new at strategy facilitation, managers had difficulty seeing the PROPHECY process benefits. Applecross has been evaluating its construction process performance along with the square footage achieved and expenditure against time. Although these measurements are important to improve building up times and quality, it only focuses on internal construction performance and does not address improvements in business performance relative to competitors. Top management's close contact with the daily construction process caused difficulty in defining business units and business processes. In addition, differentiating differences between two levels.

9.4. Summary and Conclusions

This chapter summarised and presented the PROPHECY application in Applecross. Applecross identified three business units: Villa Range (big flats >150 ft²), City Range (small flats 90-100 ft²) and detached houses. All business units have different target markets with different characteristics. Applecross decided that all selected action plans and business process objectives and performance measures for Villa Range are also valid for other business units. After applying the PROPHECY process to the Villa Range and its business processes, Applecross considered each business unit's value proposition and business unit market share, as well as business gain separately. They found that their business processes objectives and their performance measures are the same for the whole company. This raised two important issues (key lessons) for the future PROPHECY applications:

- whether focusing on the business unit would be beneficial for all types of companies within different industries
- whether there is a better way to define business units and business processes so that, before applying whole processes to the company, managers can see applicability and the benefit of the each business unit.

Furthermore, looking ahead to turn of the competition, the management at Applecross have become concerned about the future of the company's more systemically and structured way than before. For example, playing a buffer position between properties and constructors was clearly an attractive option, but the company had been frustrated in its attempts to be in the middle to develop such relationships.

The chosen strategy can be summarised in Figure 9.1.

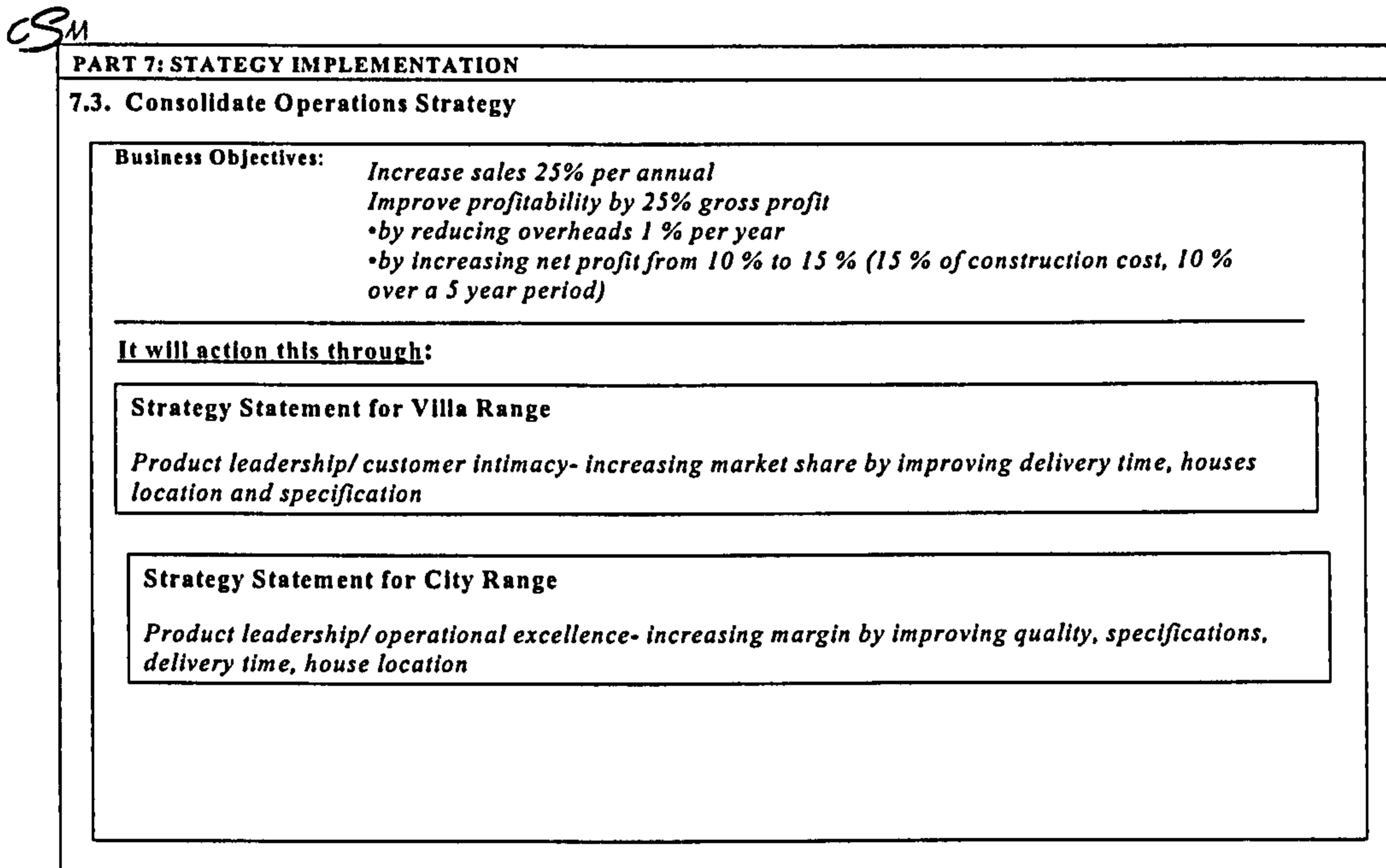


Figure 9.1. Consolidation of strategy

Chapter 10- Case Study 4- Network Storage Operations Engineering

10.1. Introduction

Chapters 7, 8, 9 gave a detailed description of PROPHECY's application to the whole company. Although the three case study companies are different in terms of industry, situations, market, activities, technology etc., the initial three case studies show that the PROPHECY's process helped management to

- Elucidate and clarify business development needs
- Generate a better understanding of the important value added processes of the company

This chapter's aim is to demonstrate the PROPHECY process flexibility by presenting a case study in one department (Network Storage Department) in Sun Microsystems. The full the PROPHECY process application has been included in Appendix H.

10.2. Company Profile

In less than a decade the world in which we live and work has changed forever. Sun Microsystems was a major force in the dot com revolution. Today it is in a unique position to help companies gain a huge competitive advantage in the new economy. Crucial to that success is it's state-of-the-art manufacturing plant at Linlithgow.

Defining the department's business units generated extensive and interesting discussion that was primarily focused on identifying the customers for the Network Storage Department.

PROPHECY facilitation took 2 months (approximately 2 hours of total 6 meetings). Manager use crestive approach (how do I encourage managers to come forward as champions of sound strategies) to involve the research.

10.3. Problems Encountered during the Case study

Network Storage Department in Sun-Scotland was used to support both external and internal manufacturing. Sun headquarters introduced a front line support engineering group, which deals with internal support. Until now, escalation management within the storage group tackled the internal problems when required, the progress of escalation management was made as above, but not to a satisfactory level. The latest development in the uses of the front line engineering is that of converting the communication of manufacturing problems directly to the front line engineering group, which aims to act as a buffer between manufacturing and storage group. The PROPHECY process does not capture different time scales environmental changes, therefore, it was decided to consider three different times (past, present and future) of each business unit's operating environment. This means that the agreed objectives and the department approach to reach these objectives considered different periods of time and were used for analysis while they are still valid. Moreover, the objectives and tactics may be updated often to reflect changes that are implemented.

Another practical difficulty that was experienced, particularly in a department, is that it becomes confusing when defining business processes. Each business process has got only one or two activities. As a result, this was taken into account when defining actions for each objective. Each action is explained in the business unit stage instead of going into the business process stage. Since business processes were not central to this particular case study this was not thought to be necessary in this instance.

10.4. Summary and Conclusions

In conclusion, this case study has illustrated that the PROPHECY process can successfully be used in one department instead of a whole company. The new approach of using PROPHECY process to define department's objectives and value strategies captured from a detailed description of a department's current situation (e.g. department's internal (other departments) and external customers instead of considering only external customers).

The PROPHECY process provided a useful overview of each department's critical process/ activity. Furthermore, it was also used to highlight specific points about the decision-making processes and value strategies for each department's business unit being examined.

This departmental application of PROPHECY process has also illustrated that it meets the criteria defined in the department's requirements, stated in the first meeting.

Each department unit's past environmental analysis was used to find out past business unit's weaknesses and scope of its work and limitation. The department's current and future environmental analysis was used to communicate a thorough understanding of the department unit situation by visualising where the department wants to move.

Some valuable **key lessons** were obtained during the facilitation process, which are:

- The PROPHECY process is flexible enough to develop one department strategy
- The PROPHECY process helped the management to
 - elucidate and clarify departmental development needs
 - generate a better understanding of the collaboration with external suppliers to offer full solutions to its customers
 - understand necessity of creating an environment for motivated and empowered employees to meet customers' requirements
- After applying the PROPHECY process, Network Storage Department's manager noticed that when they improve three business units, they can automatically improve one business unit. Therefore, a processes like PROPHECY should be used for all Business Units of the department/company in full detail, because of the complementary or conflicting nature of selected strategies/actions do not become clear, until the whole process is applied to the whole department/company.

Finally, from this case study it is clear that the PROPHECY process is flexible enough to apply to different company situations as well as departments. In this case the Network Storage department of Sun Microsystems was successfully studied by considering different department units based on their services and activities.

Chapter 11- Overall analysis of PROPHESY case studies

11.1. Introduction

Chapters 7, 8, 9, and 10 have presented PROPHESY's application as a case study that was performed within four different organisations. This chapter's aim is to provide an overall understanding of the whole set of case studies. Most of the case studies offer different learning statements depending on how they are described and what issues are emphasised.

The chapter is structured as follows: It begins by presenting case studies characteristics generally. It continues with a discussion about the rational reasons behind the choice of the criteria used in the cross case analysis. This is followed in section 11.4. by the cross case analysis and the discussion and conclusions in 11.5.

11.2. General Case Study Characteristics

Most case studies used in management education and research look retrospectively at an event or at a company history and provide a rich opportunity for 'what if' discussions — 'suppose they had done this?' or 'should they have done that?'

The main aim of the case studies was to demonstrate that a business process based approach made a difference to strategy management (making).

The objective of each case study facilitates the company's strategy, by

- providing a clear direction for the company
- setting out medium and long term objectives
- defining business units in terms of market and product requirements
- defining business processes
- clarifying the roles of managers in implementing strategies

- initiating continuous strategy management process

In short, case studies focus primarily on the current and future situation. 'What can they do now?' or 'What can they do next?', 'How are we doing against competitors?', 'How will the situation change and which resources and competencies might be needed in the future for specific market (eg business unit)?', whereas others primarily described how a company has faced some experiences relevant to strategic actions.

All cases tried to make managers think about how their objectives and strategies impact their business results.

11.3. The Choice of Comparison Criteria

The last four chapters presented how the PROPHECY process has been applied in four different companies and each case conclusion drawn by summarising which issues were raised during the facilitation process. In this section, analysis is taken to the next stage through cross case analysis. The aim is to pull together the conditions, which occur in the individual cases, to look for links.

Choosing the dimensions for a cross case analysis is an important step as that choice focuses on successive analysis. Much of the choice here was driven by case studies (experiment) facilitation in the companies. However, it should be stated that specific categories were also informed from strategy implementation (Bourgeois and Brodwin, 1983), and strategy aligns business units to their value proposition (Kaplan and Norton, 2001).

In total, five criteria were selected. These are:

1. Managers' 'strategic thinking in the beginning of the process' was included as a comparison criterion

2. Time spent and meeting times taken to apply the PROPHECY process to the company were also taken as a criterion
3. Problems that occurred during the facilitation process were also included as criteria.
4. The key lessons obtained from each case study were considered as a comparative criterion.
5. 'Managers' choice to PROPHECY implementation in the company' was included as a dimension.

11.4. The Cross Case Analysis

All cases describe situations, which are relevant for SMEs. Table 11.1. compares the characteristics of these companies to link flexibility and the applicability of the PROPHECY process to different manufacturing organisations or organisation's departments.

Both Stephen Clark and Meyer & Burger cases show the use of certain action plans in a quite formal and structured way in the past, whereas the Applecross case shows a more informal and ad-hoc way of carrying out certain strategy management activities.

Mature industrial sectors, as well as services, are represented in the Meyer & Burger and Stephen Clark cases. From the market point of view, the product range and their applications to different sectors are also wide for both cases. For instance, Stephen Clark produces petrol pumps as well as incubators. Even from the size of the business point of view, there is a wide representation and services/applications (customers) to small, medium and medium-large companies.

Technology based/innovative companies may learn from the case studies since many innovation based companies have in recent years been trying to shed the disadvantages of bureaucratic structures and acquire the characteristics of other companies - flexibility, responsiveness, an integrated management team, entrepreneurship, etc.

In contrast, a construction company - Applecross often argued, with validity, that they were desperately short of management resources, or time.

Case Studies Comparison

Case Company 1-Stephen Clark

<p>1. <i>Managers' starting point</i></p>	<ul style="list-style-type: none"> • Have clear objectives, mission and vision • Have rough idea about how to reach their objectives • Almost clear performance measures • No thought about company's business units and business processes
<p>2. <i>Facilitation time</i></p>	<p>6 months (because it was a first case study and some modifications were necessary) 15 meetings (approximately 3 hours)</p>
<p>3. <i>Problems encountered</i></p>	<ul style="list-style-type: none"> • Obtaining break down profit and loss accounts • In the beginning, defining some business unit objectives as a business objective (e.g. improve quality), there is a tendency to rely on other Business Units to clarify the same objective • some objectives about customer satisfaction, people and knowledge, partnership development and resources are not appropriate for the whole company
<p>4. <i>Lessons learned</i></p>	<ul style="list-style-type: none"> • The process made emergent strategies auditable by individuals who understood the process but without in-depth knowledge of the business • Recognizing the similarity between the two business units (fabrications and enclosures & cubicle) • The processes should be used for all Business Units of the organisation in full detail, because the complementary or conflicting nature of selected strategies / actions is unclear, until the whole process is applied to the company • Teamwork is required • PROPHECY process helped to elucidate and clarify business development needs • PROPHECY process generated understanding of the importance of participation and involvement in order to be successful • PROPHECY process provided managers with an alternative view of their organisation which can enable to focus on important business units and their strategies, for example, can make win orders for whole company or focus on certain segments e.g. a specialist business unit
<ul style="list-style-type: none"> • <i>Implementation approach</i> 	<p>Collaborative approach (see Appendix E)</p>

Table 11.1. Cross Case Analysis

Case Studies Comparison

Case Company 2-Meyer & Burger

<p>1. <i>Managers' starting point</i></p>	<ul style="list-style-type: none"> • Have fairly clear objectives • Do not know how to reach these objectives (no previous thought) • No thought about performance measures • Distinguish company's business units depending on their product range, no thought about their processes
<p>2. <i>Facilitation time</i></p>	<p>3 weeks 5 meetings (approximately 5 hours)</p>
<p>3. <i>Problem encountered</i></p>	<ul style="list-style-type: none"> • Facilitating the process because of English interview (the managers' mother language is Swiss German) • The managing director joined the company 4 months before the interviews. Lack of in depth knowledge about the company
<p>4. <i>Lessons learned</i></p>	<ul style="list-style-type: none"> • The process made emergent strategies auditable by individuals who understood the process but without in-depth knowledge about the business • Teamwork required • PROPHECY process helped to the management to <ul style="list-style-type: none"> ▪ elucidate and clarify business development needs ▪ generate a better understanding of <ul style="list-style-type: none"> • the important value added processes of the company • the collaboration with institutes and suppliers to offer full solutions to its customers • the necessity of a new company lay-out for better flow and resource usage • the necessity of a better brand image • PROPHECY process generate an understanding of the importance of participation and involvement in order to be successful
<p>• <i>Implementation approach</i></p>	<p>Cultural approach- the general manager had joined the company 4 months before. He would like to change their management style and company's structure from functional to process one (see Appendix F).</p>

Table 11.1. Cross Case Analysis

Case Studies Comparison

Case Company 3-Applecross

<p>1. <i>Managers' starting point</i></p>	<ul style="list-style-type: none"> • Unclear objectives • Do not know where the company was going • Clearly define their business processes, no thought on their business units • Unclear performance measures
<p>2. <i>Facilitation time</i></p>	<ul style="list-style-type: none"> • 3 months • 8 meetings (approximately 2 hours)
<p>3. <i>Problem encountered</i></p>	<ul style="list-style-type: none"> • Defining the company's business process. The company is in construction business • Finding common languages
<p>4. <i>Lessons learned</i></p>	<ul style="list-style-type: none"> • The process made emergent strategies auditable by individuals who understood the process but without in-depth knowledge about the business • The nature of the company would lead PROPHECY process application and to answer the question whether focusing on Business Unit would be beneficial for whole types of companies within different industries • PROPHECY process helped the management to <ul style="list-style-type: none"> ▪ elucidate and clarify business development needs ▪ understand relationships between different activities and processes ▪ distinguish different market requirements ▪ generate a better understanding of <ul style="list-style-type: none"> • the important value added processes of the company • the necessity of a better brand image
<p>5. <i>Implementation approach</i></p>	<p>Commander approach- managers do not have a clear thought about how the selected strategies will be carried out in terms of time lengths (see Appendix G)</p>

Table 11.1. Cross Case Analysis

Case Studies Comparison

Case Company 4-Sun Microsystems/ Storage Department	
<i>1. Managers' starting point</i>	<ul style="list-style-type: none"> • unclear objectives • unclear strategies • no thought about the department's segments which are adding value to department' customers • almost clear performance measures
<i>2. Facilitation time</i>	2 months 6 meetings (approximately 2 hours)
<i>3. Problem encountered</i>	<ul style="list-style-type: none"> • During the facilitation process, because it was the first time PROPHECY was used to develop one department strategy instead of within a whole company
<i>4. Lessons learned</i>	<ul style="list-style-type: none"> • PROPHECY process is flexible enough to develop one department strategy • PROPHECY process helped to the management to <ul style="list-style-type: none"> ▪ elucidate and clarify business development needs ▪ generate a better understanding of the collaboration with suppliers to offer full solutions to its customers ▪ understand necessity of creating <ul style="list-style-type: none"> • an environment for motivated and empowered employees to meet customers' requirements • knowledge management • The processes like PROPHECY should be used for all Business Units of the department / company in full detail, because the complementary or conflicting nature of selected strategies / actions do not become clear, until the whole process is applied to the whole department / company
<i>5. Implementation approach</i>	Crescive approach - the manager would like to involve headquarter managers (USA) as well as internal and external people (engineers, from design department people in United States, external manufacturer) (see Appendix H)

Table 11.1. Cross Case Analysis

Meyer & Burger and the Network Storage department in Sun Microsystems have tried many different ways to operate like smaller companies. In the process of changing in these ways they have had a dramatic impact on those companies, which supply them with components and services. They have also created new markets for other companies. After implementing adopted strategies, many companies would become part of a supply chain or network. Understanding the strategy management needs of a company now needs an understanding of the know-how management needs of the networks in which it operates.

One of the lessons learnt from two cases (Stephen Clark, Applecross) is quite similar. Both these companies are a clear example of trade-off and consolidation of objective/strategy necessity. After comparing each business unit's objective, Stephen Clark realised that two business units have got similar objectives. This suggested that a strategic action plan for one Business Unit would improve the performance of the other Business Units. On the other hand, after comparing business process objectives, Applecross recognised that when they improve one business process, this would enhance other process efficiency and effectiveness. The Applecross case raised two important questions of whether there is a need to define a business unit or whether the PROPHECY process needs to focus only on business processes analysis for companies within different industries. This depends on the nature of the business and its organisation. Therefore, it is becoming less important or meaningful to describe a company by an industry classification since the products and services it supplies can serve companies in several traditional industries and the processes it uses need not be based on a single industry or market.

All cases are compared in an internal business processes matrix illustrated in Figure 11.1, which was proposed by Kaplan and Norton (2001). Although all these processes are important for the whole company, each business unit within the company must excel at one process that has the maximum impact on its customer value proposition. The

above argument about the necessity of defining Applecross business unit or not led the researcher to consider Applecross's business processes value propositions. Although the Sun Microsystems case has not covered three value propositions for each of its business units (department segment), the researcher tried to place them in Figure 11.1.

One Stephen Clark and Meyer & Burger's value proposition is become a product leadership with technology matter. Although Meyer & Burger case is mainly focused exploitation (speed to market), strategy together with solution development whereas Stephen Clark's case is focused on the new invention to tune the R&D activities to the company's strategy.

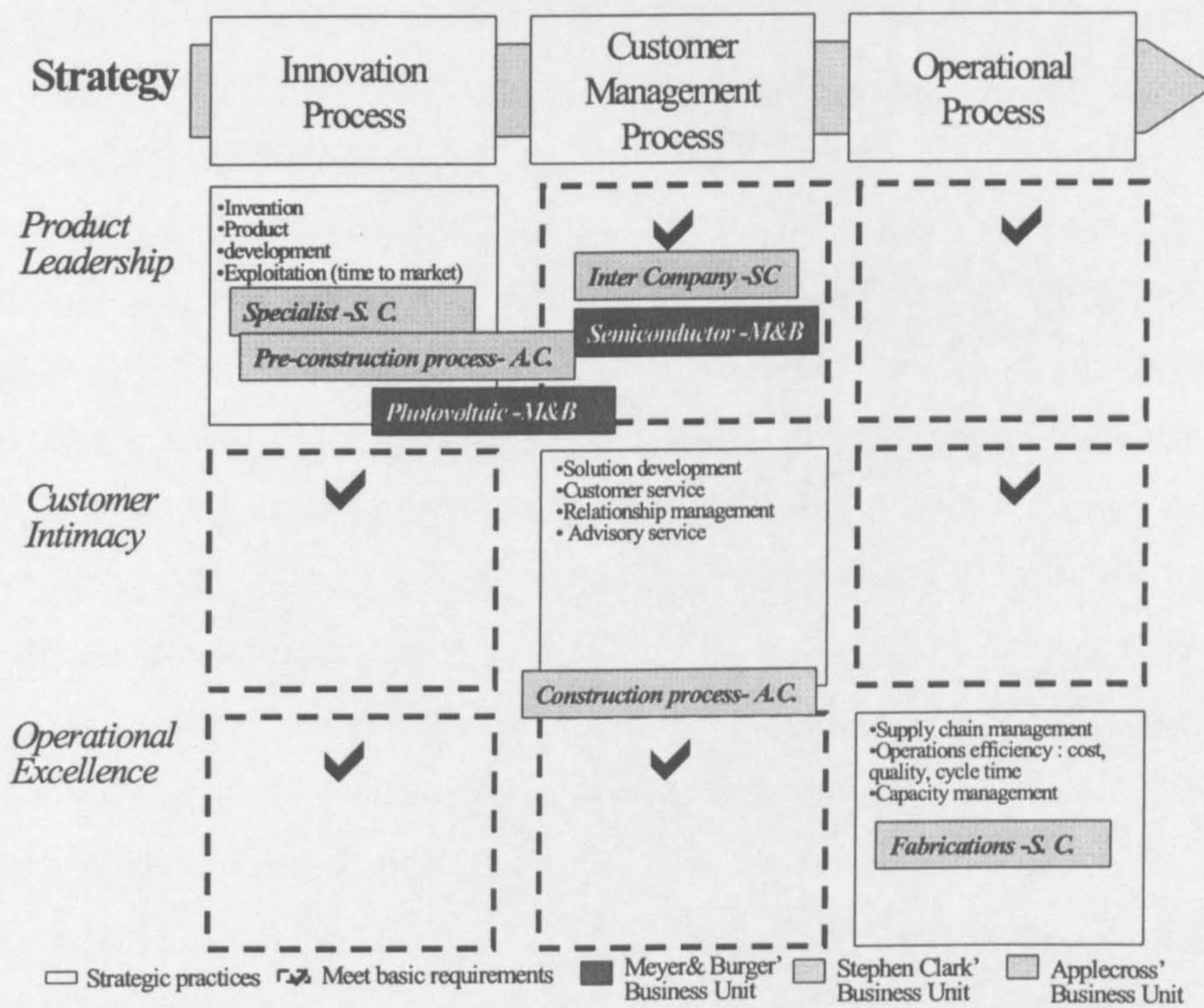


Figure 11.1. Company's Value Propositions (Kaplan and Norton, 2001)

11.5. Conclusions

In this research, the aim was not only to assist and synthesise present knowledge but also to provide means of generating knowledge about an organisation. This has been done through the development of a company strategy based on facilitation.

Four case studies validated PROPHECY process.

From this four case analysis, the following issues emerge:

- The cross case analysis showed that a structured prescriptive approach to strategy management (i.e. strategy management process- PROPHECY) makes the strategy emerging from the process auditable by practitioners / researchers, who understood the process but were without in-depth knowledge of the business. As seen in Stephen Clark cases (see Chapter 7, page 218)
- The cross case analysis suggests that processes like PROPHECY should be used for all Business Units of the organisation in full detail, because the complementary or conflicting nature of selected business units, strategies/ actions do not become clear, until the whole process is applied to the company. At the beginning of the process, Stephen Clark managers defined four different business units, namely Fabrication and Repeat, Specification, Inter Company and Enclosures and Cubicles. After comparing each business unit's objectives, Stephen Clark realised that Fabrication and Enclosure and Cubicles business units have similar objectives (Appendix Figure 7.2.). This allowed conflicting and complementary aspect of strategies to be managed more effectively (see Chapter 7, page 219)
- The cross case analysis showed that the PROPHECY process helped the management to generate a better understanding of the value adding business units and processes of the company. As seen in Stephen Clark, Sun Microsystems and Applecross after applying the whole process, they recognise the real value in adding business units and processes (see chapter 7 page 218, chapter 9 page 226, chapter 10 page, 230).

- For the PROPHECY process to succeed through facilitation, the manager must believe in their selected strategies and see the benefits in taking part of the research. Benefits occur from participation, commitment, debate and development of new insights. Applecross and Meyer & Burger are good examples for how management in both companies started to think more proactively and dynamically (see chapter 7 page 218, chapter 9 page 226, chapter 10 page, 230)
- It is usually hard for researchers to transfer their research into a practical process and convince managers to use them in practical environment. One typical question about strategy management process is its contribution to the process level performance. As it has been seen with three cases (Stephen Clark, Meyer & Burger and Applecross), strategy management process can elucidate important values of the company.

Chapter 12- Discussion

12.1. Introduction

Chapters 7, 8 9 and 10 describe how PROPHECY was validated through in-depth case studies. The evidence from the case studies supported three initial proposals and fulfils new dynamic strategy management requirements.

This chapter begins by summarising the research approach and continues by critically assessing the PROPHECY process. Two main limitations of the PROPHECY process are the limitation of research and research findings. It continues by criticising the business process based approach and it's application. Finally, it explains the PROPHECY's benefits by stating managers thinking.

12.2. Problem Definition and Summary of Approach

As stated in chapter 1, this research was undertaken to develop a better understanding of the effect of a business process based approach to strategy management. The foundation of this research was based on the following propositions:

1. Strategy management process needs to include the performance measurement process both as inputs as well as outputs (Bitici et al 1997, Owen 1982)
2. Strategic objectives need to be systematically deployed down to business processes, rather than functions, because it is the business processes that generate value for the business (Feurer, 1995; Flood and Jackson, 1981; Bititci 1997)
3. Strategy management process should be viewed as a Business Process (Pearce and Robinson, 1988; Ansof, 1990; Wheelen and Hunger, 1992; Childe et al., 1994, 1995; Goodman and Lawless, 1994; Bititci et al., 2000).

The work presented in this research, following an in-depth review of literature, developed a set of requirements for a Dynamic Strategy Management Process. These

requirements suggest that strategy management is viewed as a business process. The research continued by critically evaluating the existing strategy management frameworks, models, methodologies, tools and techniques, which have been classified according to their scope. This review concluded that although the approaches reviewed collectively met all the requirements, individually none of the approaches fulfilled all of these requirements. Hence, to fulfill these dynamic strategy management process requirements, PROPHECY (Process Oriented Performance Headed Strategy) was developed which is documented in detail in a workbook format (Acur and Bititci, 1999, 2000, 2001). The PROPHECY process was tested using two alternative approaches: The broad and shallow approach was conducted using a structured and close-ended questionnaire as well as holding workshops with a total of forty managers. The narrow and deep approach was conducted through implementation of the PROPHECY process in various case studies with four manufacturing companies namely Stephen Clark, Sun Microsystems, Applecross and Meyer & Burger. All feedback from these participants was used as a basis for improving the process.

Figure 12.1 outlines the structured approach the researcher took in advancing this thesis.

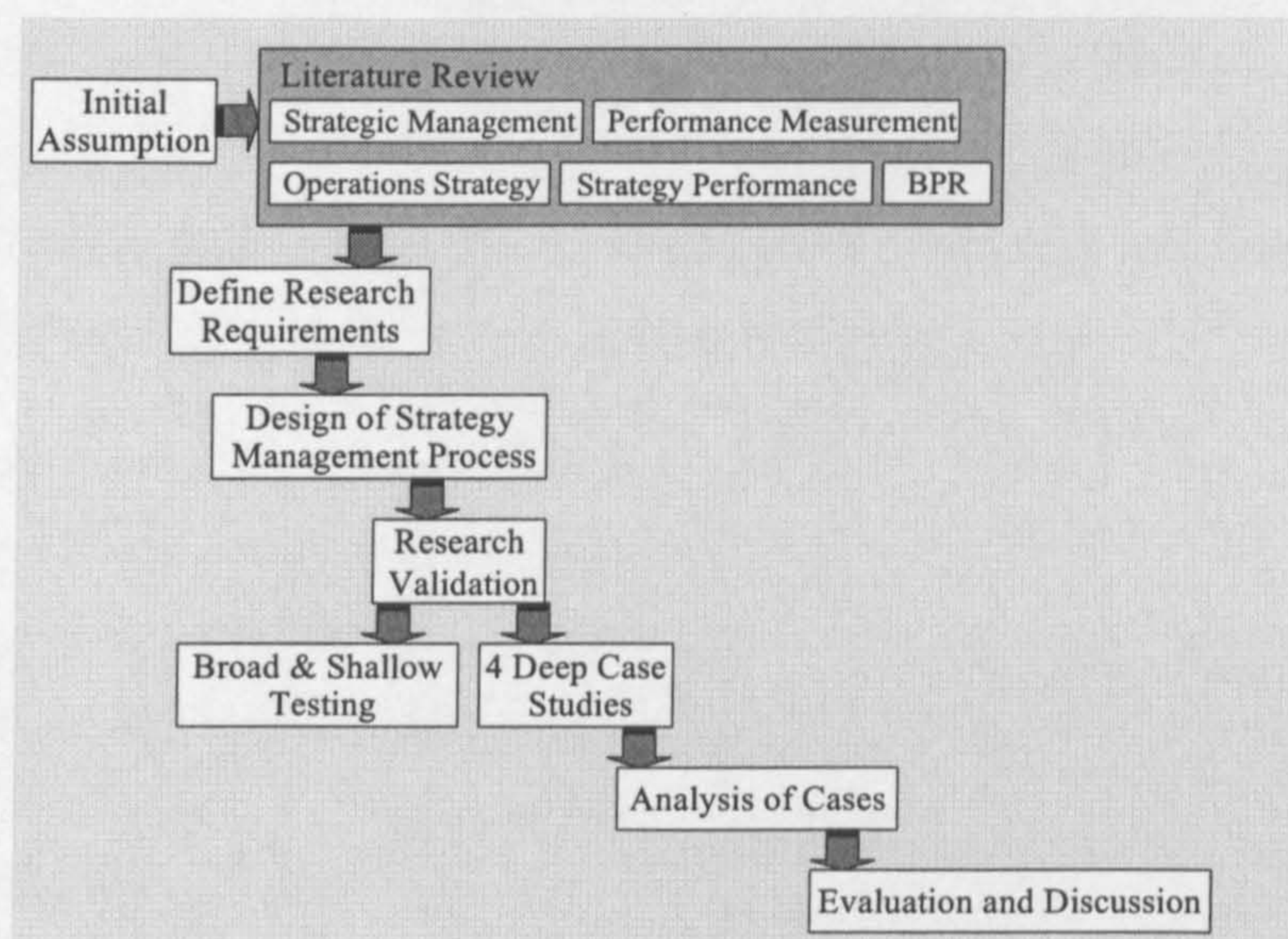


Figure 12.1. Thesis approach

12.3. Discussion on Research Approach

There are limitations to the scope of the research methodology, especially as it has to be completed in the period required for a doctoral submission.

For this research, firstly, the most important limitation is in the overall research design employed (top-down research approach). Whatever the managers learning style, there is a need to tackle research questions. The limitations or disadvantages of a research approach all contribute to the weaknesses of research methodology in undertaking the investigation.

The overall aim of the research was to develop a better understanding of the effect of business process based approach. The research would have applied two different approaches (i.e. PROPHECY and other approaches) to the same company or apply two different approaches to very similar companies. However, in reality this is not practical. There would not be time to apply two different approaches. If we tried to apply two different processes to two similar companies it would be difficult to

- Find two similar companies with similar environmental conditions
- Convince companies to take alternative approaches.

Therefore, the research approaches took four companies along the PROPHECY process.

With respect to the time factor, the learning cycle testing has not been fully tested in all case studies. In short, no follow up stage has been considered, which should take at least six months after the completion of first past. However during the first past, the process captured emergent strategies from the companies' history and used this information to facilitate creation of future strategies. It may be argued that this in itself is a test of the learning cycle (Figure 12.1.)

REVIEW										Business Results	
Actions	Time Scale					Missed	Made	Lessons Learned	Expected Business Impact		
	c-2	c-1	c	c+1	c+2						

Figure 12.1. Strategy management process learning and review cycle

To extend this argument, although this research tested the effect of process based approach to strategy management; this has not tested the impact of strategy management as a business process overtime. In order to test how PROPHECY works as a business process, it requires longitudinal research (e.g. 2 or 3 years) to see PROPHECY process impacts on business results.

However, it would not be correct to argue that because the methodology achieved positive results in the case study companies the methodology would be universally applicable. We could argue that methodology is valid as it proved to have however worked in a positive way in the four case study companies.

The validation of this research was carried out in two different ways:

- broad-shallow testing through subjective (requirements test by management team),
- deep-narrow testing through objective (requirements test by design).

Although forty-six managers were used for shallow and narrow testing, the sample size for deep and narrow testing was limited with only four case studies because of the time limitation.

12.4. Discussion on Work Done (PROPHECY)

Having used the PROPHECY process by managers, in four organisations, with senior management commitment, it could be concluded that it was difficult to:

- acquire detailed and correct information about the companies profit and loss accounts breaking down into defined business units' profit and loss account
- define business units and business processes. The managers have difficulty in thinking at an abstract level about their logical 'business units' which in reality are managed as a complete business rather than as individual/ separate business units.

This section will contain the discussion, which is drawn from the work presented in this thesis. It will also discuss the limitations of the work performed and the method developed. This section, however, starts by looking at the progress of the research made to date in addressing new strategy management process requirements established at the outset of the project.

12.4. 1. Criticism of Business Process Based Strategy Management Process

Business process based approach to strategy management have endured recently and started to underpin many of the current approaches. However, there are two criticisms, which can be made of this approach.

Firstly, a process based approach was found to be useful in strategy design; however it might be argued that PROPHECY process does not take people into account. It is a fact that people are an essential component of strategy management, involving them as employees, customers, stakeholders, suppliers, partners and so on.

Although soft system description is 'human being' rather than 'technical' in attitude, hard system is precise, well defined and quantitative. Kirk (1995) says, "Systems

represent a useful way of studying human activities but that these systems are not real but represent a activity model. They represent approaches to help our understanding of how an operation is performing and how this performance will respond to changes in the environment. It is important to recognize the nature of the problem with which we are faced”.

In the literature it is stated that ‘hard’ system thinking is a proper ‘well-defined’ and quantitative situation where it makes sense to measure, model, and expect them to behave with a predictable degree of regularity. On the other hand ‘soft’ system description is personal rather than technical in attitude (Checkland, 1999; Carter et al, 1988). Therefore, this research attempts to use the ideas of ‘hard’ systems thinking in ‘soft’ problems, moving away from the ‘hard’ engineering tradition when forced to do so by the difficulties of actual situations. (Checkland, 1999). The research has been especially interested to find out how companies can use a business process perspective as a way of managing their whole organisation in order to sustain a competitive weapon, rather than just the application of process improvement techniques.

Hammer (1997), in his discussion of how radical redesign in Business Process leads to dramatic improvement, concludes that reengineering has two dimensions. “The first entails organising a company and the people end-to-end sequences of tasks rather than around individual tasks. The second is rethinking the design of those processes and how they are performed”. This research thinking lies somewhat closer to Hammer’s second dimension. The researcher sees strategy as the unique position, which a company adopts for different markets by *allowing key decision makers at all levels of an organisation in a manufacturing business to develop company strategies by considering, their own practical experience, business, environmental and market requirements*’ in terms of deployment of resources and processes in the long term or short term.

In summary, PROPHECY process has been developed by using hard system view. On the other hand, in applying PROPHECY process, soft system view has been taken by

using a tool to facilitate key decisions makers at all levels of an organisation. Therefore, this research used a combination of both hard and soft system view to develop a better understanding of the effect of business- process based approach to strategy management.

Secondly, the research can be criticised for not identifying necessity of clear distinction between overall strategy formulation and operations strategy formulation. The research tried to show that operations strategy is more than a deployment of resources and processes in the long term. Business strategy should focus on creating value that is independent for each business unit value. This means developing horizontal strategies that have objectives of co-ordinating business processes and developing objectives that encourage the sharing of resources and skills. The nature of the linkage between business models has depicted companies as being made up of a set of functions. One of the dominant approaches during the last twenty years has been to attempt to build models, which link manufacturing with a narrow aspect of the company, e.g., it's decision areas, such as manufacturing decision areas and manufacturing capabilities by linking competitive criteria, and performance measurement with only minor modifications to this basic theme.

Each of these many models has been useful in expanding the research awareness of the links between operations strategy and the business strategy and in offering an insight into the rationale of the linkage. For example, the PROPHECY process that links a company's operations and competitive and business strategy is based on its performance measures and business processes rather than its functions. Hence, it is the business processes that generate value for the operations strategy and business. This view has attracted considerable interest over a long period (Wheelwright, 1984; so on).

Many of these models have focused only on some part of the implementation component of strategy management. However, they underestimate the Business Processes attributes to assess the impact on overall business and under describe the rational impact to the overall company strategy. What this research would like to do here is to offer a broader

framework, one that both enlarges our perspectives on the impact of the operation and broadens the rationale for that impact.

12.4.2. General Framework Discussion and Its Applications

Taking the criticism and limitations of the PROPHECY process in the above sections, this section discusses the PROPHECY process in general.

The four cases presented in Chapters 7, 8, 9 and 10 have been described using the framework. With the exception of the Sun Microsystem case, other cases seemed to have applied the thinking (fulfil the research requirements) behind the PROPHECY process. They took into account a number of considerations, which are encapsulated in the process. Managers had confidence on their selected and predicted strategies. As a result of taking the process, they obtain:

- clear written strategy statement
- performance measurements for each objective at each level
- ownership of the selected strategy

Process based approach could be used to facilitate integration of resource based approach and market based approach in a more meaningful way. Slack (2001) also supported this argument about the necessity of integration between these two approaches (Figure 12.2.). Each number as shown in Figure 12.2. is explained as follows:

1. PROPHECY through market and competitive information helps identify priorities for each business unit
2. Each business unit is prioritised according to contribution to business objectives
3. Deploy business unit objectives to business process with performance measures but no firm decisions are made with what to do within each business unit
4. Integrate the various strategies of business processes and business units and identify conflicts and complements
5. Decide trade-offs for each business unit and process

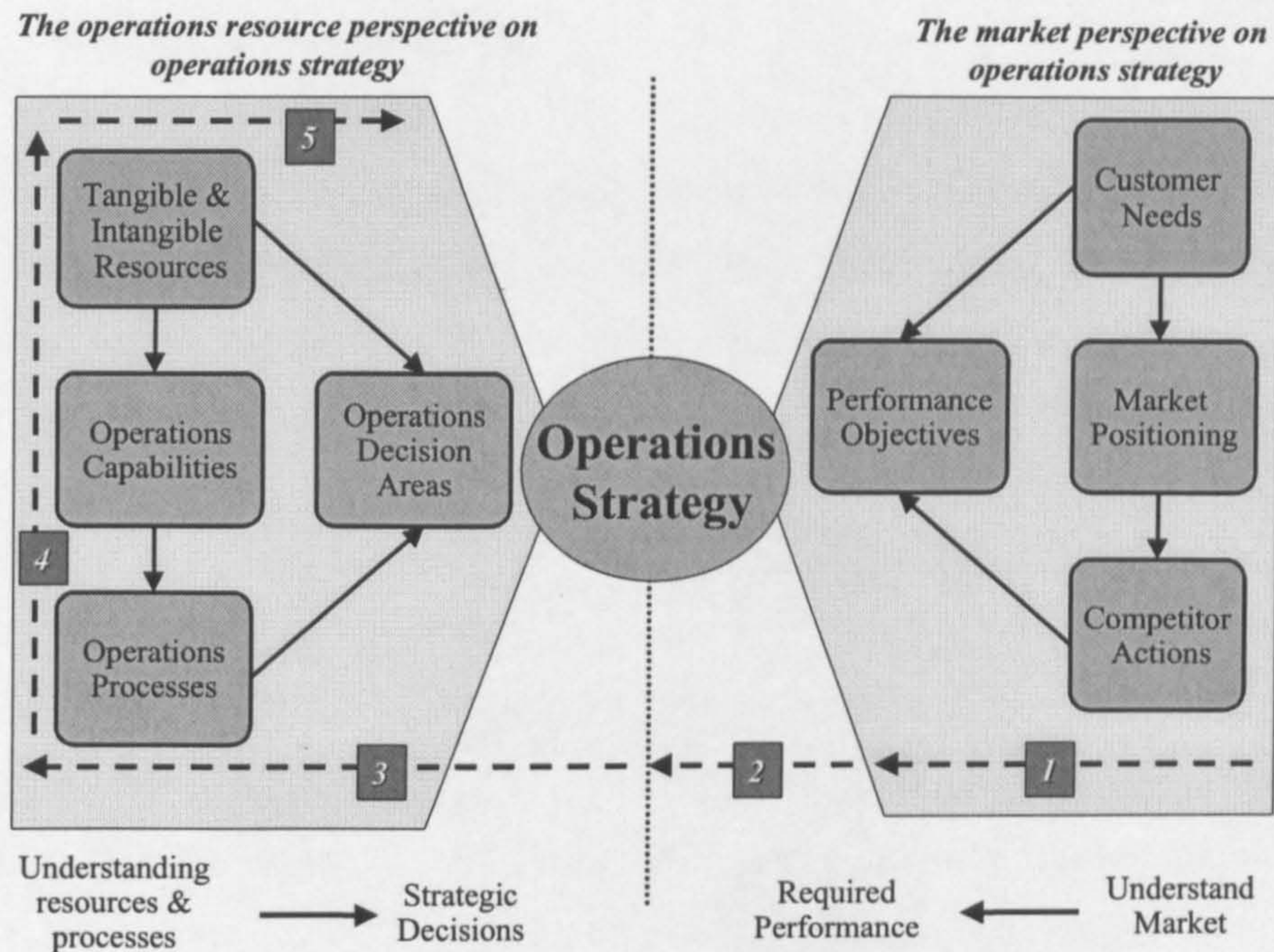


Figure 12.2. Operations Strategy Process (Adopted from Slack, 2001)

Additionally, facilitation of the methodology companies revealed the following research requirements:

- *Strategy Management process (SMP) should be continuous (see Requirement 2 in chapter 2), SMP should provide a closed loop control system (Req.3), SMP should have an event driven trigger mechanism i.e. external monitor (Req. 4). SMP should critically review the company objectives and deploy top-level objectives through all levels (Req.11)*

Having a continuous loop control system helped managers to ensure company's market share and profitability was maintained or improved. This system would allow managers to evaluate effectiveness of the whole process as well as each business unit and each business unit contribution to overall organisational performance (see Appendix E, Stephen Clark case study). Furthermore, this provided managers a means of introducing individual strategic stretch targets for each business unit and the necessity of conducting

a regular or emergency (when something happened in the market e.g. new competitors), review of progress towards these strategies.

Managers need to focus on their market characteristics and tackle their daily problems as well as sustain their market position in the long term. In this sense, the continuation of the PROPHECY process seemed to have helped in contributing to the robustness of the decision to agree on objectives and strategies e.g. Meyer & Burger Ltd. This also aided thinking about different levels of organisation and their interaction with each other.

- *Performance measurement should arise at two levels: External and Internal (Req 14). External performance measurements should provide an input to strategy management process (Req 15), which should integrate internal (e.g. financial, operational) and external (e.g. Customers/ market) performance measurements (Req 16).*

Performance measurements for each level objective developed a new way of visualising the relationship between measurements and objectives as managers felt that it was particularly important to monitor how the company performs. Such an integrated monitoring system highlighted two issues for the managers. Firstly, they provide tangible evidence that the chosen strategy is working. Secondly, using both external and internal measurements tied up with the company's vision. Since the company's objectives not only consider internal objectives e.g. improvement and efficiency, but also take into account other issues e.g. increased market share, sales and so on, which are directly related to external issues.

- *Strategy Management Process (SMP) should focus on business units (Req. 5) which should focus on it's competitive strategy and customer value proposition for each business unit (Req. 6).*

In theory, asking the managers how they compete within different markets was supposed to force them to think about the purpose of focusing on different markets in line with customer requirements. Thus enabling them to identify what they were really offering to their customer and how they were adding value to their customers within different market/focus groups. Facilitation of each section to define the company's business units and their value propositions worked very well. Manager who were involved in the project noticed the importance of segmenting the company by encouraging them to think about how they should try to win orders or support other departments (only for Sun Microsystem case).

- *Operations Strategy for each business unit arises at business processes level (Req. 10).*

The fact that the PROPHECY process was clarified to management at the outset of the process definition for each business unit. All managers were continuously encouraged to comment on the strengths and weaknesses of their company's business processes and their contribution to the business objectives. This helped managers to find out their short-term objectives and set out all operational tactics in line with business objectives.

- *SMP should consolidate various business unit strategies taking into account the various conflicts and trade-offs to develop operations strategy (Req. 7). Operations strategy should consolidate various business process strategies taking into account the various conflicts and trade-off for each business unit (Req.12).*

The managers gained benefit in trading-off business unit and business process strategies. After comparing all strategies and objectives, they managed to make clear the priorities between business units' strategies and objectives. This also helped managers to ensure that if the selected business unit/process strategies and objectives are tied up with the company's vision and if they are worthwhile, then it is worth spending time, money and

effort to implement and it was explained how they would add value to the company in general.

12.5. Discussion of Results

After facilitating strategy management process in different companies, the researcher has also found that carrying out the research to this level of detail was a valuable learning process. She believes that she has been able to extend the current boundaries of knowledge through analysing and documenting the facilitation of manufacturing companies' strategies. Therefore, the researcher has gained valuable research skills which are transferable in addition to the new knowledge.

Furthermore, PROPHECY aims not only to assist in synthesising present knowledge but also provides a means of generating knowledge about an organisation. The obvious question to pose at this point is: How practicable and realistic is PROPHECY? The answer came from the managers who used PROPHECY to develop their Strategy. They described PROPHECY as follows:

“Achievable, flexible, measurable, clear and a structured approach” (Alcan Manager).

“Achieves ownership at all levels, maximizes opportunities to involve people” (Managing Director, Stephen Clark Ltd.).

“After taking the PROPHECY process, I am thinking strategy more proactively than before” (Managing Director, Stephen Clark Ltd.).

“Based on sound data, gives confidence to the manager. It helped me to think about company's objectives and strategy very clearly” (Managing Director, Meyer & Burger, Ltd.) .

“Realistic and understandable” (Manager, Applecross Ltd.).

From these statements, it appears that the managers involved believed that the PROPHECY process helped them to clarify their objectives and strategies.

12.6. Conclusions

This thesis emphasises the process based strategy management process. A review of such methods and theories identifies a better understanding of strategy management process. This understanding adopts a business process perspective and extends the design view to embrace the organisation as the unit of analysis, performance measures and strategies.

A PROPHECY process is presented to provide a systematic approach to strategy management process based on business needs and stakeholder requirements. An application process to facilitate the strategy management process is developed and is derived from the research methodology in this thesis. It outlines the data capture, analysis and validation objectives, performance measurements used to develop strategies for the whole level of the organisation.

PROPHECY offers its users the following potential benefits:

- The opportunity for effective multidisciplinary teamwork
- A focus upon the true needs of customers
- Tools that provide insights and may lead to innovative opportunities
- Help managers to focus on company’s markets and its objectives and strategies

With the research limitation in mind it should be concluded that the PROPHECY process has been valid and effective for the case study companies presented in this thesis. Case studies show that every case is different. The process must be adapted to suit the needs of the organisation and the stakeholders’ requirements for which it is intended.

Chapter 13. Conclusions

13.1. Introduction

This chapter summarises the contribution to current knowledge, conclusions emerging from this thesis and concludes with a discussion of the wider applicability of the findings and suggestions for future research.

13.2. Contribution and Novelty

This research makes a contribution to knowledge by *‘developing a better understanding of the effect of a business process based approach to strategy management’*.

More specifically the research has established that:

- a structured prescriptive approach to strategy management (i.e. strategy management process- PROPHECY) makes the strategy emerging from the process auditable (see Chapter 7, page 218)
- PROPHECY process facilitated managers to clearly state their business objectives and strategies (see Chapter 7 page 218, Chapter 9 page 226, Chapter 10 page 230, Chapter 11 page 243)
- Feasibility of chosen strategy could be tested (subjectively) by connecting operations objectives/ strategies / performance measures with business results such as profit and loss account (see Chapter 5 page 190, Chapter 7 page 218)
- The PROPHECY process made review of existing strategies easier and more structured (see Chapter 12 page 247)
- The PROPHECY process helped the management to generate a better understanding of the value adding business units and processes of the company (see Chapter 7, page 218, Chapter 8, page 223)
- the PROPHECY process provided managers with the opportunity to think more pro-actively than they used to and also gave ownership of the selected/adopted strategy (see Chapter 8 page 223, Appendix E- later from Stephen Clark)

- to be effective, a process like PROPHECY should not be used for selected business units, but it should be used for all business units. This allows conflicting and complementary aspect of strategies to be managed more effectively (see Chapter 7, page 219, Chapter 11 page 242)
- in a business that is traditionally organised i.e. departments or which is not used to thinking about its business processes. It may be artificially forcing managers to think about their business process thus failing to promote ownership (see Chapter 8 page 223, Chapter 9 page 226)
- in a business where business units are identified logically and are managed by the same management team, the forced differentiation between business units may appear to be artificial and unnecessary depending on the management mind set (i.e. systems thinking ability) (Chapter 9 page 226)
- it requires data that may not be structured and stored keep in the required format i.e. profit and loss information for each business unit (see Chapter 8 page 222).

In order to reach above, the following additional contributions were also made that

- Developed a set of requirements for a dynamic strategy management process (see Chapter 2)
- Established that available approaches/ frameworks to strategy management do not fulfil all of the requirements by comparing requirements to available approaches (see Chapter 3)
- Proposed a process for a dynamic strategy management process – PROPHECY (see Chapter 5)
- Developed and tested the PROPHECY process which provides the following:
 - Deployment of market requirements to operations (process) simultaneously and continuously (see Chapter
 - Checklist for assessing the potential impact of a strategy
 - Documented four case studies which could be used for future resources

Summarising the discussion in Chapter 12 (section 12.4.2.), the Novelty of the research is that:

- Strategy management process
 - Is dynamic and continuous
 - Is event driven
- Deployment of market requirements to operations (process) simultaneously and continuously
- Implementation of action oriented process/ system at business process level
- Facilitation of multiple entry points

This work will provide a reference point for future work, by collecting and analysing experiences from those manufacturing companies who have tried the Strategy Management Process.

13.3. Conclusions

The research work presented in this thesis resulted in a number of conclusions. These are presented below with specific reference to the relevant chapters.

The foundation of this research was based on the following propositions:

- Strategy Management should be viewed as a key process (Chapter 2)
- Strategy Management Process need to integrate external and internal performance measurements (Chapter 2)
- The strategic objectives need to be systematically deployed down to business processes, rather than functions because business processes generate value for the business (Chapter 3)
- The distillation of the information from the literature provides 23 specific requirements for methodologies designed to understand the feasibility, use and effect of business process based approach to strategy (Chapter 2)

- Although existing approaches, which have been considered according to their scope (e.g. business wide, functional and process), reviewed collectively met all the requirements, individually none of the approaches fulfilled all of these requirements (Chapter 3)
- The PROPHECY process was developed by the researcher in response to the development needs identified. The methodology is assembly of existing knowledge, tools and techniques, some with modifications, together with new developments in the form of new concepts. The PROPHECY process was considered at four stages, Input, Formulation, Implementation and Review (Chapter 5)
- The advantage of the structure is that it provides multiple-entry points for redesign and redevelopment of the organisation strategy (Chapter 5)
- Based on objective (requirements test by design) and subjective (requirements test by management team) assessment, the methodology fulfils all requirements specified in Chapter 2 and therefore is superior to existing methods reviewed in Chapter 3 (Chapters 5, 7)
- Subjective testing of the PROPHECY process through workshops and interviews showed that research could not only make a contribution to the academic literature, but it could also make a practical contribution by encouraging and facilitating discussion and agreement between managers from different departments (Chapter 6)
- For the case study companies, the application of the methodology resulted in considerable help for management to generate a better understanding of the value adding business units and processes of the company as well as development of new strategic decisions and objectives (Chapters 7, 8, 9, 10)
- The results of the case studies carried out show that managers' understanding of improvements were due to the application of the PROPHECY process and not merely due to the Hawthorne effect (Chapters 7,8,9,10)
- The cross case analysis suggests that the processes like the PROPHECY process should be used for whole business units of the organisation in full detail, because of the complementary or conflicting nature of selected business units, strategies/actions do not become clear, until the whole process is applied to the company (Chapter 11)

- For the PROPHECY process to succeed through facilitation, the manager must believe their selected strategies and see the benefits in taking part in the research. Benefits occur from participation, commitment, debate and development of new insights (Chapter 11)
- The research presented in this thesis validates contribution (Chapter 12) in terms of:
 - Requirements specification
 - Development needs
 - The PROPHECY process
 - Experimental results (case studies)
 - Checklist to assess the potential impact of a strategy

13.4. Suggestions for Further Research

The four suggestions for further research described here resulted directly from the limitation of the research and its findings.

Firstly, all the cases examined in this research were conducted either in one department of blue chip or in smaller private companies. Therefore, further research in the process of formulating strategy in blue chip companies, which could give detailed information without being prejudiced, would be of real interest. In addition, further experiments are required to validate the usefulness of the methodology in companies with different characteristics such as non-manufacturing/service organisations, public organisations etc.

Secondly, future work should answer how the selected strategy would work in practice. Although, this research tried to give ownership to the different levels of management in the company to implement selected strategies, it does not answer the following issues:

- How can successful implementation of strategies be ensured?
- How can management be sure that the selected strategies remain valid, and that any discrepancy from schedules are dealt with effectively.

The PROPHECY process has several limitations which were stated in the previous chapter. Further research and development work should be carried out to cover these limitations.

Although this research tried to fulfil dynamic strategic management requirements, the area of strategy management is broad and there are several issues, which need to be addressed. This research has not done control experimental approach because of the time limitation. In this thesis, the business impact has only been estimated for one company. Other three companies would like to keep their profit and loss accounts confidential. Therefore, another interesting issue based on the research would be confrontational of the research findings within three years time to complete a view of how tools can be used and new strategies/objectives impact to business profitability in the long term.

Therefore, it cannot be development of review and learning mechanism, which identifies whether an organisation is learning from its mistakes and how to improve itself.

The PROPHECY process is documented in detail in a workbook format which can be time consuming in its application. A computer web based support tool may be valuable. However, the feasibility and advantages of such a tool need to be researched and if it is beneficial, development should be considered.

13.5. Closing Remarks

This research has tried to demonstrate that Strategy Management Process is more than the long-term deployment of resources and processes. Strategy should focus on creating value that is independent for each business unit. This means developing horizontal strategies that have objectives of co-ordinating business processes and developing objectives that encourage the sharing of resources and skills.

In demonstrating the need for this process to be dynamic, there is an assumption that this should be an operational tool, i.e. something used by management regularly (monthly, weekly or even daily) to manage the performance of their business. This implies that such a system should be simple. At this point of the research it is not yet clear whether this objective has been achieved. Many managers do not have any difficulty in understanding the process, but availability of data in a ready-to-use format seems to be an issue with many SME's. This in turn complicates the implementation of the processes.

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APPENDIX – A STRATEGY QUESTIONNAIRE

Candidate's Details

Name:	Tel:	Fax:	E-mail:
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Company's Details

Name:			
Address:			
Tel:	Fax:		
Position (Please Tick ✓):	Independent	Subsidiary Company	Profit Centre
Core Business:			
Products and Services:			
Markets (Please Tick ✓):	UK	Europe	North America Far East
Scope (Please Tick ✓):	Product Design	Sales and Marketing	Manufacture Distribution
	other (please specify):		

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AIM OF QUESTIONNAIRE 1:

This questionnaire assesses what you think a good business and manufacturing strategy should include.

1. Please try to answer objectively and move rapidly through the questions.
2. Do not use this questionnaire to reflect *your* current approach to strategy formulation.
3. Your answers should reflect what you personally think a good Business and Manufacturing Strategy should include.
4. It should not take you more than 10 minutes to complete this questionnaire.
5. There are 20 questions, please answer them all.
6. Please tick the appropriate boxes.

Thank you for your co-operation.

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A GOOD BUSINESS STRATEGY...

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Don't Know
1. ...Derives from Corporate Strategy which asks 'what business should we be in?'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. ...Derives from Business Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. ...Focuses on the functional activities within each department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. ...Focuses on the Business Processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. ...Focuses on product groups based on manufacturing requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. ...Focuses on competitive criteria from marketing requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. ...Should not consider functional interfaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. ...Deals with the interface between functional units in the enterprise in addition to the functions themselves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. ...Should only be deployed separately within each department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. ...Should focus on maximising the performance of the business processes, e.g. order fulfilment from order receipt through manufacturing to delivery to customer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. ...Is partially determined by all the different decisions of each department manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. ...Is a consolidation of strategies to fulfil competitive requirements of each specific market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. ...Should apply a management led top-down approach within each department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A GOOD MANUFACTURING STRATEGY...

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Don't Know
14. ...Should extend beyond the functional boundaries of the manufacturing function to include supply and distribution chains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. ...Should be limited to boundaries of the manufacturing function	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. ...Focuses on manufacturing requirements of the products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. ...Involves problem solving and improvement should be limited to functional boundaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. ...Involves problem solving and improvement which should cross functional boundaries and focus on business processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

GENERAL....

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Don't Know
19. Business processes identify the principal chains within the manufacturing company that begins and ends with its customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. EFQM and European Quality Model for business excellence is playing an important role in the strategy formulation process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



APPENDIX B

AIM OF QUESTIONNAIRE 2:

This questionnaire assesses how effective your current strategy is, and how this effectiveness could be improved by developing a new strategy.

1. Please try to answer objectively and move rapidly through the questions.
- 2: The left side of the questionnaire requires responses relating to your company's current strategy The right relates to desired strategy.
3. Please provide responses from both the right and left columns.
4. It should not take you more than 20 minutes to complete this questionnaire.
5. There are 35 questions, please answer them all.

Thank you for your co-operation.

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	Does Our Current Strategy Achieve This?			A Good Strategy...	Desired Strategy		
	Yes	No	Uncertain		Would like to improve	Would not like to improve	Unsure
1.				...Eliminates or minimises weaknesses of the organisation			
2.				...Uses strengths to exploit opportunities			
3.				...Minimises vulnerability to threats			
4.				...Is considered successful according to results			
5.				...Is considered successful if it results in an accurate and comprehensive document			
6.				...Is considered successful adapts to changes in the process			
7.				...Should be easy to understand, but also detailed and effective as well as flexible			
8.				...Can help managers to develop and improve their skills and abilities within the company			
9.				...Can keep pace with changes in the world, such as market, technological changes,... so on			
10.				...Can operate within the companies financial constraints			



	Does Our Current Strategy Achieve This?			A Good Strategy...	Desired Strategy		
	Yes	No	Uncertain		Would like to improve	Would not like to improve	Unsure
11.				...Credible within manufacturing as well as business			
12.				...Makes best use of building and equipment and other resources as well as evaluating investment decisions			
13.				...Helps evaluation of the best investment decisions			
14.				...Should provide the company with a competitive advantage			
15.				...Should provide an effective framework for decision- making on a process basis			
16.				...Should achieve business objectives			
17.				...Compares performance with plans and if necessary suggest changes that need to be made			
18.				...Should be researching needs of stakeholders in order to improve stakeholder satisfactions			
19.				...Should consider customer requirements			
20.				...Should also consider competitive position			



	Does Our Current Strategy Achieve This?			A Good Strategy...	Desired Strategy		
	Yes	No	Uncertain		Would like to improve	Would not like to improve	Unsure
21.				...Should also consider best practices			
22.				...Develops improvements internally for customers and externally for suppliers			
23.				...Should satisfy the immediate needs and future desired of the local community, people in the organisations and customers			
24.				Should consider the views of shareholders and people in the organisation			
25.				...Assesses individuals and teams in achieving objectives of the business plan			
26.				...Makes sure that necessary information is available			
27.				...Optimises use of raw materials so as to minimise impact on the environment			
28.				...Considers how the executives and leaders show by example as to inspire, support and promote a culture of total quality management			

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	Does Our Current Strategy Achieve This?			A Good Strategy...	Desired Strategy		
	Yes	No	Uncertain		Would like to improve	Would not like to improve	Unsure
29.				...Ensures that all the critical processes are defined and managed to create people satisfaction, customer satisfaction, and a positive impact on society			
30.				...Deploys its strategic objectives to improve critical processes			
31.				...Ensures that the company maximises the ability of its employees to keep improving business			
32.				...Ensures that all processes are provided with necessary resources to operate efficiently and effectively			
33.				...Ensures that management is committed to visibly provide direction to key processes within the business in order to deliver customer satisfaction as an end result			
34.				...Ensures the level of customer desired satisfaction in products and services			
35.				...Sees business results as a function to give customer satisfaction, a positive impact on society and people satisfaction			

PAGE

NUMBERING

AS ORIGINAL

**APPENDIX C
Covering Letter**



11 May 2000

Dear Sir or Madam,

I am writing to invite you and your company to participate in a research programme on Strategy Management. Your participation in this programme will be free of charge and it will result in the development of a detailed strategy for your business.

The research seeks to further the area of Strategy Management in Small and Medium Size Enterprises. As part of the research we have constructed a procedure, which facilitates small organisations to rapidly review their current position and formulate strategies for the future. The procedure is documented in the form of a 'Workbook'.

The next stage of research requires the pilot study in various companies. To this end, we would be delighted to work with your company and take you through this procedure. This should take approximately no longer than 2 weeks for implementation depending on your level of involvement and availability of information. A typical time scale for implementation and necessary information is attached for your reference.

In return, you will get access to the expertise and experience we have developed in conducting this research over the past three years. You will also get access to the broader expertise in the Centre for Strategic Manufacturing which you may find extremely valuable.

If you have any queries with regarding to my offer please contact me on phone or e-mail (Tel: 0141 548 22 54/ 25 88 e-mail: nuran.acur@strath.ac.uk)

I am looking forward to hearing from you.

Many thanks for your co-operation.

Yours faithfully,

NURAN ACUR

REQUIRED INFORMATION and WORKSHOPS

1. Company Profile
 - Company historical background
 - Scope of Organisation
 - Structure of the organisation
 - Profit & Loss account
2. Introduction

Workshop	Workshop Objectives	Approximately Time Requirements
▪ Mission Statement	Define what are the current issues to the company	2 hours
▪ Business Unit Definition	Define company's market position based on customer requirements	2 hours
▪ Product & Loss Account	Breakdown company P&L Account for each BU	2 hours
▪ Business Objectives	Define Business Objectives against the business performance measures	2 hours
▪ Business Unit Analysis	Analyse Business Unit	2 hours
▪ Current & Past Strategy	Discuss strategy which company currently have and past strategy	2 hours
▪ Business Unit Strategy	Discuss and agree on Business Unit Strategy	2 hours
▪ Business Unit Objectives	Define Business Unit objectives	2 hours
▪ Business Process Analysis	Analyse Business Processes	2 hours
▪ Business Process Strategy	Discuss and agree on Business Process Strategy	2 hours
▪ Company's strategy	Trade-off strategies and decide company's strategy	2 hours

APPENDIX – D MEASUREMENT OF SUCCESS OF COMPANY'S STRATEGY

Candidate's Details

Name:	Tel:	Fax:	E-mail:
Occupation:			

Company's Details

Name:				
Product and Services:				
Positions (Please Tick ✓):	Independent	! Subsidiary Company	! Cost Centre	! Profit Centre
Scope (Please Tick ✓):	! Product Design	! Sales & Marketing	! Manufacture	! Distribution

ORIENTATION QUESTIONNAIRE 1

This questionnaire discovers your own learning style.

1. Please try to answer objectively and rapidly through the questions.
2. Your answers should reflect your personal learning style.
3. It should not take you more than 5 minutes to complete this questionnaire
4. There are 16 questions, please answer them all. Please tick the appropriate boxes.

Thank you for your co-operation.

1.	When studying an unfamiliar subject, I prefer to:	<input type="checkbox"/> gather together a variety of information from several sources <input type="checkbox"/> stick closely to the main theme and master that first of all
2.	I would sooner:	<input type="checkbox"/> know a slight amount about a great many subjects <input type="checkbox"/> become an expert on one or two topics
3.	When studying a book or report, I prefer to:	<input type="checkbox"/> skip ahead and read chapters of special interest out of sequence <input type="checkbox"/> start at beginning and work systematically through to the end
4.	When seeking information from others, I tend to ask questions that require:	<input type="checkbox"/> general responses <input type="checkbox"/> specific answers
5.	When browsing through a library or bookstore, I usually:	<input type="checkbox"/> roam around, looking at books on a variety of topics <input type="checkbox"/> look at books relating to only one or two topics
6.	I am better at remembering:	<input type="checkbox"/> broad principles <input type="checkbox"/> particular facts
7.	When carrying out some task, I like to:	<input type="checkbox"/> have background information not strictly related to the job at hand <input type="checkbox"/> concentrate solely on strict relevant information
8.	When approaching a new subject, I would rather:	<input type="checkbox"/> take an overview of the subject and then fill in details and concepts in my own way <input type="checkbox"/> follow a logical progression of facts from start to finish
9.	If asking for directions to an unfamiliar address, I like to:	<input type="checkbox"/> be told clearly how to get there <input type="checkbox"/> follow a map or diagram
10.	When trying to understand the manual for a new appliance, I usually:	<input type="checkbox"/> read the instructions <input type="checkbox"/> follow the instructions
11.	When reading a technical report, I look first at:	<input type="checkbox"/> the text itself <input type="checkbox"/> diagrams, flow-charts, graphs and pictures
12.	During a discussion on a topic I am interested in, I am most likely to:	<input type="checkbox"/> stand back and listen to what others have to say. <input type="checkbox"/> join in and express my point of view
13.	When listening to a new process being described, I would mainly:	<input type="checkbox"/> attend to what was said <input type="checkbox"/> aid my understanding by creating mental images
14.	When working out a problem, I often:	<input type="checkbox"/> jot down relevant words or phrases <input type="checkbox"/> make doodles and drawings to help picture possible solutions
15.	The phrase I am most likely to use when expressing my understanding of another viewpoint is:	<input type="checkbox"/> I hear what you are saying <input type="checkbox"/> I see what you mean
16.	If I could choose only one of the following, I would sooner study:	<input type="checkbox"/> language <input type="checkbox"/> art

ORIENTATION QUESTIONNAIRE 2

This questionnaire assesses how the company measures the success of their strategy.

1. Please try to answer objectively and rapidly through the questions
2. Your answers should reflect what you personally think successful strategy should include
3. It should not take you more than 10 minutes to complete this questionnaire
4. There are 4 sections, please answer them all
5. Please tick the appropriate boxes

Thank you for your co-operation.

SUCCESS OF THE STRATEGY

		The Strategy Could be Judged a Success If it Facilitates...	Agree	Unsure	Disagree
1. Awareness	1.1. ...development of awareness, not only of the industry in which you operate, but also of competitors	!	!	!	
	1.2. ...self-criticism i.e. strengths, weaknesses, opportunities and threats	!	!	!	
	1.3. ... minimising vulnerability to threats	!	!	!	
	1.4. ...awareness of strengths and opportunities to exploit them	!	!	!	
	1.5. ...awareness of shareholder requirements to improve their satisfaction	!	!	!	
	1.6. ...awareness of key problem areas	!	!	!	
2. Analysis	2.1. ...decision making through effective and adaptive process	!	!	!	
	2.2. ...the maintenance and understanding of changing organisational processes and procedures	!	!	!	
	2.3. ... the use of threats to exploit opportunities	!	!	!	
	2.4. ... change by motivating people	!	!	!	
	2.5. ... understanding of changes in the external environment such as market, technological	!	!	!	
3. Planning	3.1. ... understanding of the strategic priorities of top management	!	!	!	
	3.2. ... adaptation of technology to help strategic change	!	!	!	
	3.3. ... redesign of the goal of the company	!	!	!	
	3.4. ... a shared understanding of strategic objective and priorities for all levels	!	!	!	
	3.5. ... education of all people on the importance of company strategy	!	!	!	
	3.6. ... co-ordination and flow of objectives, measures and actions from high level to low	!	!	!	
	3.7. ... trading-off of strategic choices to optimise business performance	!	!	!	
	3.8. ... development of a good document e.g. accurate, simple to understand	!	!	!	
	3.9. ... development of a clear plan with clear responsibilities	!	!	!	
	3.10. ... development of the detailed plan	!	!	!	
4. Monitoring Co-operation	4.1.effective change management avoiding overlapping and conflicted development	!	!	!	
	4.2. ... achieving a general level of agreement	!	!	!	
	4.3. ...open lines of communications	!	!	!	
	4.4. ... learning from experience	!	!	!	
	4.5. ... Involvement of staff in decision making, taking into account their ideas to let them feel they have a say in their own future	!	!	!	
	4.6. ...initiatives to improve supplier performance	!	!	!	
	4.7. ...confidence that the business is more successful as a result	!	!	!	

Appendix E- Stephen Clark Case Study (Chapter 7)

E.1. Introduction

Nevertheless, a common overall structure has been followed as a general guide to both the collection of information and the drawing up of the cases:

- *Input Stage - Company profile*, with the description of the origin and current situation of the company, its business unit, its competitive environment, and, in fact, all data, which helps to transmit and understand a picture of the company.
- *Formulation Stage - the context* in which Strategy Management- PROPHECY takes place in the company, which should reflect how things were being done before. This part makes less sense in every case study, as in some of them that context was non-existent (e.g. Stephen Clark and Meyer & Burger, which are very traditional companies, have never had written a strategy statement). The PROPHECY interviews and workshops carried out, will form the core of the case study. Nevertheless, the level of detail achieved in this point also varies significantly.
- *Results and validity of PROPHECY* obtained either from the application or from the overall management of objectives and innovation, including both the immediate impact of the activities and the final impact (if known) at the overall level of the competitiveness of the company (the profit and loss account within the next two years, overall business, e.g. sales, market share etc.). Some cases are based on the description of the company at present and the results are not always known (e.g. Meyer & Burger Ltd.).

In any case, although the above-mentioned structure forms the implicit backbone of the cases, each case has made its own adaptation of it.

In this chapter, the first PROPHECY process application to the company will be explained. Then, it will go further by stating how the PROPHECY process has been modified after this application.

E.2. Stephen Clark Ltd.

E.2.1. Input

E.2.1.1. Company Profile

Stephen Clark Fabrications was founded in 1947 and is one of the UK's leading sheet metal and enclosure manufacturers. Located in Scotland, they currently supply products to companies in over 40 countries throughout the world. Stephen Clark offers a complete service from design through to delivery. The company's background is depicted in terms of location, company name, administration, operations and strategy (as illustrated in Figure E.1.)

Product and Service Scope: The company's products and services can be defined as follows:

1. Manufacture of CO₂ Incubators and Provision of Sub-Contract Sheet Metal
2. Fabrications for electrical, instrumentation and other industries in UK
3. Manufacture of post office boxes for export to countries where there is no home delivery service
4. Manufacture of cubicles and enclosures, also storage and distribution of laboratory consumables

Geographical Scope: Company's geographic locations:

1. Manufacture of incubators in Irvine, Scotland
2. Sub-Contract manufacture in Alva, Scotland
3. Distribution of laboratory consumables in Northampton, England

E.2.1.2. Mission

The mission of Stephen Clark is: *'To continue to be the leading provider of high quality products in the life science industry worldwide and electrical instrumentation industry in Scotland'*

Stephen Clark is subscribed to the following principles:

- To provide high quality, attractive design, ability (employee skills) and value for money in a way which confronts changing technology and market conditions
- To encourage our managers, employees and suppliers to use up-to-date technology for production and quality control processes
- To make employees aware of their improvements by providing sales, production and financial information, and also encouraging their participation in suggestion schemes
- To retain, improve and discover new manufacturing resources to be ahead of our competitors

E.2.1.3. Culture

The managers defined what they think Stephen Clark's current culture is and where they want to see their culture as shown in Figure E.2.

Current Culture <i>Change From</i>	Aspects of Culture	Desired Culture <i>Change To</i>
Low <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 High	•The extent to which the organisation is market oriented, giving customers high priority	Low <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 High
Close <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Open	•The Relationships between management and staff, manifested, for example, through communications and participation systems	Close <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Open
Poor <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Committed	•The extent to which people are target oriented and committed to achieving agreed levels of performance	Poor <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 Committed
Isolated <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 Need Understand	•Attitudes towards innovation	Isolated <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 Need Understand
Accepted with reservations <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Accepted	•Attitudes towards costs and cost reduction	Accepted with reservations <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Accepted
High, as a means of survival <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Less loyal but more committed as fortunes improve	•The commitment and loyalty to the organisation felt, and shown by staff	High, as a means of survival <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 Less loyal but more committed as fortunes improve
Cautious <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Improving	•The impact of, and reaction to, technology and technological change and development, including information technology	Cautious <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 Improving

Figure E.2. Stephen Clark's culture

**PAGE
MISSING
IN
ORIGINAL**

LOCATION

Tillicoultry



Alva

+

Cumbernauld

+

Finedon, Northants

-Irvine

• Stephen Clark Fabrication Division based at Alva
 • RS Biotech Division based at Finedon
 • Laboratory Equipment Division based at Irvine

COMPANY NAME

Glenelg metal work Ltd.

Stephen Clark & Glenelg Ltd.

Tobracken Ltd.

Stephen Clark Fabrication Ltd.

Stephen Clark Ltd.

Stephen Clark Fabrication Ltd.

Stephen Clark Ltd.



ADMINISTRATION

3 proprietors + 22 workforce

2 new managers

New managers from RS Services & Research Ltd.

Shareholder was established in the embryo electronics company Abbey Electronic (Scotland) Ltd.

OPERATIONS

• metal frames for greenhouses

+

• An agency for oil fired heating equipment

+

• Animal care equipment
 • ancillary items

+

In new division

• Process and sells various types of absorbent paper, imports and distributes bedding for laboratory

+

In new division

• CO2 Incubator

• Manufacture of CO2 incubators and provision of sub contract Sheet metal fabrication for electrical instrumentation and other indust.
 • Manufacturing of post office boxes
 • Manufacture of cabbies & enclosures, also store and distribution of laboratory consumables

STRATEGY

Product leadership

Wholly owned subsidiary of Torbracken Ltd.
 Join venture with Biotech Consultants and MacLaurin & Dunn (UK) Ltd.

Company acquired 100% shared capital of its English distributor RS Service & Research Ltd.
 • The assets and liabilities of RS Service Ltd. transferred to Stephen Clark Ltd.
 • New Business Unit (RS Biotech)

Product leadership in incubator market

Company organised in to the three division

Product Leadership, Customer intimacy, Compete with Flexibility, Ability, Style, Design

1947

1955

1980

1991

1992

1995



Figure E.1. Stephen Clark History

E.2.1.4. Business Unit Definitions

Business Unit: Business Unit definition consists of five stages, as follows:

1. *Create market group:* Two differentiators (D) and three qualifiers (Q) were used for each customer (Figure E.3.). Those customers with similar competitive criteria are clustered and formed as a market group.
2. *Associate product / product groups with each market group:* Upon creating the market groups, the existing product ranges of the company by different manufacturing type are associated with those markets, and market-product profile is established (Figure E.4.).
3. *Place market group on the complexity and uncertainty matrix:* Each market group is mapped on the complexity and market uncertainty matrix proposed by Puttick (1994), in order to present whether the market group should split up into two or more market groups, or would combine some market groups into one group according to each market group's disagreeable positions (Figure E.5.).
4. *Evaluate market group:* As a result of the evaluation of complexity-uncertainty matrices, managers first consider combining "fabrication" and "repair" due to their similar level of project complexity and high market uncertainty. After thinking precisely, the managers decided that these two market groups, as well as remaining market groups, are not required for further re-grouping, as shown in Figure E.6.
5. *Place product groups on the product-process matrix:* This matrix identified that "fabrication" and "repeat" can be combined into the one market group, as considered in the previous section, because of their similar product volume and process variety. Therefore, "fabrication" and "repair" are considered as one market. This market group was called "fabrication-repeat" (Figure E.7.).

No	Customer	Which of these characteristics would help a customer choose your products over the competition? Please do not spend more than 20% of the score (D), 3 Quality (Q) marks for each customer.											Market Group					
		Quality	Low Cost	Delivery Time	Product Support	Style Design	Flexibility	Flexibility	Customer Support	Customized Product	Innovative Product	Value for Money		Other	Ability			
1	Wayne	Q	Q														1,10,11	1. Fabrications
2	Radyne	D		D														
3	Scottish Power			D	Q												6,7,8,9	2. Enclosures + Cubicles
4	L.E.D.	Q	D	Q	Q												1,4	3. Repeat
5	R.S.B.																	
6	A.B.B.	D	D	Q													2	4. Inter company
7	West coast controls	Q				Q											2	5. Specialist
8	East coast controls	Q				Q												
9	Bemco	Q	D	D														
10	Agrano Ltd.	Q	Q															
11	Smaller customer			Q														

Figure E.3. Competitive Criteria

Product and Product Group	Market Groups				
	Market Group 1	Market Group 2	Market Group 3	Market Group 4	Market Group 5
Fabrications					
Enclosures + Cubicles					
Repeat					
Inter company					
Specialist					
Subcontract Fabrications	✓			✓	✓
Incubator Parts				✓	✓
Dryers	✓				✓
Enclosures Cubicles		✓	✓		✓
Product sorting equipment	✓		✓		✓
Stainless steel parts for laboratories	✓			✓	✓

Figure E.4. Product groups

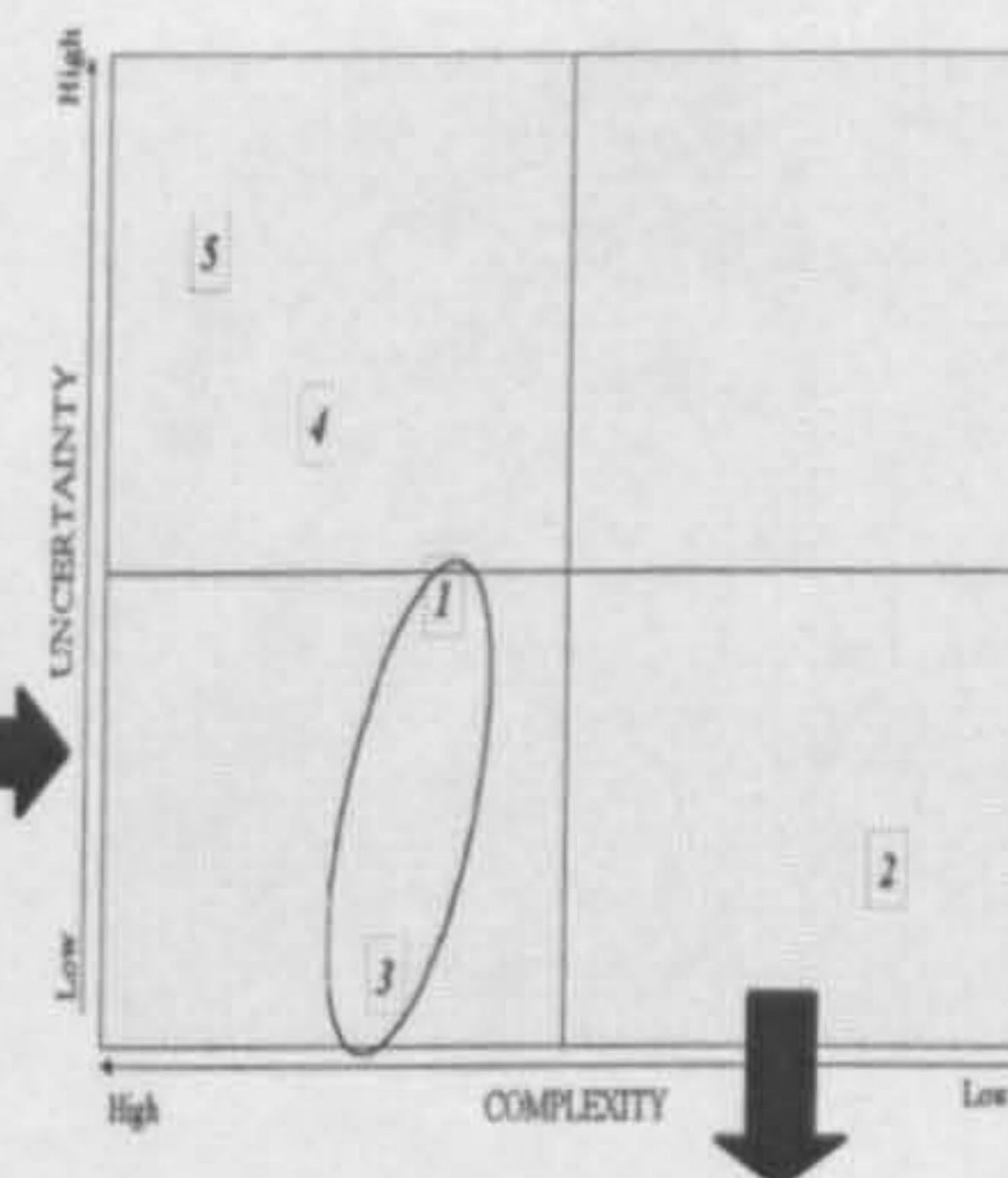


Figure E.5. Complexity uncertainty matrix

BUSINESS UNITS	Competitors Factors	Customers	Product Groups	Sales £ x 1,000
Business Unit 1 Business Unit Name 1. Fabrications Repeat	D- Flexibility D- Ability D- Low Cost Q- Quality Q- Customer Support	Wayne Agrano Ltd. Smaller customer Scottish Power L.E. D.	Subcontract Fabrications Incubator Parts Dryers Product sorting equipment Stainless steel parts for laboratories	320
Business Unit 2 Business Unit Name 2. Enclosures + Cubicles	D- Quality D- Low Cost D- Customer support D- Customized Product Q- Ability	A.B.B. West coast controls East coast controls Bemco	Enclosures Cubicles	380
Business Unit 3 Business Unit Name 3. Inter company	D- Style-Design D- Customer support Q- Delivery time Q- Ability	R.S.B.	Subcontract Fabrications Dryers Stainless steel parts for laboratories	330
Business Unit 4 Business Unit Name 4. Specialist	D- Quality D- Delivery time Q- Customer support Q- Ability	Radyne	Subcontract Fabrications Dryers Enclosures Cubicles Product sorting equipment Stainless steel parts for laboratories	250

Figure E.8. Stephen Clark's Business Unit

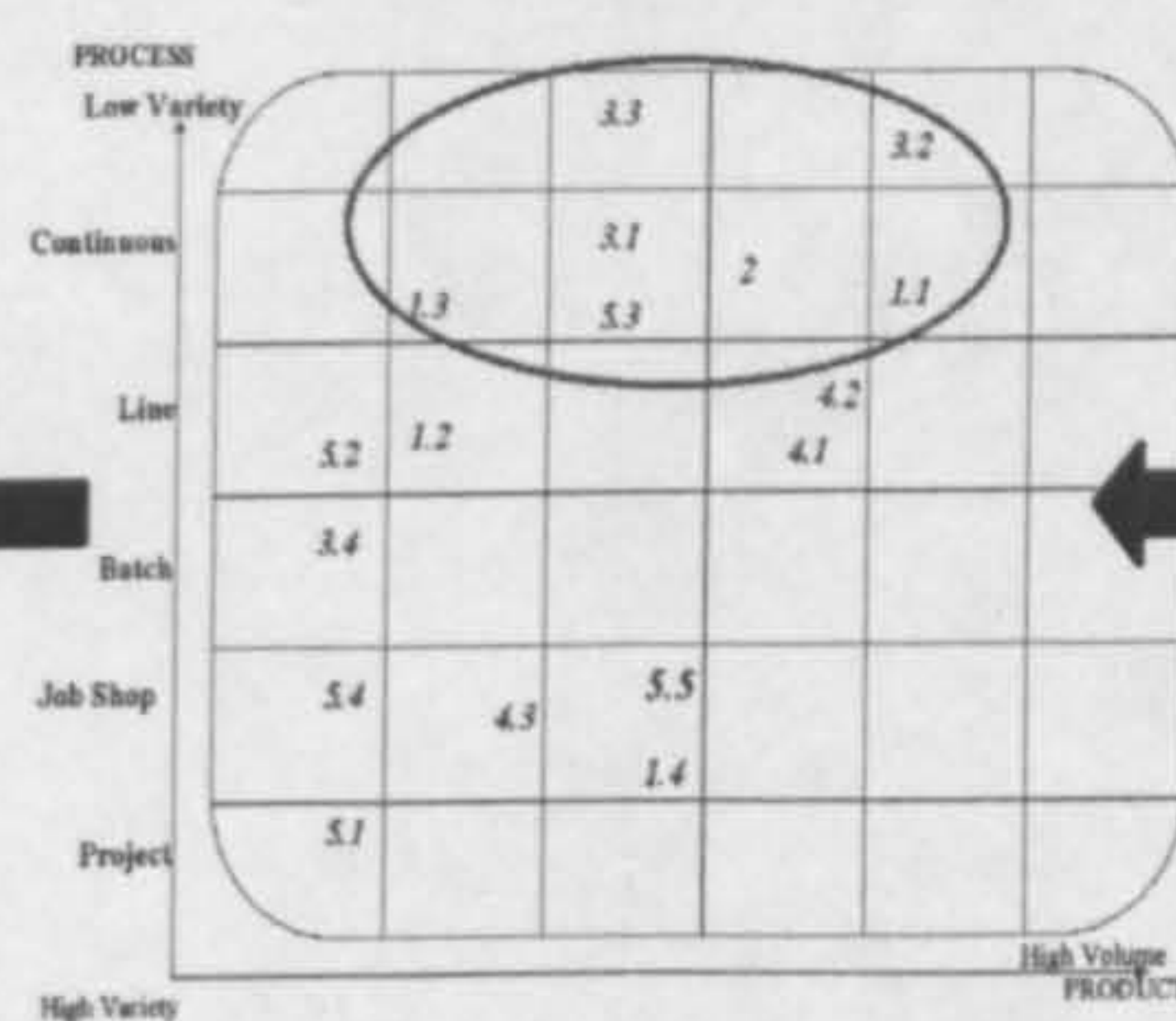


Figure E.7. Product/process matrix

Market Groups	Customers	Product Groups
1. Fabrications	Wayne Agrano Ltd. Smaller customer A.B.B.	Subcontract Fabrications Dryers Product sorting equipment Stainless steel parts for laboratories
2. Enclosures + Cubicles	West coast controls East coast controls Bemco	Enclosures Cubicles
3. Repeat	Scottish Power L.E. D.	Subcontract Fabrications Incubator Parts Enclosures Cubicles Product sorting equipment
4. Inter company	R.S.B.	Subcontract Fabrications Dryers Stainless steel parts for laboratories
5. Specialist	Radyne	Subcontract Fabrications Dryers Enclosures Cubicles Product sorting equipment Stainless steel parts for laboratories

Figure E.6. Market Group Evaluation

With a similar number of products from each product type with similar process variety (i.e. project type production, or job shop), all of those market groups indicate that these groups can be regarded as separate Business Units. Eventually, the following business units are identified for Stephen Clark Ltd., as shown in Figure E.8.

E.2.1.5. Financial Profile

Stephen Clark's financial profile for whole business, Business Unit specific profit and loss accounts, and desired profit and loss account are summarised in Figure E.9., E.10. and E.11.

PART 3. PROFIT & LOSS ACCOUNTS		BUSINESS LEVEL ANALYSIS					
3.1. Profit and Loss Accounts History		£x 1,000					
	Current Year		Current-1		Current-2		
	Month	December	Month	December	Month	December	
	Year	2000	Year	1999	Year	1998	
Sales/ Turnover		4090		3666		3900	
Direct Material Cost and Services Costs		2007		1711		1810	
Cost of Sales		2007		1711		1810	
Gross Profit		2083		1955		2090	
Operating Costs (Variable Costs)							
	Variable %		Variable %		Variable %		
Labour		609		492		683	
Production Overheads		508		556		578	
Variable Total		1117		1048		1271	
Other Expenses (Fix Costs)							
Sales		220		218		141	
Administration & Finance		585		623		676	
Fix Total		1805		841		817	
Profit Before Tax / Profit %		161 %		21 %		50 %	

Figure E.9. Stephen Clark's P&L account

PART 3. PROFIT & LOSS ACCOUNTS		BUSINESS LEVEL ANALYSIS					
3.2. Breakdown Company Profit and Loss Account For Each Business Unit Current Year		£x 1,000					
	Company	Business Units					
		1. Fabrications Repeat	2. Enclosures+ Cubicles	3. Inter Company	4. Specialist		
Sales/ Turnover	1790	320	380	350	250		
Cost of Sales	818	139	172	163	114		
Gross Profit (Sales Added Value)	972	185	208	187	136		
Gross Profit Margin %							
Variable Costs	612	104	128	122	86		
Variable %							
Fix Costs	324	55	68	65	45		
Profit Before Tax							
Profit %	49	8.3	10.29	9.8	6.8		

Figure E.10. Breakdown P&L account

PART 3. PROFIT & LOSS ACCOUNTS		BUSINESS LEVEL ANALYSIS											
3.4. Future Profit and Loss Account For Business		£x 1,000											
	Current Year Month	Current+1 Year				Current+2 Year				Current+3 Year			
		optimistic		Pessimistic		optimistic		Pessimistic		optimistic		Pessimistic	
		%	%	%	%	%	%	%	%	%	%	%	%
Sales/ Turnover	1790		1732		1237		2187		1482		2787		1592
Cost of Sales	818		517		406		636		442		804		472
Gross Profit (Sales Added Value)	972		1220		978		1551		1040		1978		1120
Gross Profit Margin %													
Variable Costs	612		983		849		1196				1378		933
Variable %													
Fix Costs	324		219		223		238				233		218
Profit Before Tax	14		16		96		117		38		343		33
Profit %													

Figure E.11. Stephen Clark's Future P&L account

7.2.1.6. Business Objectives

Stephen Clark's objectives are shown in Figure E.12.

Key Performance Results	Business Objectives	Rank	Measured By..
•Growth	Sales: Grow by 15% annually in real terms (by increasing sales to inter company divisions in particular)	1	Turnover
•Profitability	Improve profitability from % 4 in 3 years •Invest in modern factory using state of the art equipment •New investment 20 % (now ROI=10%)	2	Profit % Spend on capital equipment Profit pro interest / capital spent cumulatively

Figure E.12. Stephen Clark's Objectives

E.2.2. Strategy Formulation

Stephen Clark has four business units. Each business unit and its business processes strategy formulation will be explain separately, as follows:

E.2.2.1. Inter Company

E.2.2.1.1. Inter Company Business Unit Analysis and Value Propositions

Inter Company Business Unit analysis is shown in Figure E.13.

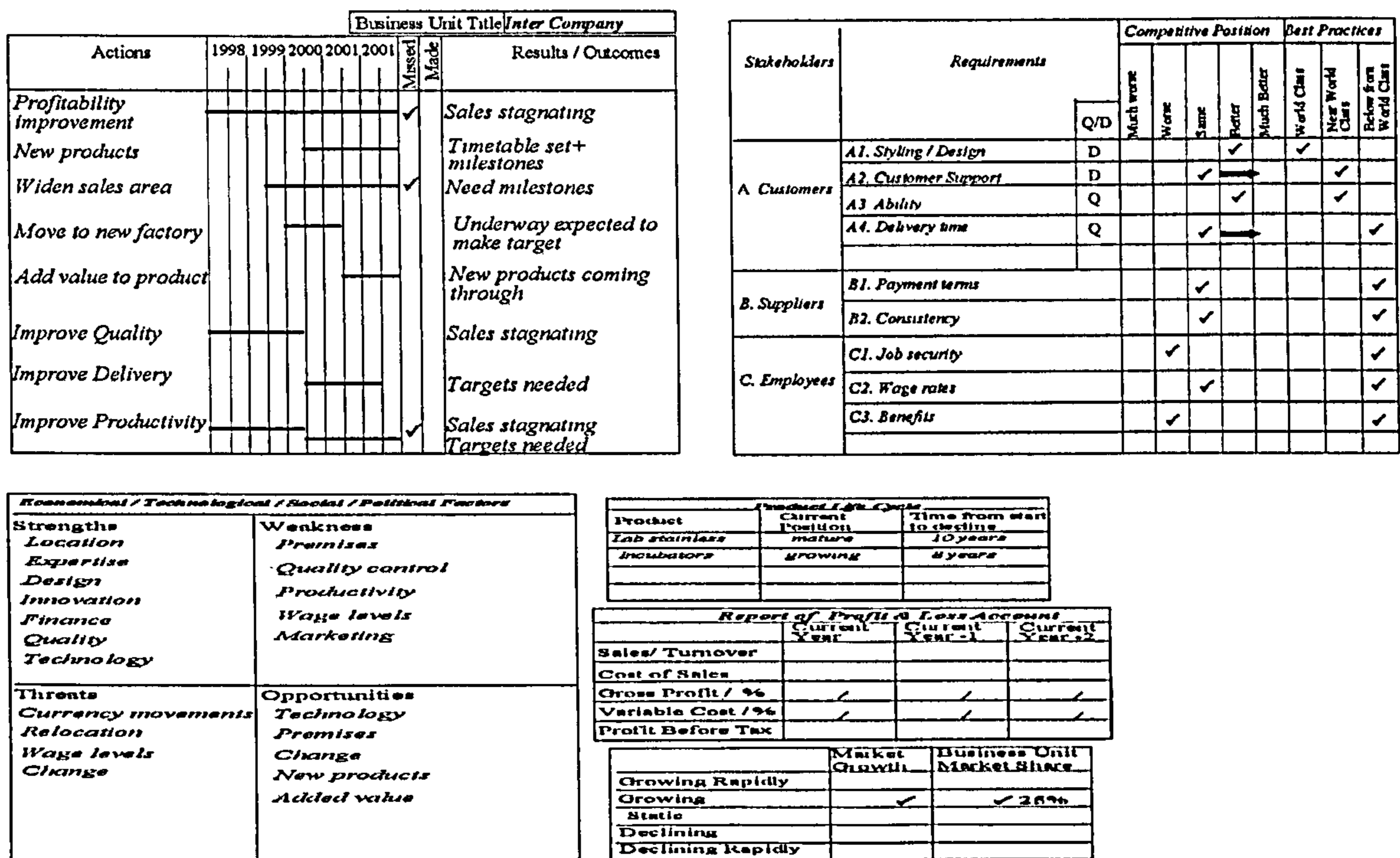


Figure E.13. Inter company business unit analysis

Strategic History: Historically, the Inter Company Business Unit is unsuccessful in dealing with profitability objectives because of currency movement, poor quality control and marketing. Even location, design, innovation and technology are Business Units strengths. Dynamic environment and marketing lead costly product design.

Market and Product Analysis: The Inter Company Business Unit's market is growing; its market share, which is 25 % of the total market, is growing. Although one product (lab stainless) is mature within this Business Unit and its life cycle is 10 years. Another product (incubator) is still growing and has 8 years to decline. With these products, Business Units contribution to the business profit is average.

Competitor and Best Practice Analysis: The differentiators reflected a *product leadership* strategy to reduce time to market Qualifier, to produce new design and style to product and improve customer support by providing skilled people who could customise the product and enhance responsiveness.

Strategic Objectives and Priorities: Contribution to business objectives by growth and margin improvement through product leadership value strategy. It is going to achieve this by:

Product Leadership - introducing new products to existing markets (mainly incubators), by offering improved functionality and by improving customer support.

Discussion and Justification: The Inter Company Unit decided to address explicitly how it provided value to external customers (currently delivery time and customer support the same as competitors). In the past, the manager felt that as long as it offered product design using skilled people, it had delivered desired value to the customers. The value proposition, therefore, had to emphasize "support to customer by skilled people". However, the Inter Company Business Unit now wanted to move beyond a pure design product strategy to a more 'added value' customer relationship that leveraged the value of the technology, expertise and design services it provided. This strategy is to expand revenue, mainly growth, through new products and services. "Innovative new products" and "*functionality*" about markets are components of the new strategy based on product leadership (Table E.1).

Inter Company Objectives	Measured By	Current Performance	Target performance	Constraints
• Develop new incubators product	Number of launched new products	On target	2 per year	People
• Improve functionality	Operating firm where software upgrades	On target	All products upgraded per year	Training
• Improve customer support	Complaints	> 1 week	< 1 month	
• Increase sale of incubators	Incubators sales	390 per year	Growth of >20% per year	

Table E. 1. Inter Company Business Unit performance measures

E.2.2.1.2. Inter Company' s Business Processes Analysis

In summary, the Inter Company “*Product Leadership*” value strategy consists of four overlapping strategic themes (objectives):

1. Introduce new products for incubators
2. Improve functionality
3. Improve customer support
4. Increase sales of incubators (Figure E.14.)

PART 6. ANALYSE BUSINESS PROCESSES							
							Business Unit Title
							3. Inter company
6.1. Define Process Objective Against Each Business Unit Objective							
Business Unit Objectives	Operate Processes				Support Product		
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Finance	Human Resource
• Develop new incubators product	Better market information	Design for manufacture	• Increase flexibility • Flexible management of resource allocation	Provide good warranty service	Upgrade equipment	Fund development	Find development engineer
• Improve functionality (Operations more friendly)	Better market information	Design for manufacture	• Improve manufacturing resource usage	Communicate customer requirements	Upgrade equipment	Fund development	Find development engineer + Training
• Improve customer support	More customer contact	Increase quality	Improve quality	Improve customer contact	Provide customer data		Training
• Increase sale of incubators	Specify new incubators through market research	Develop new designs	• Reduce productivity time • Manufacture more cheaply	Improve customer contact	Market database	Fund development capital	Ensure sufficient trained workforce

Figure E.14. Inter Company Business Unit objectives deployment

Generate Demand: Better market information on customer requirements would maximise new incubator product development's opportunity and improve functionality. One of the most important characteristics to be highlighted in this process would specify new incubators through market research, which would increase sales of incubators. A perfect knowledge of the market, the technology and of the whole industrial environment would manage contacting and gaining more customers (move more than 100 customers to every year more 20% customers), although sales force recruitment is a constraint (Table E.2).

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Better information market	1	Customer requirements	In 5 years	Annually	
• Improve customer contact	3	Delivery time	100 + (current customers)	+20% per year	Sales force recruitment
• Specify new incubator from market research	2	Time or hours per person	< 1 hour per year per person	> 5 hours/year/ person	Training

Table E.2. Generate Demand performance measures

Develop Product: After distinguishing the basic market requirements and needs, the Inter Company requires to identify the design for manufacture that would drive new product development as well as enhanced functionality ((Table E.3.).

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Design for manufacture	1	New designs	1 per year	2 per year	Development engineer
• Increase quality	3	Less rejects internally	> 3 per week	< 1 per week	Training in quality control
• Develop new designs	2	New prototypes for products	2 per year	2 per year	

Table E.3. Develop Product performance measures

Fulfil Order: To launch new incubator products does not just require better market information; it also needs flexible management to allocate resources and augmented flexibility. The focal point for the improvement functionality is to improve manufacturing resource usage that would support in increasing the number of units

produced per week from ten to fifteen. In addition, improving quality creates another asset to broaden the customer support as well as relationship.

Increased capacity, reduced production time would lead to substantial incubator sales enhancement (Table E.4.).

Order Fulfilment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Flexible management in resource application	3	Number of units produced	10 per week	15 per week	New designs and premises
• Improve manufacturing resource usage	4	Number of units produced	10 per week	15 per week	New designs and premises
• Improve quality	2	Number of rejects	> 3 per week	< 1 per week	
• Manufacturing more cheaply	5	Cost of manufacture	44 % of selling price	> 40% of selling price	Management availability
• Increase capacity	1	Move to bigger premises	Premises to small	Move by 2001	
• Reduce production time	6	Numbers of units produced	10 per week	15 per week	

Table E.4. Order Fulfilment performance measures

Support Process: The success of the Inter Company business unit is believed by the business unit to depend on its close relationship with customers.

The Inter Company's support product process adds value to new incubator product development by providing good warranty service. The Inter Company business unit customers' response to claims and complaints (product support objective) could also affect its customer support improvement as well as incubator sales improvement (Table E.5.)

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Provide good warranty service	2	Warranty claims	10 % of units sold	< 2 % of units sold	Training of operatives
• Improve communication with customer to understand their requirements	1	Upgraded system control	3 per year	All products per year	Development engineer
• Improve customer contact	3	Number of customer contacted	±20 per week	> 25 per week	

Table E.5. Support Product performance measures

IT: In the case of new incubator product development and functionality improvement, it is necessary to upgrade equipment. Until then the Inter Company had been using some outdated (i.e. *premises*) methods, which required upgrading in order to have a fully equipped workforce. The Inter company's IT plan focuses on capturing and sharing knowledge of the market, including knowledge management of the both customer and market databases to be able to increase incubators sales and support the customers (Table E.6.).

IT Objectives	Measured By	Current Performance	Target performance	Constraints
• Upgrade equipment manufacture	Purchases of new products	Very low	All workforce fully equipped	Move to new premises
• Provide customer data	Customer calls	≈20 per week	> 25 per week	
• Set up market database	Establishment of database		Up running by end 20001	Training & new person

Table E.6. IT performance measures

Finance: Fund development for the Inter Company business unit became the enablers for helping them to launch a new product, improving functionality and also increasing incubators sales (Table E.7.).

Finance Objectives	Measured By	Current Performance	Target performance	Constraints
• Fund development	Funds available for new product	Very low	All workforce fully equipped	Grant applications
• Fund working capital	Funding supporting the training	Fully funded	Fully funded	

Table E.7. Finance performance measures

HRM: The launch of new incubator products requires three employees (currently two) with development knowledge concerning the market information and the design, which are of importance for manufacturing (Table E.8.).

HRM Objectives	Measured By	Current Performance	Target performance	Constraints
• Employ engineere	Developed engineering employed	2	3	
• Train development engineers	Development engineering trained	2	3	
• Train customer support	Fewer complaints	> 3 week	< 1 week	

Table E.8. HRM performance measures

The Inter Company process action plan can be shown in the following Tables, E.9. and E.10.

PAGE

NUMBERING

AS ORIGINAL

E.2.2.1.3. Inter Company's Business Processes Action Plan

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit Title: 3. Inter Company											
6.4. Establish Business Processes ... General Demand ... Strategy		2001			2002			Cost Estimate £	Man-Days	Priority High Medium Low	Business Process Recommended Action	Ownt	
		Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02						Q3/02
Structural	Obtain better market information												
	1.1 Improving demand forecasting											SD	
	1.2 Anticipating customer's design requirements when developing new products											SD	
	3... range												
	2.1 Quarterly get meeting with customer to understand their requirements												
	2.2 Using information from customer, contact and market information												
	3. More customer contact												
	3.1 Specify new incubators through market research												

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit Title: 3. Inter company											
6.4. Establish Business Processes ... Order Fulfillment ... Strategy		2001			2002			Cost Estimate £	Man-Days	Priority High Medium Low	Business Process Recommended Action	Ownt	
		Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02						Q3/02
Infrastructure	Increase flexibility											GM	
	3.1 Flexible management in resource application												
	3.2 Increasing decentralised decision making												
	3.3 Improving employee education for independence of action												
	4. Reduction backlogs											GM	
	4.1 Increase frequency of feedback of forecasts, backlogs etc. into plan												
	4.2 Use of appropriate priority rules												
	5. Improve quality											GM	
	5.1 Developing team work												
	5.2 Reducing production lead time												

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit Title: 3. Inter Company											
6.4. Establish Business Processes ... Develop Product ... Strategy		2001			2002			Cost Estimate £	Man-Days	Priority High Medium Low	Business Process Recommended Action	Ownt	
		Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02						Q3/02
Structural	Design for manufacture											GM	
	1.1 by improving manufacturing complexity and new designs												
	1.2 setting up a programme for continuous innovation											GM	
	Infrastructure											GM	
	3. Offer new products developed in house by introducing prototypes for each product												
	3.1 Identifying gaps in the existing product range												
	3.2 Using information from customer contact and market information												
	3.3 Improve quality												
	3.1 waste reduction measures throughout the facility											GM	
	3.2 educating the workforce in the location of total quality											GM	

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit Title: 3. Inter company											
6.4. Establish Business Processes ... Order Fulfillment ... Strategy		2001			2002			Cost Estimate £	Man-Days	Priority High Medium Low	Business Process Recommended Action	Ownt	
		Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02						Q3/02
Structural	Cellular manufacturing											GM	
	1.1 Reduce production times, set up times, lead times, WIP and finished goods												
	1.2 Identifying the non value activities												
	1.3 Identification and elimination of bottlenecks												
	1.4 Reduce manufacturing cost by improving the quality of the raw materials												
	3. Improve manufacturing resource usage											GM	
	2.1 Introduce formal planning system like MRP-Reducing inventory												
	2.2 Improving scheduling of resources												

Table E.9. Inter company business processes action plan

E.2.2.1.4. Inter Company' s Business Process Objectives Validation

PART 7: STRATEGY IMPLEMENTATION						
7.1. Operate Objectives Validation						
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)
IT Upgrade equipment	Purchases of new products	Very low	All workforce fully equipped	£10K		- £2K Per An.
Provide customer data	Customer calls	20 per week	> 25 per week			
Set up market database	Establishment of database		Up running by end 2001			
Finance Fund development	Funds available for new product	Very low	All workforce fully equipped	£100K	Extra sales 300K per year (see generate demand & development)	+ 60 K
Provide customer data	Customer calls	20 per week	> 25 per week			
Set up market database	Establishment of database		Up running by end 2001			
H.R.M						
Fund development engineering	Development engineering employ	2	3			
Train development engineers	Development training	2	3			
Train customer support	Fewer complaints + rejects	> 3 week	< 1 week	£7K	Long term	- £20K Per An.
Find sufficient workforce them	Additional employees	9	Additional 2 per year			

PART 7: STRATEGY IMPLEMENTATION						
7.1. Operate Objectives Validation						
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)
Generate Demand	Customer enquiries by contract		Quarterly			
Better market information	Delivery time	100+ (current customers)	+20% per year	£10K	15% sales increase	30K
Improve customer contact	Number of incubators per year	< 1 hour per year p/person	> 5 hours/year/person			
Specify new incubator from market research						
Develop Product	New designs	> 2 per year	2 per year			
Design for manufacture	Less rejects internally	> 3 per week	< 1 per week	£28K	100 K extra sales	20K
Improve quality	New prototypes for products	2 per year	2 per year			
Develop new designs						

PART 7: STRATEGY IMPLEMENTATION						
7.1. Operate Objectives Validation						
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)
Order Fulfillment	Number of units produced	10 per week	15 per week			
Flexible management in resource application	Number of units produced	10 per week	15 per week			
Improve manufacturing resource usage	Number of rejects	> 3 per week	< 1 per week	£9K	2% cost reduction	£12 K
Improve quality	Cost of manufacture	44% of selling price	> 40% of selling price			
Manufacturing more cheaply	Move to bigger premises	Premises too small	Move by may 2001			
Increase capacity	Number of units produced	10 per week	15 per week			
Reduce production time						
Support Product	Warranty claims	10% of units sold	< 2% of units sold			
Provide good warrant service	Upgraded system control	3 per year	All products per year	£2K	Extra sales 5K per year	£1 K per year
Improve communication with customer to understand their requirements	Number of customer contacted	20 per week	> 25 per week			
Improve customer contact						

Table E.10. Inter company business processes objectives validation

E.2.2.2. Specialist Business Unit

E.2.2.2.1. Specialist Business Unit Analysis and Value Propositions

The Specialist Business Unit analysis is shown in Figure E.15.

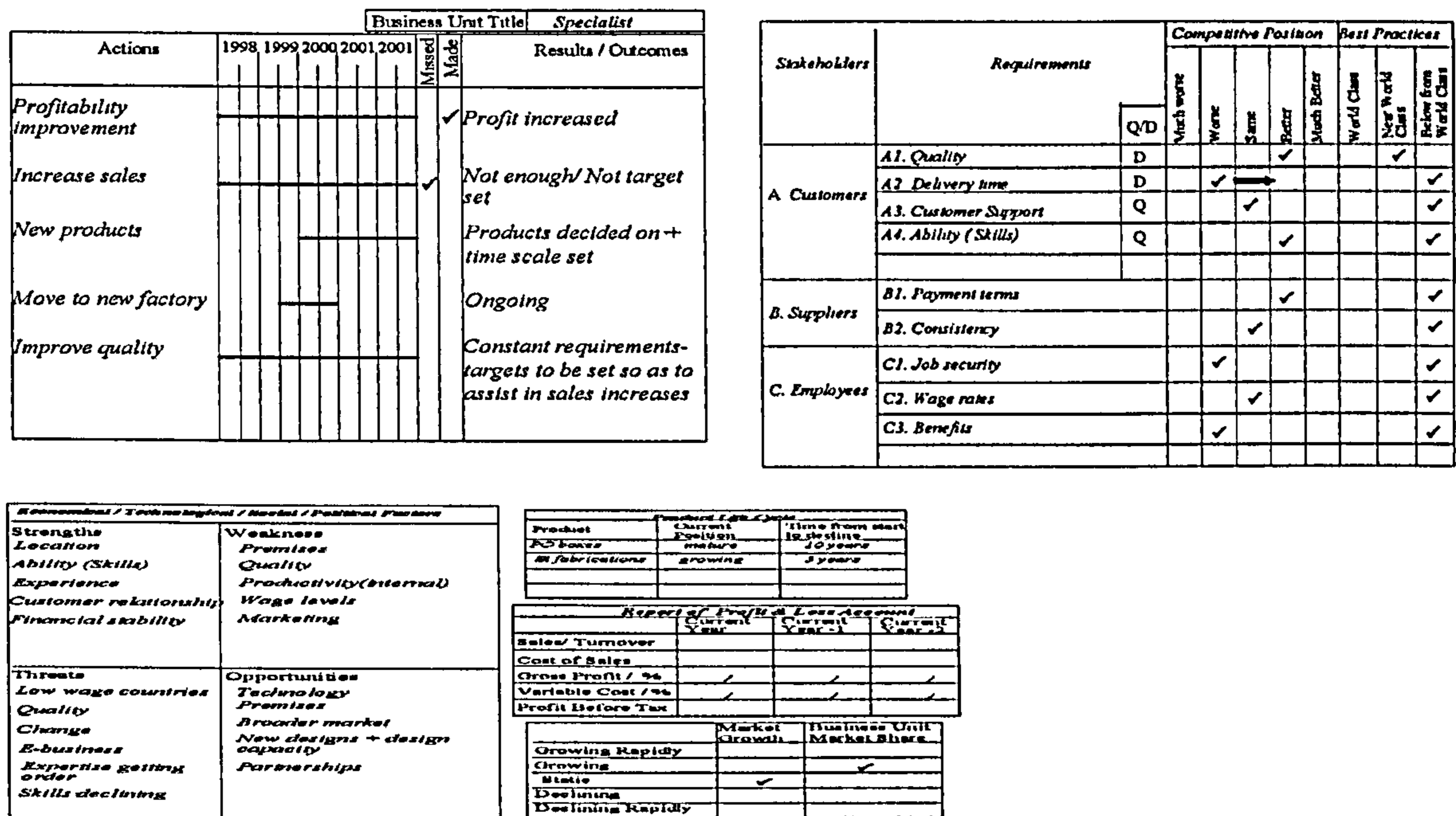


Figure E.15. Specialist business unit analysis

Strategic History: Historically, the Specialist Business Unit strategy has a clear and market focus. This helped the Specialist Business Unit to position itself in the industry and to develop distinctive competencies on which sustained competitive advantages have been built.

Market and Product Analysis: The Specialist Business Unit’s market is static; its market share is growing. Although one product (Post Office boxes) is mature within this Business Unit, its life cycle is 10 years. The other product (incubators) is still growing and has 8 years to decline. With these products, the Business Unit’s contribution to the business profit is high (- 7.5 %).

Competitor and Best Practice Analysis: The differentiators reflected a *product leadership* strategy to reduce time to market, to offer high quality product and improve customer support by providing skilled people who could customise the product and enhance responsiveness.

Strategic Objectives and Priorities: Stephen Clark Ltd. embarked on Specialised Unit strategy to improve its growth performance (high growth contribution to the business) as well as profitability (high contribution) through a strategic theme:

Product Leadership - introducing new products to existing markets at a lower price and improved delivery time

Discussion and Justification: The Specialist Business Unit has distinctive strengths that can be achieved to shape its customers' needs according to its own technological competencies and strategies, by means of a partnership (opportunities). This is important since the customers do not always know what they may need in the future. The Specialist is technology based with high-level specialized knowledge, but unlike some other small businesses it is not primarily trading the knowledge. Therefore, their skills are becoming threats for them. To explore their broader market opportunities, the Specialist should take actions (e.g. market research), including all customers' requirements into the development of new product to avoid niche solutions and dependencies (Table E.11)

Specialist Objectives	Measured By	Current Performance	Target performance	Constraints
• Introduce new products	New products	0	5 products within a 6 months period	Time
• Reduce price by reducing cost	<ul style="list-style-type: none"> • Unit selling price • Production cost 	1.5 1	1.4 0.9	New products
• Improve delivery time	OTIF	<75%	>95%	
• Increase capacity	Unit production per year	45 units	90 units	Time 3 years

Table E.11. Specialist business unit performance measures

E.2.2.2.2. Specialist's Business Processes Analyses Business Processes

In summary, the Specialist "Product Leadership" value strategy consists of five overlapping strategic themes (objectives) (Figure E.16):

1. Introduce new products
2. Reduce price by reducing cost
3. Improve delivery time
4. Improve capacity (future term objective)

Business Unit Objectives	Operate Processes				Support Product			
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Engineering	Finance	Human Resource
1. Introduce new products	Improve partnership	Speed up prototyping	Increase capacity availability		Design ideas	Improve skills+ imagination and expertise	Tooling & prototype costs	
2. Reduce price by reducing cost	Economies of scales	Re-engineering products to reduce parts-time	Increase flexibility and speed	Increase adequate material supplies (stock levels)	Increase accurate information	Good work instruction	Stock finance	Training
3. Improve delivery time	Improve customer confidence	Quick adaptation of design to market	Increase flexibility and speed	Increase inventory levels	Increase accurate information	Good work instruction	Stock finance	Training
4.								
5. Increase capacity (Future term)	Improve demand forecast accuracy		Increase labour, parts & machine availability	Increase adequate material supplies (stock levels)	Increase accurate information	Good work instruction	Finance for machines + increase capacity	

Figure E.16. Specialist business unit objectives deployment

Generate Demand: The nature of development of the Specialist products and activities, demanded by their markets, forced them to provide a larger supply of CAD products and services and which, in turn, forced to improve demand forecast accuracy.

With the increase in economies of scales and the improvement in delivery time which could augment the opportunities for growth and the strength relationships between the customer and the company. Possible accompaniment conflicts between the company and its customer disappear, establishing a strong co-operation (partnership) in its place. This co-operation manages multidisciplinary involvement in the process at all stages, right

from the assessment process leading to conceptual design and development of the products, as well as improving customer confidence (Table E.12).

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve partnership	1	Improve partnerships	10%	50%	Travel time
• Economics of scales	4	Volumes of orders	45 Units	90 Units	New products
• Improve customer confidence	2	On delivery time	<80 %	100%	
• Improve demand forecast accuracy	3	Potential / actual orders	Work done	2 years forward	Market information

Table E.12. Generate demand performance measures

Product Development: The fact of being a specialist in an advanced technological business unit has led the Specialist Business Unit to concrete its product development in one more explicit technological strategy, developed around three basic vectors:

- Rapid prototyping
- Re-engineering products to reduce parts complexity and time taken for product development
- The quick adaptation of design to market.

The problem arises from current deliveries and lack of drive. It is in this context where a business unit is able to carry out developments directly linked with the needs of the market and use a good CAD system, including 3D design facility.

Two types of developments exist in the Specialist Business Unit. One is the development of a completely new product, based on a specific customer demand, and the other is the augmentation (enhancement) of new products. Re-engineering products deliver substantial financial benefits from cost reduction and enhanced productivity. This theme emphasis reduces the Bill of Material parts from 30 to 25, which would

produce efficiency in quick adaptation of design to market and also in better delivery time (Table E.13).

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Rapid prototyping (each products should at least 2 prototypes)	1	Time taken	Too long	2 weeks	
• Re-engineering products to reduce parts –time	3	Number of new products	0	5 products	
• Quick adaptation of design to market	2	Reduce BOM	30 parts	25 parts	

Table E.13. Develop product performance measures

Order Fulfilment: Creating a customer based business unit is almost dedicated to overseas customers, with their own range of products, in terms of more flexible, as well as rapid product. A situation has been created with sufficient capacity to think about conquering new markets and products.

Increasing products, market and technological capacities respond to the logic of the process creation of a new product development. These objectives in the long term (3 years) are to augment (increase) work scheduling from $\pm 90\%$ to $\pm 95\%$, although currently there is a lack of incentive system and also lack of investment objectives (Table E.14.).

Order Fulfilment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Increase capacity availability	2	Work scheduling	$\pm 90\%$	± 95	People
• Increase flexibility and speed	3	Throughput time	3 weeks	1 week	Training
• Increase labour, parts & machine availability	1	Throughput time	3 weeks	1 week	Training

Table E.14. Order Fulfilment process performance measures

Product Support: Specialist products would value its research capacity very highly but with a practical twist due to the product support process tactics. By improving inventory levels for finished goods, the Specialist Business unit could reduce its won cost and

increase its capacity. The next task (understanding) in capacity improvement would come from increasing material stocks in terms of critical stocks level information to create, in the future, automated levels establishment. Furthermore, material supply improvement would deliver substantial financial benefits from cost reduction and reduction in delays during the production (currently more than 5 weeks). As a result, it could start to improve delivery time (Table E.15).

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Increase inventory levels for finished goods	2	Units ready for delivery	0	10	Finance
• Improve material supplies	3	Delays in production	>5 weeks	0	
• Increase material stocks	1	Critical stocks level	No of order levels	Established automated levels	

Table E.15. Support product performance measures

IT: The accurate information of the needs of the machine, design ideas and the capacity in the area is a clear help in the definition of new products (Table E.16.).

IT Objectives	Measured By	Current Performance	Target performance	Constraints
• Design ideas	Prototypes	0	10 (5 products x)	Finance
• Accurate work information	Rework levels	>5	0	

Table E.16. IT performance measures

Finance: As the company introduces new products, the higher demand in terms of funding was coming from the new product development costs. The specialist business unit faces investment in tooling and prototyping from less than £5K per year (currently) to more than £15K per year (in the future). To increase capacity, the business unit also needs to invest in £20000 < money < £ 50000 their mutineers and capacity. Discussions on new initiatives, skill development of existing personnel are tied back to such actions, would contributed to accomplishing the strategic issues (Table E.17.).

Finance Objectives	Measured By	Current Performance	Target performance	Constraints
• Tooling and prototyping costs	£ spend	< £5 K PA	> £15 K PA	
• Stock / stores finance	Rework levels	>5	0	
• Finance for machines & increase capacity	£ spend	Nil	£20 000 <£ < £ 50 000	

Table E.17. Finance performance measures

Engineering: The people perspective is critical to the Specialist business unit to be a customer-focused section. Therefore, engineering process strategy would require having a clear work instruction to reduce rework levels from 5% to 0%. Introducing innovative product requires improved skills and innovation in producing at least two prototypes for each product (Table E.18.).

Engineering Objectives	Measured By	Current Performance	Target performance	Constraints
• Skills + imagination	Prototypes	0	10	
• Good work instruction	Rework levels	>5	0	

Table E.18. Engineering performance measures

HRM: Employees are encouraged to supplement their skills by undergoing training. A number of training programs (e.g. CAD training) are provided in-house to increase employee skills (Table E.19.).

HRM Objectives	Measured By	Current Performance	Target performance	Constraints
• Training	Time spend	<5 hours PA	5 Days PA	

Table E.19. HRM performance measures

The Specialist business processes' action plan is shown in the following Tables, E.20. and E.21.

E.2.2.2.3. Specialist's Business Process Action Plan

PART 6. ANALYSE BUSINESS PROCESSES												Business Unit Title		4. Specialist		
6.4. Establish Business Processes ... <i>Generate Demand</i> ... Strategy																
Business Process <i>Generate Demand</i> Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate £	Application Plan												Owner
				2001			2002			2003						
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Infrastructure																
1. <i>Improve partnership with customers</i>	<input checked="" type="checkbox"/>															SM
1.1 <i>Improve customer confidence</i>	<input checked="" type="checkbox"/>															GM
1.2 <i>Improve delivery time</i>	<input checked="" type="checkbox"/>															SM
2. <i>Economies of scales</i>	<input checked="" type="checkbox"/>															GM
3. <i>By improving demand forecast accuracy</i>	<input checked="" type="checkbox"/>															
3.1 <i>anticipating customer's design requirements when developing new products</i>	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															

PART 6. ANALYSE BUSINESS PROCESSES												Business Unit Title		4. Specialist		
6.4. Establish Business Processes ... <i>Develop Product</i> ... Strategy																
Business Process <i>Develop Product</i> Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate £	Application Plan												Owner
				2001			2002			2003						
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Structural																
1. <i>Increasing time to market</i>	<input checked="" type="checkbox"/>															DC
1.1. <i>% reduction against standard time</i>	<input checked="" type="checkbox"/>		NIL													PC
1.2 <i>speeding up prototyping</i>	<input checked="" type="checkbox"/>															Design
2. <i>re-engineering products reduce parts and time</i>	<input checked="" type="checkbox"/>		NIL													
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															

PART 6. ANALYSE BUSINESS PROCESSES												Business Unit Title		3. Inter-company		
6.4. Establish Business Processes ... <i>Order Fulfillment</i> ... Strategy																
Business Process <i>Order Fulfillment</i> Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate £	Application Plan												Owner
				2001			2002			2003						
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Infrastructure																
3. <i>Increase flexibility</i>	<input checked="" type="checkbox"/>		£0													GM
3.1 <i>Flexible management in resource application</i>	<input checked="" type="checkbox"/>															
3.2 <i>Increasing decentralized decision making improving employee education for independence of action</i>	<input checked="" type="checkbox"/>															
4. <i>Reduction backlogs</i>	<input checked="" type="checkbox"/>		£0													GM
4.1 <i>Increase frequency of feedback of forecasts, backlogs etc into plan</i>	<input checked="" type="checkbox"/>															
4.2 <i>Use of appropriate priority rules</i>	<input checked="" type="checkbox"/>															
5. <i>Improve quality</i>	<input checked="" type="checkbox"/>															
5.1 <i>Developing team work</i>	<input checked="" type="checkbox"/>		£1													GM
5.2 <i>reducing production lead time</i>	<input checked="" type="checkbox"/>															

PART 6. ANALYSE BUSINESS PROCESSES												Business Unit Title		4. Specialist		
6.4. Establish Business Processes ... <i>Support Process</i> ... Strategy																
Business Process <i>Support Process</i> Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate £	Application Plan												Owner
				2001			2002			2003						
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Structural																
1. <i>Better stock planning inventory levels</i>	<input checked="" type="checkbox"/>															GM
1.1 <i>Better demand and production planning</i>	<input checked="" type="checkbox"/>		£5													
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															
	<input checked="" type="checkbox"/>															

Table E.2.1. Specialist's business processes action plan

E.2.2.2.4. Specialist's Business Process Objectives Validation

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		4. Specialist	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
Generate Demand -Improve partnership -Economies of scales -Improve customer confidence -Improve demand forecast accuracy	Improve partnership Volumes of orders On time delivery Potential/ actual orders	10 % 45 units < 80 % Work done	50 % + 90 units 100 % 2 years forward	NII	≅ 10% sales increase	≅ 10K			
Develop Product Rapid (fast) prototyping (each product at least should have 2 prototypes) Re-engineering products to reduce parts-time Quick adaptation of design to market	Time taken No of new products Reduce BOM	Too long 0 30 parts	2 weeks 5 products 25 parts	NII	Speed up new product and services	≅ 5K			

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		4. Specialist	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
Order Fulfillment Increase capacity availability Increase flexibility and speed Increase labour, parts & machine availability	Work scheduling Throughput time Throughput time	1.90 % 3 weeks 3 weeks	1.95 % 1 week 1 week	£250K	Increase sales by 25%	Minimum £25 K per annual			
Support Product Increase inventory levels for finished goods Improve material supplies Increase material stocks	ready Units for delivery Delays in production Critical stock levels	0 > 5 weeks No order levels	10 0 Established automated levels	£5K	Improve customer satisfaction	- £10 K			

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		4. Specialist	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
IT Design ideas Accurate works information	Prototypes Rework levels	0 > 5	10 00	£250K	Speed up throughput	+ £ 2K per annual			
Finance Tooling and prototype costs Stock/stores finance Finance for machines & increase capacity	£ spend Rework levels £ spend	< £5 K PA > 5 NIL	> £15 K PA 00 > £20000 + < 50 000	See above Order fulfillment					
Engineering Skills + imagination Good work instruction	Prototypes Rework levels	0 > 5	10 0		Net quantifiable but positive	?			
HRM Training	Time spend	< 5 hours PA	5 Days PA	£5K	Fewer rejects, Better product	£ 5K per annual			

Table E.22 Specialist's Business Process Objectives Validation

Competitor and Best Practice Analysis: The customer requirements against the company's competitive position and best practice were divided into two components. The basic objectives defined are two outcomes that customers expected - flexibility and skills workforce (ability) at a reasonable cost. The differentiators reflected a *customer intimacy* strategy to partner with the customers by providing skilled people, who could create innovative design and enhance responsiveness, as well as *operational excellence* strategy in terms of low cost.

Strategic Objectives and Priorities:

Stephen Clark Ltd. embarked on a Fabrications-Business Unit strategy to improve its growing performance (low growth contribution to the business) as well as profitability (average contribution) through a strategic theme:

Operational excellence - commanding lower price through responsiveness, flexibility, ability (skills) and by working on the cost base.

Fabrication business unit's objectives and their performance measures are shown in Table E.23

Fabrication Objectives	Measured By	Current Performance	Target performance	Constraints
• Reduce cost	Manufacturing profit	45%	55%	Currently, factory lay out
• Improve reliability of delivery	On time delivery record	89%	100%	
• Improve people flexibility	People trained	Poor	100% people cross trained – capacity improvement	
• Improve skills	<ul style="list-style-type: none"> • Productivity/communication • Sales per production hour 	Better	<ul style="list-style-type: none"> • Minimum once a month • £55 	Management changes

Table E.23. Fabrication business unit performance measures

E.2.2.3.2. Fabrications' Business Processes Analyses Business Processes

In summary, the Fabrication "Operational excellence" value strategy consists of four overlapping strategic themes (objectives):

1. Reduce cost
2. Improve skills
3. Improve flexibility
4. Improve reliability of delivery (Figure E.18.)

Business Unit Objectives	Operate Processes				Support Product		
	Generate Demand	Develop Product	Order Fulfillment	Product Support	IT	Finance	Human Resource
1. Reduce Cost	Reduce price reduction in more sales	New better product + more sales	•Faster through product •Labour time utilization		Better information for manufacture	As necessary limited investment	Training
2. Improve reliability of delivery	Improve customer confidence		•Improve accuracy of work schedule •Improve BOM accuracy •Better customer relationships (JIT)	Increase finished goods availability	Increase accurate information	As necessary limited investment	Training
3. Improve flexibility	Improve employee involvement in product development	Improve employee involvement in product development	Bottleneck elimination	Increase availability of engineering information	Feedback on machine utilization	As necessary limited investment	Training
4. Improve skills	Pressure of employee to trained to meet generate demand	Introduction of better ways of manufacture and more skills	Improve customer involvement+ customer demand driven	Increase understanding of products and customer requirements	Greater use of IT	As necessary limited investment	Training

Figure E.18. Fabrication business unit objectives deployment

Generate Demand: Improvement in delivery time, which could augment the opportunities for the strength relationships between the customer and the company as well as improving customer confidence.

Currently, fabrication business units' products sales prices are 25% higher than the market. Therefore, sales price reduction is essential to satisfy customers. Although the cost of the product is a constraint for the fabrication unit, the sales price would be 5% below the competition.

Employers' communication and participation can only be achieved with the full co-operation of the employees. Workers should view themselves as important contributors and be active as contributors to the overall product development process. Improving employee skills and their involvement in product development is not easy to achieve and it requires the total co-operation of both employees and management pressure on employee to be trained in order to meet 'generate demand process', see Table E.24.

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Reduce sales price	3	Competitor comparison- per year in terms of price	25 % higher	5 % under competition	Cost of product
• Improve customer confidence	1	Delivery time	<85%	100%	
• Employee involvement in product development	2.2	Time or hours per person	< 1 hour year / p person	> 5 Hours/ year/ person	Training
• Employee trainee to meet market demand	2.1.	Productivity-sales per production hour	£41	£55	Training

Table E.24. Generate demand performance measures

Develop Product: Develop product processes sought to exploit the benefits from more complex products by increasing the bill of material average items level from 25 to 35. The manager felt that as long as it offered its commodity product and services at the accurate timely process (JIT) in the industry, it would be delivering the desired confidence to its external customers. This can be measured with delivery on time record.

An essential strength for the new product development process is to improve employee involvement that would support development, both from new flexible products and from acquisition.

Introducing a better way of manufacture, which enables the reduction of internal rejects and rework hours from 150 per month to less than 10 per month. Consequently, employees' skills would be enhanced (Table E.25.).

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• More complex product	4	Bill of materials	Average 25 items	35 items	Customer confidence
• JIT-Increase customer confidence	2	Delivery on time	<85%	100%	
• Employee involvement in product development	3	Hours/ person	< 1hr/ person / year	> 5 hr/ person/year	Training
• Introduce better way of manufacture	1	Internal rejects/ rework hours	Aver. 150 / months	<10 months	Training

Table E.25. Develop product development performance measures

Order Fulfilment: Fabrication business unit consolidates its cost reduction from faster throughput and labour time utilisation, it could start by reducing non-productive hours from 13% to less than 7% per employee. Moreover, bottleneck elimination through decreasing delay and waiting time in manufacturing operations delivers flexibility improvement.

Besides, the focal point for the enhanced reliability of delivery is to improve

- Accuracy of work schedule
- Bill of Material accuracy
- Customer relationships (JIT)

A continuous improvement program for the reliability of delivery, which would be critical to the operational excellence proposition.

The customer perspective is critical to the Fabrication business unit, to be a flexible, customer driven one. The new strategy would require more skilled people to improve skills and flexibilities. The order fulfilment improvement process objective focuses on capturing and sharing knowledge of customers, accompanied by their involvement and

accountability. As a result, the supporting culture increases the creation of involvement and accountability of customers from 10% to 50% (Table E.26.).

Order Fulfilment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve labour time utilization	2	Non productive hours	13% / person	< 7 % per person	Work scheduling
• Improve BOM accuracy	4	No. of mistakes made	Too high	none	
• Bottleneck elimination	3	Waiting time / delay frequency		No delays	Machine scheduling
• Improve customer involvement	5	Customer input	10%	50%	
• Improve accuracy of work scheduling	1	Improve manufacture time	Average 3 weeks	Average 1 weekt	Training

Table E.26. Order fulfilment performance measures

Support Product: The next succession in cost reduction would come from increasing finished goods availability in terms of finished stocks level information. Also, the knowledge gained by engineering about availability profiles enabled them to develop a more flexible workforce. Similarly, information as market and customer about their requirements and their eagerness for the product created another asset to broaden the employee skills (Table E.27.).

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve finish goods availability	3	Finished good stock levels	Low	1 months take	No constraints defined
• Improve availability of engineering information	1	Machine rework	10 months	2 months	No constraints defined
• Improve understanding of product + customer requirements	2	Customer inputs	10%	50%	No constraints defined

Table E.27. Support product performance measures

IT: The next breakthrough in cost reduction, flexibility and delivery reliability improvement would come from using information technology to create efficiencies in operate processes and employee skills enhancement. Therefore, the Fabrication business

unit wants to improve manufacturing and accuracy of work information that would diminish to re-work levels from 10 months to 2 months. Feedback on machine utilisation would enable employee flexibility to measures sales per production hour. The IT process' main objective is to obtain access to the whole of the employees by increasing the number of terminals in the company by six, especially on the shop floor (Table E.28.).

IT Objectives	Measured By	Current Performance	Target performance	Constraints
• Improve manufacturing information	Rework	10 months	2 months	
• Accurate works information	Rework	10 months	2 months	
• Machine utilisation	Sales per production hour	£41	£55	
• Access of IT	Number of terminal		6	

Table E.28. IT performance measures

Finance: Because of the Fabrications business unit's vulnerable position in terms of growth and market share, the manager decided to keep an eye on this business unit (in terms of cost base) by cutting fixed costs and avoiding investments meanwhile. If necessary, some investments should be made (Table E.29).

Finance Objectives	Measured By	Current Performance	Target performance	Constraints
• If necessary some investment	£ spend	≅ £5000 PA	> £15 000 PA	

Table E.29. Finance performance measures

HRM: The people perspective is critical to keep this business unit. The business unit strategy would require people to change their skills and responsibilities.

Training of both skills and the employees to be involved in the production process is the other key issue. The training activities are focused on:

- learning the correct use of the IT
- improving customer support and marketing ability

- maintaining the equipment, in particular how to fix it after its potential breakdowns (Table E.30.)

HRM Objectives	Measured By	Current Performance	Target performance	Constraints
• Skills training	Time spend			
• Customer support training	Time spend			
• IT training	Time spend			
• Marketing training	Time spend			

Table E.30. HRM performance measures

Specialist business processes' action plan are shown in the following Tables, E.31. and E.32.

E.2.2.2.3. Fabrications' Business Processes Action Plan

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit: Fabrication														
6.4. Establish Business Processes ..G.M.R.R.G./D.R.G.G./P.R.G.G. Strategy		Application Plan														
Business Process Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001				2002				2003				Owner
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Generate Demand/Develop Product																
Develop Demand / Infrastructure																
1. Reducing price results in more sales																
2. Improving customer confidence																
3. Improving employee involvement in product development																
2.1 preparing of employee to include in meet generate demand		10														GM
Develop Product / Structure																
1. Introducing new better product			20													
1.1 introducing better way of manufacture and more skills																
3. Improving employee involvement in product development																

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit: Fabrication														
6.4. Establish Business Processes ..D.R.G.G./P.R.G.G./S.R.G.G./P.R.G.G. Strategy		Application Plan														
Business Process Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001				2002				2003				Owner
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Order Fulfillment / Support Product																
Order Fulfillment / Structure																
1.1 Improving BOM (bill of material) accuracy																
1.2 Reduce stock elimination																
2. Labor time utilization																
2.1 Improving accuracy of work schedule																
3. Better customer relationships (BTR)																
3.1 Improving customer involvement																
3.2 customer demand driven																
Support Product / Infrastructure			40													
1. Increasing availability of engineering information																
2. Increasing understanding of product																
3. Product development of equipment																

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit: Fabrication														
6.4. Establish Business Processes ..I.T./F.R.G.G./H.R.M. Strategy		Application Plan														
Business Process Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001				2002				2003				Owner
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
IT / Finance / HRM																
1. better information for manufacture																
1.1 feedback on machine utilization																
1.2 increasing accurate information																
Finance																
b. As necessary limited investment			See other waits													
HRM																
1. introducing / assisting schemes			See other waits													

Table E.31. Fabrications' business processes action plan

PAGE

NUMBERING

AS ORIGINAL

E.2.2.2.4. Fabrications' Business Process Objectives Validation

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		Fabrication	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
Generate Demand and Reduce Sales price	Competition per year in terms of price	25% higher	5% higher competition	£5K	High +100 sales	25			
Improve customer confidence	Delivery time	< 85%	100%		High +40 sales	10			
Employee involvement in product development	Time or hours per person	< 1 hour per year/person	> 5 hours / year/person		Medium				
Employee trained to meet market demand	Productivity - sales per production hour	£41	£55		High	-5			
Develop Product	Bill of Materials	Average 25 items	35 items		Medium	20			
More complex customer confidence	Delivery on time	< 85%	100%		High				
Employee involvement in product development	Hours/person	< 1 hr/person	> 5 hr/person		Medium				
Introduce better way of manufacture	Internal rejects Rework hours	Ave 150 / month	< 10 months		Medium				

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		Fabrication	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
Order Fulfillment	Non productive hours	13% / person	< 7% / person		High	20			
Improve BOM	No. of mistakes made	Too high	none		Medium				
Bottleneck elimination	Waiting time		No delays		Medium				
Improve customer investment	Delay frequency	10%	50% +		Medium				
Improve accuracy of work scheduling	Customer input	Average 3 weeks	Average 1 week		Medium				
Support Product	Finished good stock levels	low	1 months take	5	Medium	1			
Improve finished goods availability	Machine rework	10 months	2 months						
Improve availability of engineering information	Customer input	10%	50%						
Improve understanding of product + customer requirements									

PART 7: STRATEGY IMPLEMENTATION						Business Unit Title		Fabrication	
7.1. Operate Objectives Validation									
Business Process Objectives	Measured By	Current Performance	Target Performance	Cost	Business Impact	Future Profit and Loss Account (C+2)			
IT									
Improve manufacturing information	Rework	10 month	2 month	3	Medium	5			
Accurate works information	Rework levels	10 month	2 month						
Machine utilisation	Sales per production hour	£41	£55						
Access of IT	Number of terminals		6						
Finance				15	Medium				
If necessary some investment	£ spend	+ £ 5000 pa	> £15 K PA						
HRM									
Skills Training -1	Time spend			5	High	5			
Customer support Training-3									
IT Training-2									
Marketing Training-4									

Table E.32. Fabrication's business processes objectives validation

E.2.2.4. Enclosures & Cubicles Business Unit

E.2.2.4.1. Enclosures & Cubicles Business Unit Analysis and Value Propositions

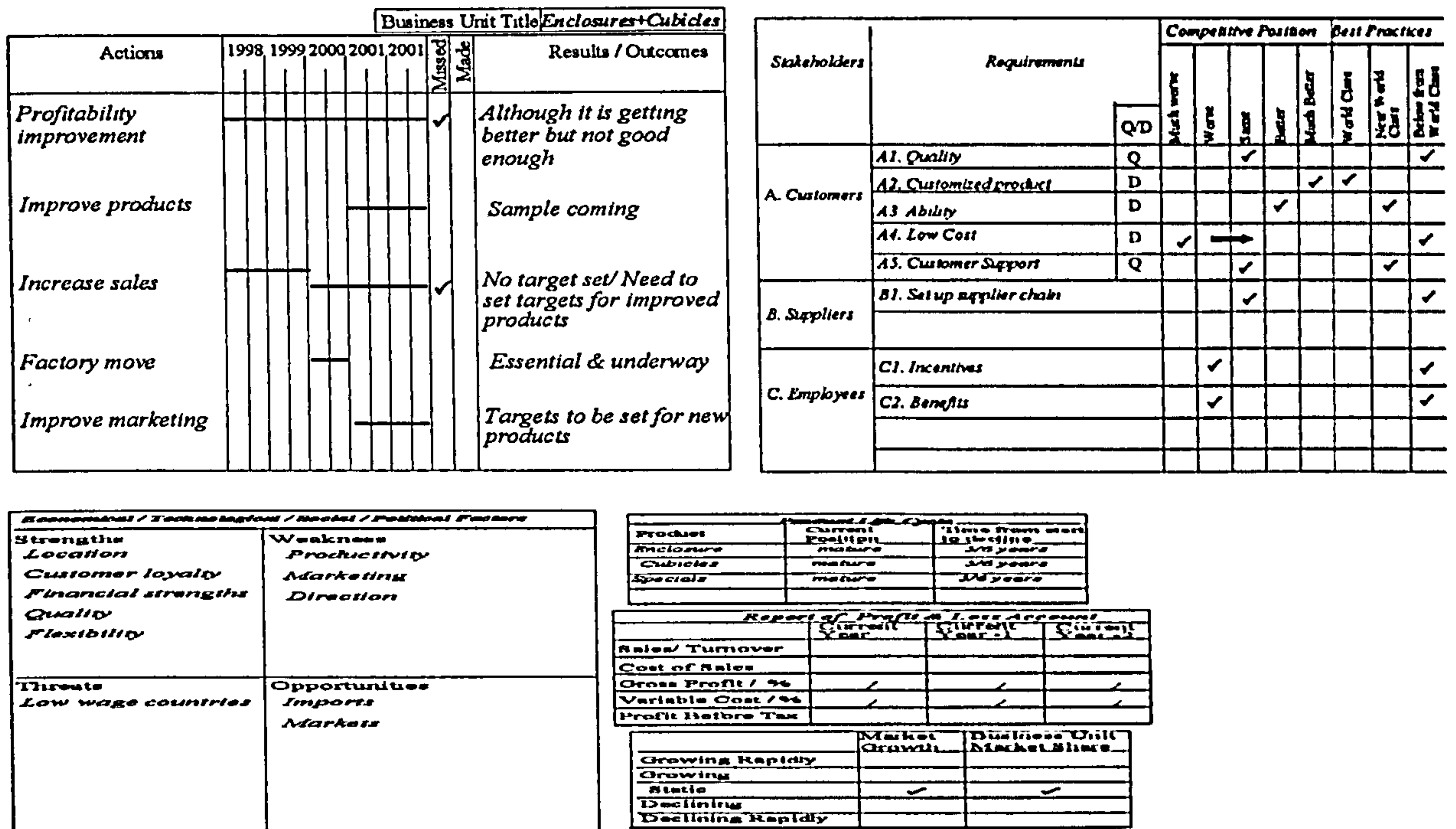


Figure E.19. Enclosures & Cubicles business unit analysis

Strategic History: Historically, the Enclosures and Cubicles Business Unit failed to deal with profitability objectives because of the low wages of people in the same countries, poor productivity and not providing enough volume. Even with enough volume, poor productivity would mean losses. Marketing needs large batches instead of small batches.

Market and Product Analysis: Enclosures and Cubicles Business Unit's market is static, all products within this Business Unit are mature and their life cycle is 5/6 years. Therefore, this Business Unit market share is located in static and its contribution to the whole business is very low (+15 % growth and profit).

Competitor and Best Practice Analysis: The differentiators reflected an *operations excellence* strategy to reduce cost, improve quality (qualifier) and improve customer

support by providing skilled people, who could customise the product and enhance responsiveness.

Strategic Objectives and Priorities: Stephen Clark Ltd. embarked on an Enclosures and Cubicles Unit strategy to improve its growth performance (low growth contribution to the business) as well as profitability (low contribution) through a strategic theme:

Operational excellence- reducing the cost by increasing volume through reducing sales price by outsourcing sub-assemblies.

Discussion and Justification: If Enclosures and Cubicles could align its newly streamlined (re-organised) manufacturing process to set-up reduction techniques, and use additional equipment, the business unit could improve its margin. By re-engineering manufacturing, the business unit could deliver substantial financial benefits from cost reduction and enhanced productivity. This theme supported the idea of setting up a new supply chain that would produce efficiency in supply and distribution. These improvements would enable Enclosures and Cubicles to reduce sales prices, Enclosures and Cubicle's relationships with its suppliers as well as expanding import opportunities.

Enclosures & Cubicles Objectives	Measured By	Current Performance	Target performance	Constraints
Reduce cost	% reduction	0	Reduced by 30%	Time to improve
Reduce sales price	Price competitive index	+ 20-50%	0 %	
Outsource sub-assemblies	Number of sub-assemblies outsource	0	14	Response from source
Improve quality	Internal rejects/ external rejects	15% / 5%	5 % / 0%	Training
Improve customer support	<ul style="list-style-type: none"> • Repeat orders • Number of customer complains 	<ul style="list-style-type: none"> 2 repeat orders 5 customers complains 	<ul style="list-style-type: none"> • 0 lost customer • 0 customer complain 	Time/ training

Table E.32. Enclosures & Cubicles business unit objectives

E.2.2.4.3. Enclosures & Cubicles Business Processes Analyses Business Processes

In summary, the Enclosures and Cubicles “Operational Excellence” value strategy consists of five overlapping strategic themes (objectives):

1. Reduce cost
2. Reduce sales price
3. Outsource sub-assemblies
4. Improve quality
5. Improve customer support (Figure E.20.)

Business Unit Objectives	Operate Processes				Support Processes			
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Finance	Human Resource	
1 Reduce cost	Better market information on customer requirements to maximize standardise opportunities	Design for manufacture, standardization use across of products	Improve communication of customer requirements •Sales order process •same automation •better material utilization		Right int for develop product and shop floor data capture		Training	
2 Reduce sales price								
Outsource sub-assemblies		•Standardization •Identify sources for suppliers, customers •Right cost	•Accountability (make people responsible from their work)					•Training
4 Improve quality			Accountability (make people responsible from their work)					
5 Improve customer support		Customer involvement in product development		Response to claims + complains			Accurate Invoice	•Training

Figure E.20. Enclosures & Cubicles business unit objectives deployment

Generate Demand: The first objective- cost reduction delivers financial benefits from sales price reduction (second objective) and enhanced productivity. This objective highlighted better market information on customer requirements that would maximise standardisation opportunity.

For the customer management issue, the Enclosures and Cubicles could observe that its most satisfied customers, who are involved in product development (product development objective), paid invoices with shorter delays than dissatisfied customers.

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Better market information	1	Not tangible enough			

E.33. Generate Demand performance measures

Develop Product: Cost reduction delivers financial benefits from sales price reduction (second objective) and enhanced productivity. This opportunity would enable Enclosures and Cubicles to design for manufacture through all products.

The third business objective highlights outsourcing sub-assemblies. This objective, in turn, leads to many improvements in product development process.

By developing standardisation, identification of right sources, parts of the product and cost, enclosures and cubicle unit could improve its quality in product development process. These issues are also a requirement of ISO 9000 implementation, which are under progress (Table E.34.).

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Standardization	1	Standardization ratio	?	?	
• Identify the source parts	2	Not decided			
• Customer involvement in product development	3				

Table E.34. Develop Product performance measures

Fulfil Order: As Enclosures and Cubicles consolidates its gain from cost reduction and sales reduction; it starts to improve set-up times, customer information, better material utilisation, as well as some automation. Also, better information from the customer back to the sales and process. The automation enables a reduced lead-time. Currently, costs are increased because there are a lot of small parts that have to be done individually and the staff have to handle everything. If the Enclosures and Cubicles unit could align

automation, the business unit could have better material utilisation through providing materials and sales cost reduction.

The fourth business objective emphasised improvement in quality. The next breakthrough in quality improvement would come from accountability to create experience- efficiencies (weakness) for employees in order fulfilment process. The standardisation, identification of right sources, parts of the product and cost, translated into directly lower costly rework.

For the customer management issue, Enclosures and Cubicles could observe that its most satisfied customers are served by employees who have accountability in production (Table E.35).

Order Fulfilment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve communication with customer	3	Sales order process lead time as % of total lead time	50%	25%	Without increasing the lead-time
• Accountability and training	1.1.	Not decided			
• Methods to support other objectives	1.2.				

Table E.35. Order Fulfilment performance measures

Support Product: unit customers responsible to claims and complaints (product support objective) could also affect its customer support improvement.

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Response to claim and complaints	1	Open to close lead time	Not decided		Time

Table E.36. Support Product performance measures

IT: By obtaining the right kit (equipment required to do the job, e.g. up-to-date staff 3D facility) for product development process and shop floor data capture (IT objective), the enclosures and cubicle unit could reduce both its own cost and sales cost (Table E.37.).

IT Objectives	Measured By	Current Performance	Target performance	Constraints
• Right kit (Equipment required to do the job) for product development		Not decided		
• Right kit for shop floor data capture	Bar-coding system top track job progress			Slow/ inaccurate job projects information

Table E.37. IT performance measures

Finance: The employee training (HRM objective) could also leverage their customer-support experiences, as well as accountability into accurate invoices in finance and better product design for future work for customer concern product (Table E.38.).

Finance Objectives	Measured By	Current Performance	Target performance	Constraints
• Accurate invoices	Invoice accuracy			

Table E.38. Finance performance measures

HRM: As a whole business, the Enclosures and Cubicles Business unit is planning to make significant investments in staff training to ensure that this strategy is executed at the point of better quality, sales order process and customer support. Making employees responsible for their work, in turn, led to many improvements in quality that can be achieved from employee training.

HRM Objectives	Measured By	Current Performance	Target performance	Constraints
• Training in sales order process			100	
• Training in quality			100	
• Training in customer support			100	

Table E.39. HRM performance measures

Stephen Clark decided to combine the Enclosures and Cubicles Business Unit and the Fabrications Business Units. Therefore, the Enclosures and Cubicles' action plan has not been done.

E.2.3. Trade-off

Strategy implementation consists of two stages

- Trade-off and consolidation of business unit's objectives
- Validate chosen strategy

Based on an analysis of each business unit situation and its business processes, several alternative strategies and tactics are available to each business unit as explained below (see Figure E.21.):

Market Growth ↑	High	<i>Build selectively</i>	<i>Invest to build</i> X Inter company	<i>Protect Position</i>
	Medium	<i>Limited expansion or harvest</i>	<i>Selectively / manage for earning</i>	<i>Build selectively</i> X Specialist
	Low	<i>Divest- Milk</i> X Enclosures	<i>Manage for earning</i>	<i>X Fabrications</i> <i>Protect or refocus</i> <i>Keep on eye</i>
		<i>Low</i>	<i>Medium</i>	<i>High</i>
		Business Unit Gain		

Figure E.21. Business Unit Gain/ Business Unit Market Growth

In summary (Figure E.21.), two business units (Inter Company and Specialist) are revealed as the most attractive ones for growth, as their markets are also growing. Moreover, one Enclosures and Cubicles business unit is shown to be in such a dismal position that the worthwhile strategy seems to be withdrawal. Although this business unit seems unattractive, this situation could be resolved by milking Enclosures and Cubicles, because Stephen Clark wants to use this business unit as a learning point to improve other business unit's profitability and efficiency. Finally, the Fabrications

business unit is exposed as the most outstanding one for the business unit's gain, but they have a very vulnerable position in terms of growth and market share. This suggests keeping an eye on this business unit (in terms of cost base) by cutting fixed costs and avoiding investment.

Trade-off Business Unit objectives

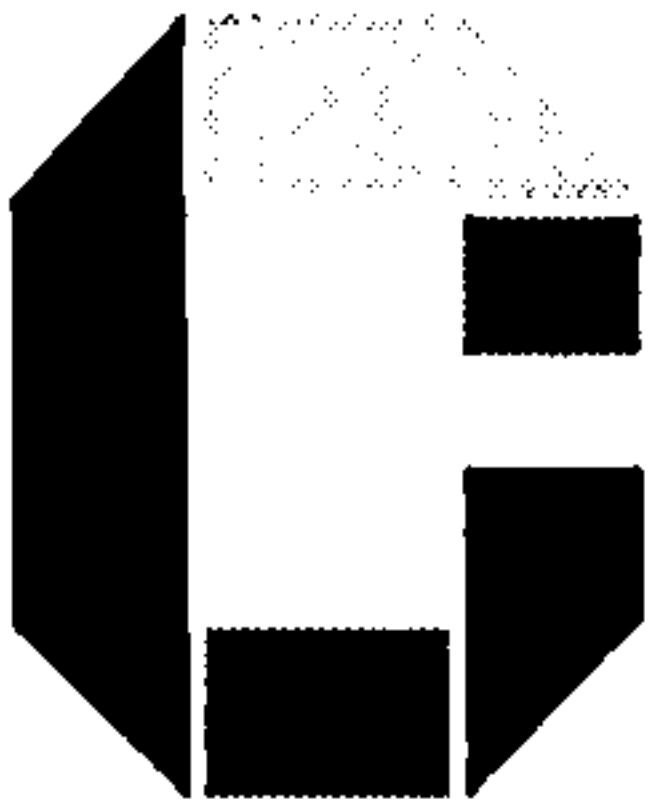
Business Unit objectives need to be made explicit to eliminate or manage them. Therefore, each business objectives are considered against one another to resolve conflicts when possible (Potential conflict: PC, positive relationships: +).

	Business Unit <i>Inter Company</i> Objectives				Business Unit <i>Specialist</i> Objectives				BU <i>Fabrications</i> Objectives				B.U. <i>Enclosures & Cubicles</i> Objectives											
	Develop new incubators product	Improve functional	Improve customer support	Increase sales of incubators	Introduce new products	Reducing price by redu. cost	Improve delivery time	Increase capacity	Reduce cost	Improve delivery reliability	Improve people flexibility	Improve skills	Reduce cost	Reduce sales price	Impr. quality	Outsource sub-assembly	Improve customer support							
Business Unit <i>Inter Company</i> Objectives	Develop new incubators						PC				+	+			+									
	Increase sales of incubators				PC																			
	Improve customer support																+							
	Improve functional						PC	PC		PC					+									
Business Unit <i>Specialist</i> Objectives	Introduce new products																							
	Reducing price by reducing																		+	+				
	Improve delivery time														PC									
	Increase capacity																		PC		+			
Business Unit <i>Fabrications</i> Objectives	Reduce cost																							
	Improve delivery reliability																		+	+	+			
	Improve people flexibility																							
	Improve skills																							

Figure E.22. Trade-off Business Unit objectives

Figure E.22. shows that almost all Enclosure and Cubicles business unit 's objectives have positive relationships with Fabrications objectives. After comparing each business

unit's objectives, Stephen Clark realised that Fabrication and Enclosure and Cubicles business units have similar objectives. This finding suggested that the Fabrication and Enclosures and Cubicle business units should combine into one business unit. When the Fabrications Business Unit actions have taken place, these actions would apply automatically to the Enclosure and Cubicles unit.



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Your Ref:
Our Ref: A5829/EE/MF
Date: 18 April 2001

Dear Nuran

Thank you very much for sending the final report on Stephen Clark's strategy built up by the PROPHECY system which you have been working on for the past year.

The amount of work put into the report is impressive and I look forward to discussing it in detail with my colleagues.

The amount of detail in the report is most impressive but it will take some time for my colleagues to assimilate it. I will feed back to you any reactions that come through to me which may be of assistance to you in the future.

Once again, many congratulations on this amount of work and thank you for the time and effort you have spent on it. Please pass on my gratitude to Umit Bititci for his input as well.

Kind regards.

Yours sincerely

Edward Elworthy

Appendix F- Meyer & Burger Case Study (Chapter 8)

F.1. Introduction

Although a detailed report was prepared for the company, the full the PROPHECY process application has not been included here. Almost all the included stages for PROPHECY, however were necessary. This appendix is structured in three sections as appendix E. It will state input and formulation stage of the PROPHECY process.

F.2. Input

The input stage is concerned with the collection of relevant information to facilitate strategy formulation. Input stages consist of the following:

F.2.1. Company Profile

This section provides general background information about Meyer & Burger Ltd, such as ownership, time of establishment, location and so on. Examining Meyer & Burger's history also enables managers to notice what management teams accomplished to get where it is now. Meyer & Burger was established in 1953 in Switzerland. Products manufactured on M&B machines are in demand wherever maximum precision is at a premium: in communications and computer technology, in the engineering and optical industries, in power generation and space travel.

Managers were asked to define scope as to the choice of products and services offered by Meyer & Burger Ltd. and the customer it wants to serve:

- Product and Service Scope: Company's products and services can be defined as follows: Design, sales, marketing, manufacture and product support
- Geographical Scope: Company's geographic location: Steffisburg, Switzerland
- Main markets: Company's main markets are as follows: 40 % EU, 40% USA, 20

F.2.2.Mission

The mission of Meyer & Burger is: *'To continue to be the leading provider of high precision slicing system to cut hard and brittle material in the high-tech industries'*

Meyer &Burger subscribes to the following principles:

- To provide innovative flair, reliability and unrivalled precision machine, and value for money in a way which confronts changing technology and market conditions
- To encourage our managers, employees and suppliers to use up-to-date technology for production and quality control processes
- To make employees aware of their improvements by providing sales, production and financial information, and also encouraging their participation in suggestion schemes
- To retain, improve and discover new manufacturing slicing systems in cost-effective performance to be ahead of our competitors

F.2.3.Culture

The managers defined what they think Meyer & Burger's current culture is and where they want to see their culture, as shown in Figure F.1.

Current Culture	Aspects of Culture	Desired Culture
Change From Low High	•The extent to which the organisation is market oriented, giving customers high priority	Change To Low High
Close Open		Close Open
Poor Committed	•The Relationships between management and staff, manifested, for example, through communications and participation systems	Poor Committed
Isolated Understood	•The extent to which people are target oriented and committed to achieving agreed levels of performance	Isolated Understood
Accepted with resignation Accepted	•Attitudes towards innovation	Accepted with resignation Accepted
High, as a means of survival Less loyal but more committed as fortunes improve	•Attitudes towards costs and cost reduction	High, as a means of survival Less loyal but more committed as fortunes improve
High, as a means of survival Less loyal but more committed as fortunes improve	•The commitment and loyalty to the organisation felt, and shown, by staff	High, as a means of survival Less loyal but more committed as fortunes improve
Cautious Improving	•The impact of, and reaction to, technology and technological change and development, including information technology	Cautious Improving

Figure F.1. Meyer & Burger's culture

F.2.4. Business Unit Definitions

The objective of defining the business unit is to provide goods and services to its market and generate wealth and fulfil different market requirements. The managers are asked to define the following stages:

- Create market group: In order to create market groups, each customer group is evaluated against the various dimensions of supply competitiveness on which they choose. Two differentiators (D) and three qualifiers (Q) were used for each customer (Table F.1).
- Associate product and product groups through each market group: Upon creating the market groups, the existing product ranges of the company by different manufacturing type, are associated with those markets and market-product profile is established (Figure F.2).
- Place market group on the complexity and uncertainty matrix: Each market group is mapped on the complexity and market uncertainty matrix (Figure F.3).
- Evaluate market group: Market groups are evaluated based on each of the quadrants in the complexity-uncertainty in contact with customers and products
- Place product groups on the product-process matrix: Each product or product group is then placed in the product-process matrix (Hayes and Wheelwright, 1979) for each market group (Figure F.4).
- Define business unit: With a similar number of products from each product type

with similar process variety (i.e. project type production, or job shop) all of those market groups have indicated that these groups can be regarded as separate Business Units. Eventually, the following business units are identified for Meyer & Burger. as shown in Table F.2.

PART 2: BUSINESS UNIT DEFINITION											
2.1. Customer & Market Profile											
Customer	Which of these characteristics would help a customer choose your product over the competitors? Please do not specify more than 3 Differentiator (D), 3 Qualifier (Q) criteria for each customer										
	Quality	Low Cost	Delivery Time	Product Support	Value for Money	Brand	Value for Money	Customer Support	Customised Products	Innovative Products	Market flexibility
Semiconductor					Q			Q			D D
Photovoltaic											Q D D
Quartz					Q						Q
Ceramic					Q						Q
Glass											Q
Magnetic, optic											Q

Table F.1: Competitive Criteria

Products and Product Groups	Market Groups		
	Market Group 1 <i>Semiconductor</i>	Market Group 2 <i>Photovoltaic</i>	Market Group 3 <i>Different new materials</i>
DS260	✓		✓
DS261	✓	✓	✓
DS262		✓	
BS	✓		
ID	✓		✓
OD			✓

Figure F.2: Product Groups

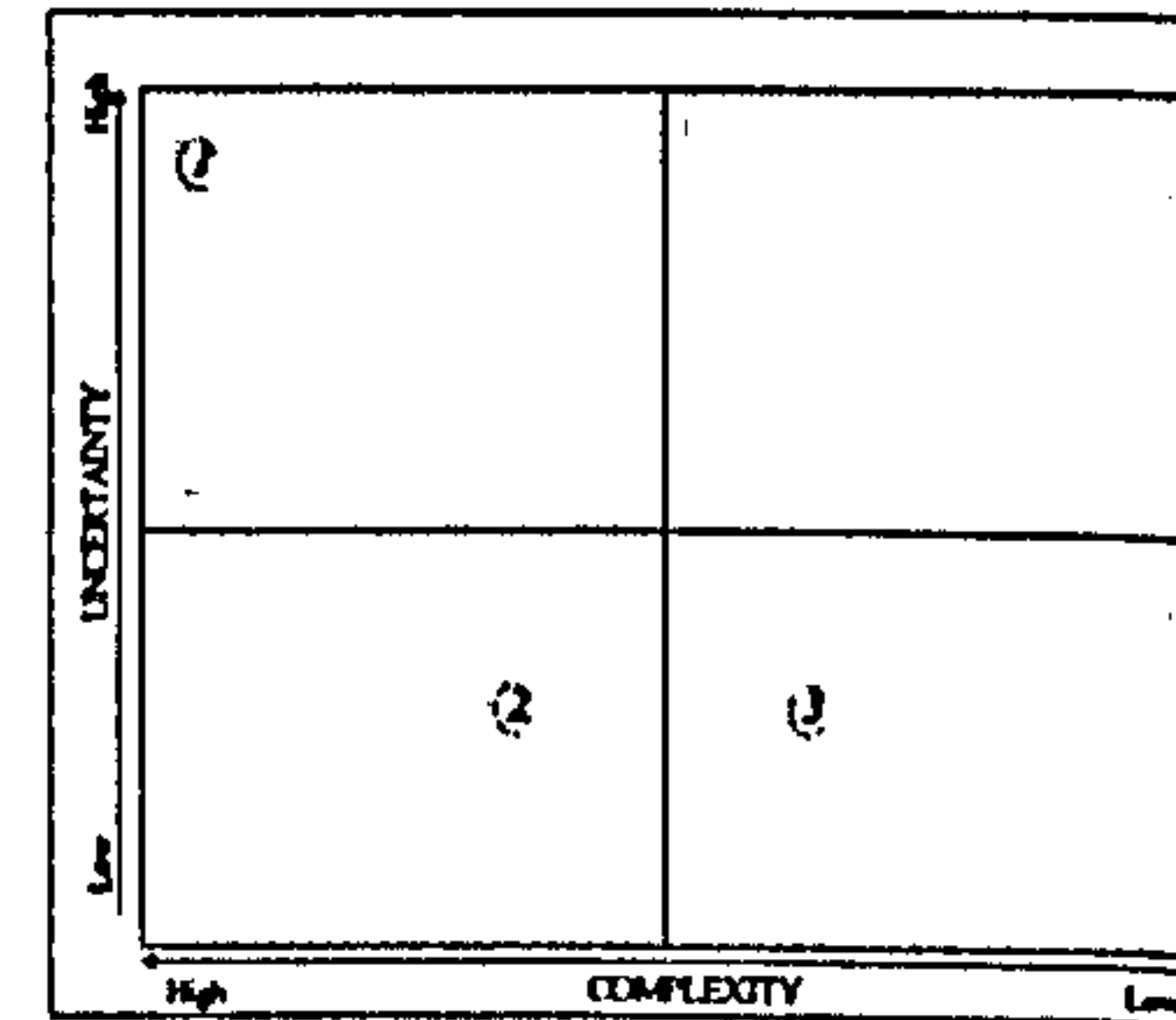


Figure F.3: Complexity / Uncertainty Matrix

BUSINESS UNITS	Competitors Factors	Customers	Product Groups	Sales £ x 1,000
Business Unit 1 Business Unit Name <i>Villa range</i>	<i>Quality - D</i> <i>Location - D</i> <i>Delivery time - Q</i> <i>Flexibility - Q</i> <i>Customer support - Q</i>	<i>Villa range</i>	<i>3 bedrooms</i> <i>4 bedrooms</i>	<i>20 %</i>
Business Unit 2 Business Unit Name <i>City range</i>	<i>Design - functionality - D</i> <i>Investment value - D</i> <i>Delivery time - Q</i> <i>Flexibility - Q</i> <i>Customer support - Q</i>	<i>City range</i>	<i>2 bedrooms</i> <i>3 bedrooms</i>	<i>70 %</i>
Business Unit 3 Business Unit Name <i>Detached house</i>	<i>Design - functionality - D</i> <i>Customised product - D</i> <i>Quality - Q</i> <i>Customer support - Q</i> <i>Value for money - Q</i>	<i>Detached house</i>	<i>4 bedrooms</i> <i>5 bedrooms <</i>	<i>10 %</i>
Business Unit 4 Business Unit Name				

Table F.2: Meyer & Burger's Business Unit

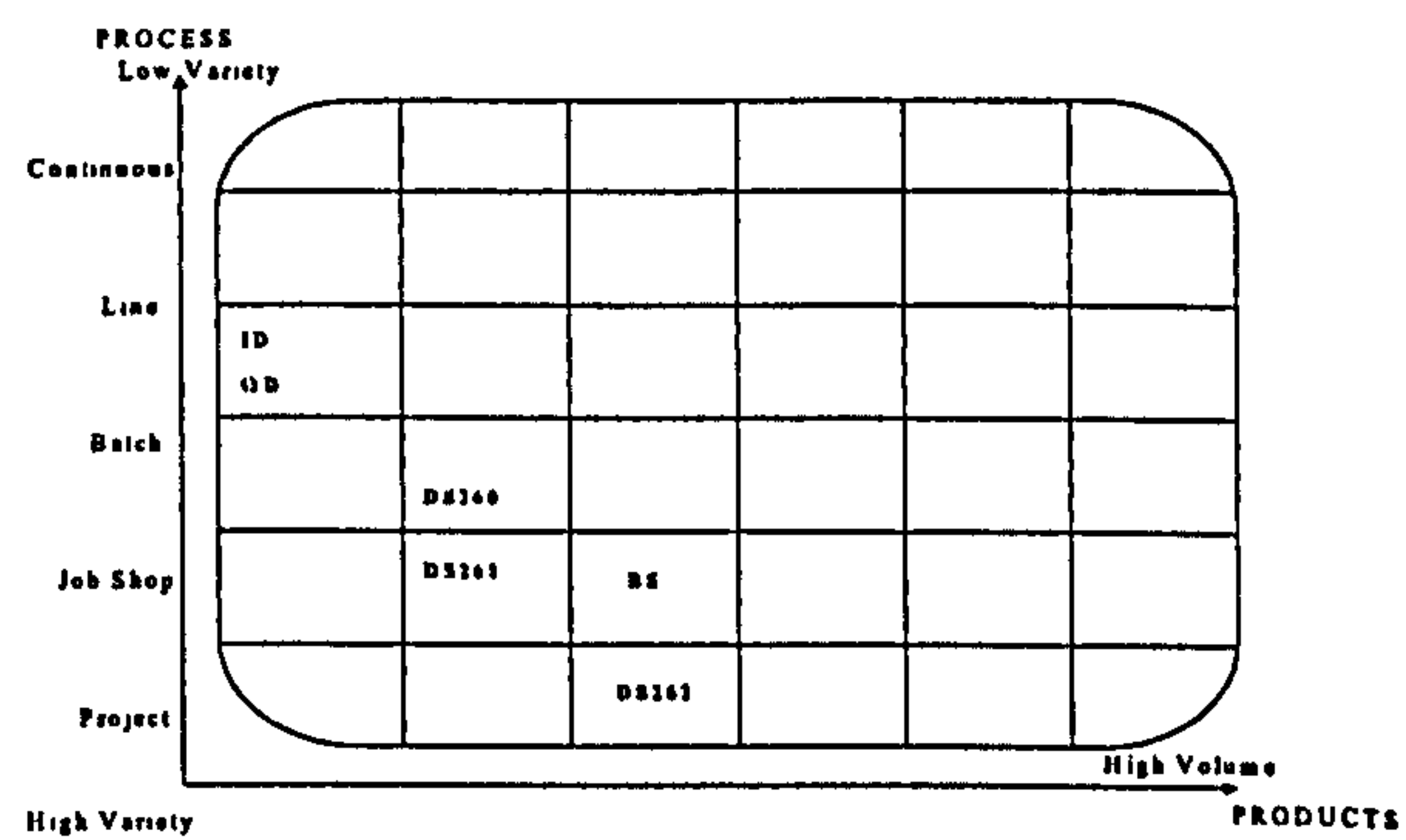


Figure F.4: Product / Process Matrix

F. 2. 5. Profit and Loss Account

Meyer & Burger did not agree to give their whole profit and loss accounts. Therefore, history of the company's profit and loss accounts provides a broad overview of the company's current financial position, and also how well it is using the capital employed to generate sales, and, in turn, profits. The calculations are shown in Table F.3 for whole business profit and loss account (£ 1000).

<i>Year</i>	<i>Turnover</i>	<i>% of Semiconductor gain</i>	<i>% of Photovoltaic gain</i>
2000	23,500 million	50%	50%
1999	23,500 million	50%	50%
1998	22,7 million	70%	30%

Table F.3. Business Unit share

F.2.6. Objectives

Specific performance measures have to be applied for these objectives of Meyer & Burger Ltd. and the priorities of objectives are listed in Figure F.5.

PART 4 DEFINE BUSINESS OBJECTIVES		BUSINESS LEVEL ANALYSIS	
Business Objectives : In the space below, write-down your major objectives by considering the issues on the right hand side. Rank your objectives in order of importance. This list does not claim to be complete nor does it follow that any particular organisation will need to develop measures for all those listed			
Key Performance Results	Business Objectives	Rank	Measured By...
-Growth	Growth by 27,5 Million CHR (17% more) within 2001 40 Million CHR within 2005		Turnover
-Profitability	Improve profitability by 10%		ROI
-Others	Incorporate new functions that do not exist in the machine available on the market (e.g. washing, dyeing, delivering etc) Looking for niche markets		

Figure F.5. Meyer & Burger's Objectives

F.3. Strategy Formulation

Strategy formulation consists of two main levels- business unit and business process. Meyer & Burger have got three business units. Meyer & Burger decided to consider two major business units namely semiconductor and photovoltaic. Each business unit and its business process strategy formulation will be explained separately, as follows:

F.3.1. Semiconductor

F.3.1.1. Semiconductor Business Unit Analysis and Value Propositions

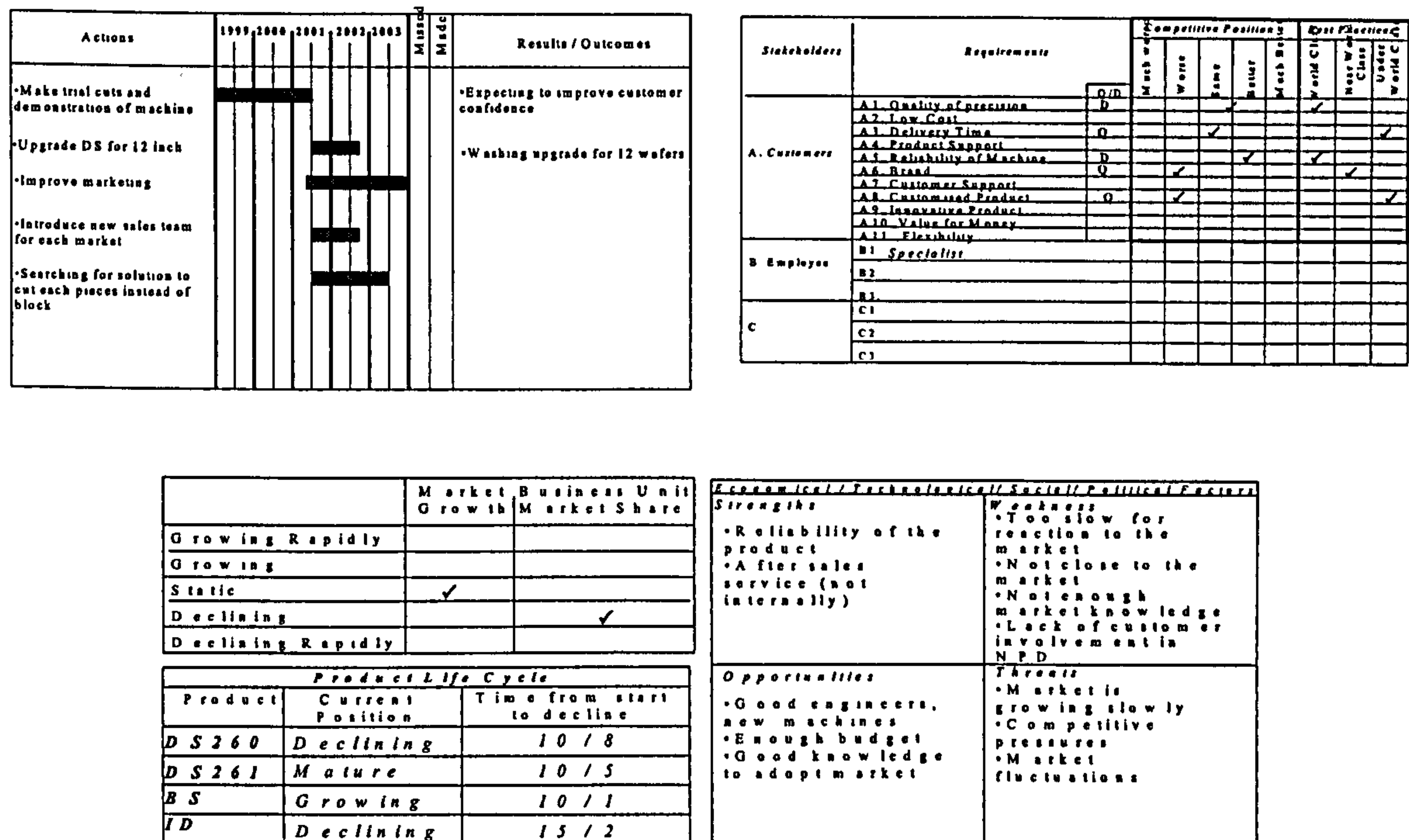


Figure F.6. Semiconductor business unit analysis

Strategic History: The Semiconductor Business Unit has started making trials, cuts and demonstrations of machines. This might help to improve customer confidence. Meyer & Burger, after so many years in the semiconductor industry and knowing market potential for their product in Europe, North America and Japan, is of the opinion that:

- Sales team, marketing
- Some products e.g. upgrading DS for 12 inch
- Solutions which the company are offering

need to be improved.

Market and Product Analysis: The Semiconductor Business Unit's market is static; its market share is declining which is 10 % of the total market. Although one product (DS260) is declining (2 years more), the other one (DS261) is mature (expecting 5 more

years) within this Business Unit and the life cycle of both is 10 years. One product (BS) is still growing and 9 years to decline. With these products, Business Units contribution to the business profit is average.

Competitor and Best Practice Analysis: The differentiators reflected a product leadership strategy to reduce time market to offer high reliability of machine and better quality of precision (Differentiators) by customising product and improving customer support after sales.

Strategic Objectives and Priorities: Contribution to business objectives by growth and margin improvement through product leadership value strategy. It is going to achieve this by:

<p><i>Product Leadership-</i> customising product to existing markets by offering improved quality of machine (precision) by improving customer support service.</p>

Discussion and Justification: The Semiconductor Unit decided to address explicitly how it provided value to external customers (currently customer support same as competitors, brand image worse than competitors). In the past, managers felt that as long as it offered reliable machines and quality of precision, it had delivered the desired value to customers. The value proposition, therefore, had to emphasise “provide the precision and remain within the tolerances required by the semiconductor industry”. However, the Semiconductor Business Unit now wanted to move beyond a pure design product strategy to more added value customer relationships that leveraged the value of the technology, expertise and customer involvement in the product design provided. This strategy is to expand revenue, mainly growth through new product customisation and services.

If Semiconductor could align its newly streamlined (re-organised) manufacturing process to set-up layout, and use additional equipment, the business unit could improve

it's margin. By re-engineering manufacturing shop floor lay out, the business unit could deliver substantial financial benefits from cost reduction and enhanced productivity. This theme supported the idea of setting up a new supply chain that would produce efficiency in supply and distribution. These improvements would enable the Semiconductor's relationships with its suppliers as well as expanding import opportunities. (Table F.4)

Semiconductor Objectives	Measured By	Current Performance	Target performance	Constraints
• Improve customer service	Number of complaints calls received p/week	25 p/w	15 p/w	
• Improve delivery time				
• Improve quality of machine (precision)	% of quality cost	8%	<5 %	
• Improve brand image	Market share	10%	12% first year	
• Improve product customisation	% of machine standardization	60%	70%	

Table F.4. Semiconductor business unit performance measures

F.3.1.2. Semiconductor' s Business Processes Analysis

In summary, the Semiconductor "Product Leadership" value strategy consists of four overlapping strategic themes (objectives):

1. Improve customer service
2. Improve delivery time
3. Improve quality of machine (precision)
4. Improve brand image
5. Improve product customisation

PART 6. ANALYSE BUSINESS PROCESSES					Business Unit Title <i>Semiconductor</i>			
6.1. Define Process Objective Against Each Business Unit Objective								
Business Unit Objectives	Operate Processes				Support Product			
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Engineering	Finance	Human Resource
1. Improve customer service	<i>Improve partnership with different sales agencies</i>	<i>•Offering easy to maintain •Improve contact with decision makers</i>		<i>Use more up to date technology to help customer in term of repairing</i>	<i>Introduce database</i>		<i>Budget allocation</i>	<i>employ bilingual person</i>
2. Improve delivery time	<i>•Improve demand forecast accuracy</i>	<i>Customer and employee involvement in product development</i>	<i>•Improve quality control • Re-engineering factory shop floor lay-out •Improve manufacturing resource usage •Introduce simultaneous activities</i>	<i>Good machine' usage instruction for customers</i>		<i>More skilled, specialised people</i>	<i>Spend money to build-up new assembly floor</i>	
3. Improve quality of machine (precision)	<i>Better informing market with the company's latest innovations</i>	<i>Improve control machine effectiveness</i>	<i>•Introduce quality performance measures •Improve BOM accuracy</i>	<i>•Improve procedures, processes for customers •Better transferring knowledge</i>	<i>Reporting system about customer complains</i>			<i>Customer training Introduce help line point</i>
4. Improve brand image	<i>•Improve customer confidence •Better market research •More customer visit</i>		<i>•Re-engineering and having showing room •Better web-side</i>					
5. Improve product customisation	<i>•Offer better technical solution •Specify new machines from market research</i>	<i>•Improve partnership with supplier •Modules product</i>	<i>•Improve manufacturing resource usage •Increase capacity •Optimisation of resource usage</i>	<i>•Better understanding of customer requirements for after sales</i>		<i>Employ specialise person</i>		<i>Increase employe skills for customer problem oriented placing</i>

Table F.5. Semiconductor Business Unit objective deployment

Generate Demand: Better market information on customer requirements would maximise new machine development's opportunity and adopt to the market quickly. One of the most important characteristics to be highlighted in this process would specify machines through market research and offering solution before competitors, which would increase sales of machines in a fluctuating market. Informing the market of the customer's latest innovations and it's new technology through customer visits and partnerships with sales agencies, Meyer & Burger would manage to build up a better brand image in the market, as well as enhance customer confidence.

Generate Demand	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve partnership with different sales agencies	5	% orders from each project / offers	≈ 30%	50%	Training, support from agencies
• Improve demand forecast accuracy	7	No. of sold machine from the stock	20 unsold	15 total (15 % of turnover should be free)	Feedback from the agencies
• Better informing of the market with the company's latest innovations	1	No. of advertisement per year	0	4 times p / y (e.g. news letter)	
• Improve customer confidence	8	% of market share	10%	12% (first year)	
• Better market research	4	No of meetings with agencies and customers p/y	1	2 times p/y	Personal, English spoken sales person
• More customer visit	2	No of visits to big customers	Every 6 months	Every 2 months	Personal
• Offer better technical solution	3	% of orders lost because of technical problem p/y	20%	<10 %	Lack of prioritising for technical parts
• Specify new machines from market research	6	No of new machines p/y	Every 3 year	1 per year	Management

Table F.6. Generate performance measures

Develop Product: After distinguishing the basic market requirements and needs, Semiconductor requires to involve its customers and employees in a product development process that would drive quicker product customisation, as well as an enhanced better technical solution. Therefore, Meyer & Burger follow the approach to gather important technical information from external sources in order to incorporate this knowledge into it's internal R & D processes.

The Semiconductor Business Unit aims to establish a partnership with its suppliers to offer a complete solution to it's customers. This is considered as an important element for establishing one contact point as well as being able to control all manufacturing steps by Meyer & Burger (Table F.7.).

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Offering an easy to maintain machine	5	No. of days spent with customers	300 days p/y 1-3 days per machine	<300 days max 2 days per machine	Customer / agencies training
• Improve contact with decision makers	4	No of meeting with managers p/y	1 p/y	2 p/y	

• Customer & employee involvement in product development	1	% of product customization	≈ 50	80% (not about quality issue customization)	
• Improve control machine effectiveness	8	not decided			
• Improve partnership with supplier	2	% of offering complete solution	30%	50%	Subcontract or performance
• Modular product	6	% of machine standardization	60%	70%	
• Offer better technical solution	7	% / No of orders received p/y	50 machine 50%	60-70%	

Table F.7. Develop Product performance measures

Fulfill Order: The focal point for delivery time improvement is to introduce simultaneous activities (concurrent engineering) in production as well as improve manufacturing resource usage that would support in increasing the percentages of machine running time per day from 60% to 80%. The philosophy of Concurrent Engineering is strongly embedded in the way in which the people involved work, and also extended to the external agents in the development (clients, suppliers, sales agencies etc.) A brand image will be improved throughout giving demonstration / trial presentation about the machines within a short time, when customers request to know technical and maintenance characteristics of the machine.

In addition, improving quality creates another asset to broaden the customer support as well as relationship. Re-engineering factory shop floor layout will reduce production time and would lead to substantial machine sales enhancement in the semiconductor business unit (Table F.8.).

Order Fulfillment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve quality control	3	Quality cost	8%	>5 %	It is not clear where quality problems occur
• Re-engineering factory shop floor' lay-out	1	Slack time in production			Money, investment
• Improve manufacturing resource usage	4	Machine running time p/d	60%	80%	
• Introduce simultaneous activities	7	manufacturing time	9 months per machine	6 months	

• Introduce quality performance measures	8	not decided			
• Improve complexity of parts list accuracy	6	No of parts levels			
• Re-engineering and having demonstration / trial room	2	Time differences between customer inquiry to company demonstration time	2 months	2 weeks	Investment
• Better web-side	5	Frequency of web-site updating		4 times p/y	

Table F.8. Order Fulfillment performance measures

Support Process: The success of the Semiconductor business unit is believed by the business unit to depend on its close relationship with customers. Open and solid collaboration with major customers and sales agencies should provide the development process as well as build-up durable customer relationships.

Although the new machine and its technology is very important, the success of the after sales is very much dependent on trust and good relationships being built up between technical personnel from both organisations. This can only be achieved by transferring knowledge about the machine usage, maintenance etc.

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Use more up to date technology to help the customer in terms of repairing	2	The age of machines which are not in the system	No system	More than 10 years old	Time consuming to enter the data
• Good machine usage instruction for customers	4	No. of complaints calls received p/week	25 p/w	15 p/w	
• Better transferring knowledge by improving procedures, processes etc.	3	No. of recipes per week	No systems	5 p/w	Need specialist for training
• Better understanding of customer requirements for after sales	1	No. of days spent with customers after selling the machine	1-3 days per machine	1-2 days	

Table F.9. Support Product performance measures

Semiconductor Company process action plan can be shown in the following tables in Figure F.7.

F.3.1.3. Semiconductor's Business Processes Action Plan

PART 6. ANALYSE BUSINESS PROCESSES																					
6.4. Establish Business Processes ... Strategy																					
Business Process Develop Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan																	
				2001		2002		2003		Owner											
				Q1	Q2	Q3	Q4	Q1	Q2		Q3	Q4									
1. Offering easy to maintain machine	3 2 3																				Tech
1.1 Defining recipe/how-how instructions for each customer	3 2 3																				Tech
1.2 Transferring / sharing knowledge about how to use machine	3 2 3																				GL
2. Improve contact with decision makers	3 2 3																				GL
2.1 Quarterly see meeting with decision makers in order to understand their requirements	3 2 3																				
2.2 Recruit member of clubs institutes, involving projects	3 2 3																				
3. Improve control machine effectiveness	3 2 3																				
3.1 Improving manufacturing capability and throughput	3 2 3																				Stu
3.2 waste reduction measures throughout the facility	3 2 3																				Stu

PART 6. ANALYSE BUSINESS PROCESSES																					
6.4. Establish Business Processes ... Strategy																					
Business Process Generic Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan																	
				2001		2002		2003		Owner											
				Q1	Q2	Q3	Q4	Q1	Q2		Q3	Q4									
1. Improve partnership with different sales agencies	3 2 3		20K																		Rup
1.1 Quarterly see meetings with agencies to address customer requirements	3 2 3																				Kah
1.2 Introduce discussion group in internet	3 2 3																				GL
2. Improve customer confidence	3 2 3																				GL
2.1 Better informing market with the company's latest innovations.	3 2 3		50K																		Kab
2.2 More customer visit	3 2 3																				Stu
2.3 Offer better technical solution	3 2 3		10K																		Kab
2.4. Prepare news letter	3 2 3																				Kab
3. Obtain better market information	3 2 3																				Kab
3.1 Improving demand forecasting	3 2 3																				Stu
3.2 Specifying new machines from market research	3 2 3																				Kab
3.3 Collaboration with institutes	3 2 3		5K																		GL

PART 6. ANALYSE BUSINESS PROCESSES																					
6.4. Establish Business Processes ... Strategy																					
Business Process Develop Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan																	
				2001		2002		2003		Owner											
				Q1	Q2	Q3	Q4	Q1	Q2		Q3	Q4									
4. Improve partnership with suppliers	3 2 3																				Kab
4.1 Offering complete solution to the customer	3 2 3																				Kab
4.2 Improve justification for supply chain (price / quality / manufacturing)	3 2 3																				
5. Introduce modular product	3 2 3																				Stu
5.1 Define new lot and functionality list	3 2 3																				Stu
5.2 Defining standard part and customizable part specification	3 2 3																				

PART 6. ANALYSE BUSINESS PROCESSES																					
6.4. Establish Business Processes ... Strategy																					
Business Process Order Fulfillment Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan																	
				2001		2002		2003		Owner											
				Q1	Q2	Q3	Q4	Q1	Q2		Q3	Q4									
1. Introduce simultaneous activities	3 2 3																				Stu
1.1 Identifying the possible parallel and non-urgent activities	3 2 3																				GL
1.2. Use of appropriate priority rules	3 2 3																				J
2. Improve manufacturing resource usage	3 2 3																				J
2.1 Introduce formal planning system like MRP-Reducing inventory	3 2 3																				Stu
2.2 Improving scheduling of resources	3 2 3																				Stu
3. Improve parts complexity (BOM) accuracy	3 2 3																				Be
3.1 Flexible management in resource application	3 2 3																				Be
3.2 Bottleneck elimination	3 2 3																				

Figure F.7. Semiconductor's business processes action plan

PART 6. ANALYSE BUSINESS PROCESSES				Business Unit Title: Semiconductor										
6.4. Establish Business Processes ... Strategy				Application Plan										
Business Process Order Fulfillment Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	2001			2002				2003			Owner
				Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02	Q3/02	Q4/02	Q1/03	Q2/03	
4. Re-engineering factory shop floor	H M L													Be
4.1. Give make versus buy decision	H M L													GL
4.2. Map the process by using flow charts or IDEF	H M L													GL
5. Improve quality control	H M L													Be
5.2 Introduce SPC - waste reduction measures throughout the facility	H M L													Be
5.3. educate the workforce in the notion of total quality	H M L													Be
6. Increase capacity availability	H M L													Be
6.1. New inventory in equipment	H M L													Be
7. Design showing room	H M L													Be
7.1. Decide how to organise showing room / give presentation	H M L													Rup

PART 6. ANALYSE BUSINESS PROCESSES				Business Unit Title: Semiconductor										
6.4. Establish Business Processes ... Strategy				Application Plan										
Business Process Support, Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	2001			2002				2003			Owner
				Q1/01	Q2/01	Q3/01	Q4/01	Q1/02	Q2/02	Q3/02	Q4/02	Q1/03	Q2/03	
1. Better transferring knowledge to the customers about the machine	H M L													Tech
1.1. Improving customer training	H M L													Tech
1.2. Improving instructions in terms of clear procedures, processes	H M L													Tech
1.3. Identifying customers requirements after buying the machine	H M L													Kah
2. Use up to date technology to help customers in terms of repairing	H M L													Rep
2.1. Define customers' problems	H M L													Kah
2.2. Code general problem for each machine	H M L													Su
2.3. Use cause and effect diagrams for each problem	H M L													Su
2.4. Define solutions for each machine against general problem	H M L													Su

Figure F.7. Semiconductor's business processes action plan

F.3.2. Photovoltaic Business Unit

F.3.2.1. Photovoltaic Business Unit Analysis and Value Propositions

Actions	1999,2000	2001	2002,2003	Missed	Made	Results / Outcomes
• Introduce DS 262	█					• It helped to enter the market
• Introduce BS 800	█					
• Improve marketing			█			
• Improve partnership with solar industry			█			
• Improve co-operation and joint venture with companies			█			
• New product development			█			

Stakeholders	Requirements	Competitive Position					Best Practices			
		Q/D	Mech won	Worse	Same	Better	Much Better	World Class	Next World Class	Under World Class
A. Customers	A1. Quality of precision	D			✓					
	A2. Low Cost									
	A3. Delivery Time	Q			✓					
	A4. Product Support									✓
	A5. Reliability of Machine	Q			✓					
	A6. Brand	Q		✓						✓
	A7. Customer Support									
	A8. Customised Product									✓
	A9. Innovative Product									
	A10. Value for Money									
	A11. Flexibility	D				✓				✓
B. Partners	B1. Partnership improvement in marketing and organizing			✓						
	B2. Developing product innovation				✓					
C.	C1.									
	C2.									
	C3.									

		Market Growth	Business Unit Market Share	<i>Economical / Technological / Social / Political Factors</i>	
Growing Rapidly		✓		Strengths •New product •Product innovation abilities •To have more functional product	Weakness •Lack of market image •Not finding right channel for customers
Growing					
Static		✓			
Declining					
Declining Rapidly					
<i>Product Life Cycle</i>					
Product	Current Position	Time from start to decline	Opportunities		Threats
DS 262	Introduction	10 / 2	•New product •New technology •Rapid market growth		•Subsidiary product •Rapidly changing technology
BS	Introduction	10 / 1			

Figure F.8. Photovoltaic business unit analysis

Strategic History: Historically, the Photovoltaic Business unit entered the Photovoltaic market with the DS 262 machine in 1998. A perfect knowledge of the market, and the technology of the solar industry is the main concern of the Photovoltaic business unit.

Market and Product Analysis: Although Meyer & Burger managed to enter the market, lack of market image and not finding the right channels to reach customers very quickly result in static market share against rapid market growth. Two products within the business unit are in the introduction stage and eight years to decline.

Competitor and Best Practice Analysis: The customer requirements against the company's competitive position and best practice were divided into two components. The basic objectives defined are two outcomes that customers expected – flexibility and solution development, reliability and quality of machine. The differentiators reflected a customer intimacy strategy to partner with the customers by providing exploitation (speed to market) and enhance responsiveness as well as operational excellence strategy in terms of quality of precision and reliability of the machine.

Strategic Objectives and Priorities: Meyer & Burger embarked on the Photovoltaic Unit strategy to improve its growth performance (high growth contribution to the business) as well as profitability (high contribution - 50% of company's profit in 2000) through a strategic theme:

Product Leadership/ customer intimacy - introducing new products by offering better, machine functionality (full solution co-operation to markets and improved delivery time

Discussion and Justification: In fact, the product development process is the main process taking place in the Photovoltaic industry because of rapidly changing technology and subsidiary product, which articulates the rest of the activities. Therefore, the Photovoltaic Business Unit would gain distinctive advantages through a new product development process. This can be obtained by giving the decision of entering the market very quickly as an integral manufacturer of a complete solution (more functionality e.g. washing, dying, cleaning, polishing etc.). This demands a big effort in product development with different partners. In short, it can be achieved to shape its customers needs according to its own technological competencies and strategies by means of a partnership (opportunities).

The strength of the design and open policy with respect to the Photovoltaic business unit's customers require to keep a total traceability, quality precision on the machine and on its components through its life cycle. This traceability would allow the following:

- To carry out improvements on the machine operation
- To give better customer support
- When a malfunction is detected, the customer base is well known, which allows for fixing the problem according to customers' specific needs.

To explore their broader market opportunities, the Photovoltaic business unit should take action (e.g. market research), including all customers' requirements into the development of a new product to avoid niche solutions and dependencies.

Photovoltaic Objectives	Measured By	Current Performance	Target performance	Constraints
• Introduce new products	Prototyping time	12 months	9 months	
• Improve co- operation/ offer full solution	Realised project	0	1-3 per year	Warranty problems
• Improve delivery time	On time delivery	80%	90%	
• Improve customer relationship	No of customers visit per year	1-2 per year	4 times per year	Time

Table F.10. Photovoltaic business unit performance measures

F.3.2.2. Photovoltaic's Business Processes Analyses Business Processes

In summary, the Photovoltaic "Product Leadership/customer intimacy" value strategy consists of five overlapping strategic themes (objectives):

1. Improve delivery time
2. Introduce new product
3. Improve co-operation with suppliers
4. Improve customer relationship

PART 6. ANALYSE BUSINESS PROCESSES					Business Unit Title: <i>Photovoltaic</i>			
6.1. Define Process Objective Against Each Business Unit Objective								
Business Unit Objectives	Operate Processes				Support Product			
	Generate Demand	Develop Product	Order Fulfilment	Product Support	IT	Engineering	Finance	Human Resource
1. Improve delivery time	•React very quickly to market requirements	•Introduce simultaneous activities in product development	•Improve material flows •Introduce simultaneous activities	•Better understanding of customer requirements after selling the product		More skilled, specialised people	Spend money to build-up new assembly floor	
2. Introduce new product	•Better market research •Co-operation with the institutes	•Speed -up prototyping	•Flexibility of producing small series parts •Increase capacity availability	•Clear instruction, procedures, price list etc..	•Good scheduling system	Employ design engineers for new innovative ideas		Introduce team for NPD
3. Improve co- operation	Offer full solution to customers (One contact company for more responsibilities)	•Handling all steps in the operations	•Arranging out-sources	•Good how-how instruction	Controlling suppliers and partners availability			More people for getting information
4. Improve customer relationship	•More customer visit •Getting more feedback from agencies			•Good instruction, catalogues, marketing, advertisement.				Improve people
5.								

Table F.11. Photovoltaic business unit objectives deployment

Generate Demand: The nature of the development of Photovoltaic products and activities, demanded by their markets depending on new technologies, forced them to provide better functional machines and services. Therefore, the Photovoltaic business

unit is a truly knowledge market, where the organizational know-how is at the same level as the technological and market know-how. Building good knowledge flow about the new technology throughout co-operation with the institutes and company sales agencies would help to build better market image for the whole company, as well as distinctive characteristics of Photovoltaic business units. Furthermore, establishing good co-operation with suppliers and outsourcers would manage to offer full solutions through multidisciplinary involvement within the supply chain and one contact company for customers.

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• React very quickly to market requirements	1	% of offered ends with sales	20%	40%	
• Better market research	5	No of visits and meetings	1	2 times p/y	Staff
• Co-operation with the institutes	4	Contact number for each market location	1 in Europe	1 in Europe 1 in Asia 1 in ABD	
• Offer full solution to customers	3	Released project p/y	0	1-3 p/y	Warranty problems
• More customer visits	2	No of visits	1-2	4 times p/y	Time
• Getting more feedback from agencies	6	No of visits		2 times p/y	

Table F.12. Generate Demand performance measures

Product Development: The real success of the Photovoltaic business unit is not to dream up many products development, it is to disseminate and consolidate awareness of just a few major development projects. Meyer & Burger for the Photovoltaic business unit does not need to respond to a customer's requirements for faster new product development by working faster. Careful project scheduling etc. is important to cost control but 'speed up market-prototype' is an important strategic issue within a rapidly growing market. An increase in speed to market in terms of prototyping can be best achieved by introducing simultaneous activities in production and working with the customer collaboratively and more smartly, rather than just quickly. Feedback from trials can be used to influence future R& D project selection decisions.

Develop Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Speed prototyping -up	1	prototyping taken	12 months	9 months	
• Handling all steps in the operations	2	Slack time between activities	not decided		

Table F.13. Develop product performance measures

Order Fulfillment: The fact of producing machines to the advanced technological solar industry has led the Photovoltaic Business Unit to consolidate its product development in one more explicit technological strategy, developed around five basic vectors:

- Increasing capacity availability
- Introducing simultaneous processes/activities to improve material flows
- Arranging out-sources
- Re-engineering products to reduce parts complexity
- Flexibility of producing small series parts

The successful incremental development of business unit illustrates the importance of developing future capability realistically.

Order Fulfillment Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
• Improve material flows	1	% of slack time in production	not decided		
• Introduce simultaneous activities	4	Lead time	9 months	6 months	
• Flexibility of producing small series parts	5	% of customization of the machine	20%	30%	
• Increase capacity availability	3	% of working hours	≈ 80 %	≈ 90 %	Not clear measures
• Arranging out-sources	2	On time delivery time	80%	90%	

Table F.14. Order fulfillment performance measures

Product Support: Although a new machine is really important, the success of transferring knowledge about how to use the machine and its maintenance is very much dependent on good personal relationships between the technical personnel from both organisations (Meyer & Burger, customers, sales agencies) by supplying know-how

instruction (clear procedures, price list, maintenance issues etc).

Support Product Objectives	Priority	Measured By	Current Performance	Target performance	Constraints
<ul style="list-style-type: none"> Better understanding of customer requirements after selling the product 	3	Solving customer problems time	1 day to 2 weeks	1 day to 1 weeks	Employee allocation
<ul style="list-style-type: none"> Good know-how Instruction 	1	Machine implementation time in company	1-4 weeks	1 week	
<ul style="list-style-type: none"> Good instruction, catalogues marketing, advertisement etc. 	2	No. of information letters e.g. new machine realization	0	4 times a year	

Table F.15. Support process performance measures

Semiconductor business unit's process action plan can be shown in the following Tables.

F.3.2.3. Photovoltaic's Business Processes Action Plan

PART 6. ANALYSE BUSINESS PROCESSES																
Business Unit Title											Photovoltaic					
6.4. Establish Business Processes Strategy																
Business Process Develop Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan												
				2001			2002			2003			Owner			
				Q1/01	Q2/01	Q3/01	Q1/02	Q2/02	Q3/02	Q1/03	Q2/03	Q3/03				
1. Obtain better market information 1.1. Improving demand forecasting 1.2. Anticipating customer's design requirements when developing new products	2 2 2		-													Kab
3. Improve co-operation with institutes	2 2 2		-													Kab
2.1. Attending seminars, conferences, workshops	2 2 2		5K													Sth
2.2. Be open for memberships in institutes, clubs	2 2 2		5K													Rup
3. Offer complete solution to customers (one contact company)	2 2 2															Rup
3.1. Define collaborator companies and their responsibilities	2 2 2															Be
3.2. Define administration for project (responsibilities, time scales etc)	2 2 2															
4. Getting more feedback from agencies	2 2 2		50 K													GL
4.1. more agencies visit	2 2 2															
4.2. introduce discussion group in internet	2 2 2		10 K													Kab

PART 6. ANALYSE BUSINESS PROCESSES																
Business Unit Title											Photovoltaic					
6.4. Establish Business Processes Strategy																
Business Process Order Fulfillment Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan												
				2001			2002			2003			Owner			
				Q1/01	Q2/01	Q3/01	Q1/02	Q2/02	Q3/02	Q1/03	Q2/03	Q3/03				
4. Increasing capacity availability	2 2 2		2000 K													Be
4.1. New inventory in equipment	2 2 2															Be
5. Arranging out-sourcing	2 2 2		5K													Be
5.1. Organizing purchasing department/group	2 2 2															
	2 2 2															
	2 2 2															
	2 2 2															
	2 2 2															
	2 2 2															

Figure F.9. Photovoltaic Business Processes action plan

PART 6. ANALYSE BUSINESS PROCESSES															
Business Unit Title											Photovoltaic				
6.4. Establish Business Processes Strategy															
Business Process Develop Product Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan											
				2001			2002			2003			Owner		
				Q1/01	Q2/01	Q3/01	Q1/02	Q2/02	Q3/02	Q1/03	Q2/03	Q3/03			
1. Speed-up prototyping	2 2 2		-												Sth
1.1. Introduce simultaneous activities in product design	2 2 2		-												Sth
1.2. Introduce team work	2 2 2		100K												GL
2. Delivering complete solution	2 2 2		100K												Sth
2.1. Handling all steps in the operations	2 2 2														
2.2. Involve customer in the operations	2 2 2														
2.3. Involve customer in the operations	2 2 2														
2.4. Involve customer in the operations	2 2 2														
3.	2 2 2														
4.	2 2 2														

PART 6. ANALYSE BUSINESS PROCESSES															
Business Unit Title											Photovoltaic				
6.4. Establish Business Processes Strategy															
Business Process Support Project Recommended Action	Priority High Medium Low	Man- Days	Cost Estimate CHF	Application Plan											
				2001			2002			2003			Owner		
				Q1/01	Q2/01	Q3/01	Q1/02	Q2/02	Q3/02	Q1/03	Q2/03	Q3/03			
Better understanding of customer requirements after buying the machine	2 2 2		-												Kab
1.1. More customer contact, visits, presentations	2 2 2		20K												Flt
1.2. Good know-how instructions, catalogs	2 2 2		20K												Kab
1.3. Improving instructions in terms of clear procedures, processes, prices etc.	2 2 2		-												GL
	2 2 2														
	2 2 2														
	2 2 2														
	2 2 2														

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F.3.3. MEYER & BURGER's Support Processes

Meyer & Burger decided to consider the support processes for the whole company instead of each business unit.

IT: In the case of new machine development and functionality improvement, it is necessary to upgrade equipment. Meyer & Burger's IT plan focuses on capturing and sharing knowledge of the market, including knowledge management of both the customer and market database, to be able to increase machine sales and support the customers.

IT Objectives	Measured By	Current Performance	Target performance	Constraints
<ul style="list-style-type: none"> Introduce database for customer service 	All machines should be in the database	No system	At the end of this year	Person, staff required
<ul style="list-style-type: none"> Reporting system about customer complains to improve quality of machine 			To be ready 2002	

Table F.16. IT performance measures

Finance: Fund development for factory lay-out became the enablers for helping the company to launch new product, improving functionality, resource usage, delivery time and also increasing machine sales.

Finance Objectives	Measured By	Current Performance	Target performance	Constraints
<ul style="list-style-type: none"> Budget allocation 	Money spend	21 million	15% more	
<ul style="list-style-type: none"> Spend money to build-up new assembly floor 			1,7 million	

Table F.17. Finance performance measures

HRM: The launch of new machines requires three employees (currently two) with development knowledge concerning the market information and the design, which are of importance for manufacturing. Training of both customers and sales agencies to be involved in the production process is the other key issue. Training activities should focus on:

- To learn the correct use of the new machine
- Maintenance of the new machine, in particular how to fix it after its potential breakdowns.

HRM Objectives	Measured By	Current Performance	Target performance	Constraints
• Employee employ bilingual person	% of sales & service people who can speak English	70%	90%	
• Customer training • Introduce helpline point	2 people in the office helping on the phone and organizing spare parts	1 person	2 people	Internal person ability
• Increase employee skills for customer problem oriented placing	Problems occurred per week	not decided		

Table F.18.HRM performance measures

Engineering: The people perspective is critical to Meyer & Burger to be a customer-focused section. Therefore, engineering process strategy would require having a clear work instruction to reduce rework levels. Introduce innovative product requires improved skills and innovation in producing.

Engineering Objectives	Measured By	Current Performance	Target performance	Constraints
• More skilled, specialised people	% of engineering in the company	10%	15 %	HRM, market driven
• Employ specialist person		At least 1 person this year	0	

Table F.19. Engineering performance measures

Meyer & Burger Support processes action plan can be shown in the following tables in Figure F.10.

PART 6. ANALYSE BUSINESS PROCESSES											
6.4. Establish Business Processes ... Strategy											
Business Process .../I... Recommended Action	Priority High Medium Low	Max- Days	Cost Estimate CHF	Application Plan						Owner	
				2001		2002		2003			
1. Fund development	High										J
1.1 Investing in product research and design	High		100K								J
1.2 Budget allocation for building-up new assembly floor	High		5K								J
	High										
	High										
	High										
	High										

PART 6. ANALYSE BUSINESS PROCESSES											
6.4. Establish Business Processes ... Strategy											
Business Process .../I... Recommended Action	Priority High Medium Low	Max- Days	Cost Estimate CHF	Application Plan						Owner	
				2001		2002		2003			
1. Upgrading equipment	High		-								Be
1.1 increasing network coverage	High		10K								Be
1.2 setting up customer service database	High		15K								Kah
1.3 Reporting about customer complaints	High		5K								Kah
1.4 customer problem solving database	High		5K								J
1.5 Good scheduling system (MRP)	High		5K								Be
1.6 New database software to control suppliers, partners availability	High		5K								Be

PART 6. ANALYSE BUSINESS PROCESSES											
6.4. Establish Business Processes ... Strategy											
Business Process .../II... Recommended Action	Priority High Medium Low	Max- Days	Cost Estimate CHF	Application Plan						Owner	
				2001		2002		2003			
1. Employ a bilingual person	High		2K								J
2. Introduce team for new product development	High										Stu
3. Introduce / extend employee skills for customer oriented	High		5K								Be
3.1 Introduce / extend customer training how to use their machine	High		10K								Kah
3.2 Train agencies in the house	High		15K								Kah
3.3 Introduce exchange program for the employees between agencies and employees in Meyer & Burger	High										Rup
	High										
	High										

PART 6. ANALYSE BUSINESS PROCESSES											
6.4. Establish Business Processes ... Strategy											
Business Process Engineering Recommended Action	Priority High Medium Low	Max- Days	Cost Estimate CHF	Application Plan						Owner	
				2001		2002		2003			
1. Improving skills + imagination and expertise	High										Stu
2. Employ specialist person	High										Stu
3. Employ design engineers for new innovations/ideas	High		5K								Stu
	High										
	High										
	High										

Figure F.10. Support processes action plan

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F.4. Strategy Implementation

Strategy implementation consists of two stages:

- Trade-off and consolidation of business unit's objectives
- Validate chosen strategy

F.4.1. Trade-off Business Unit Objectives

Based on analysis of each business unit situation and its business processes, several alternative strategies and tactics are available to each business unit as explained below (see Figure F.11):

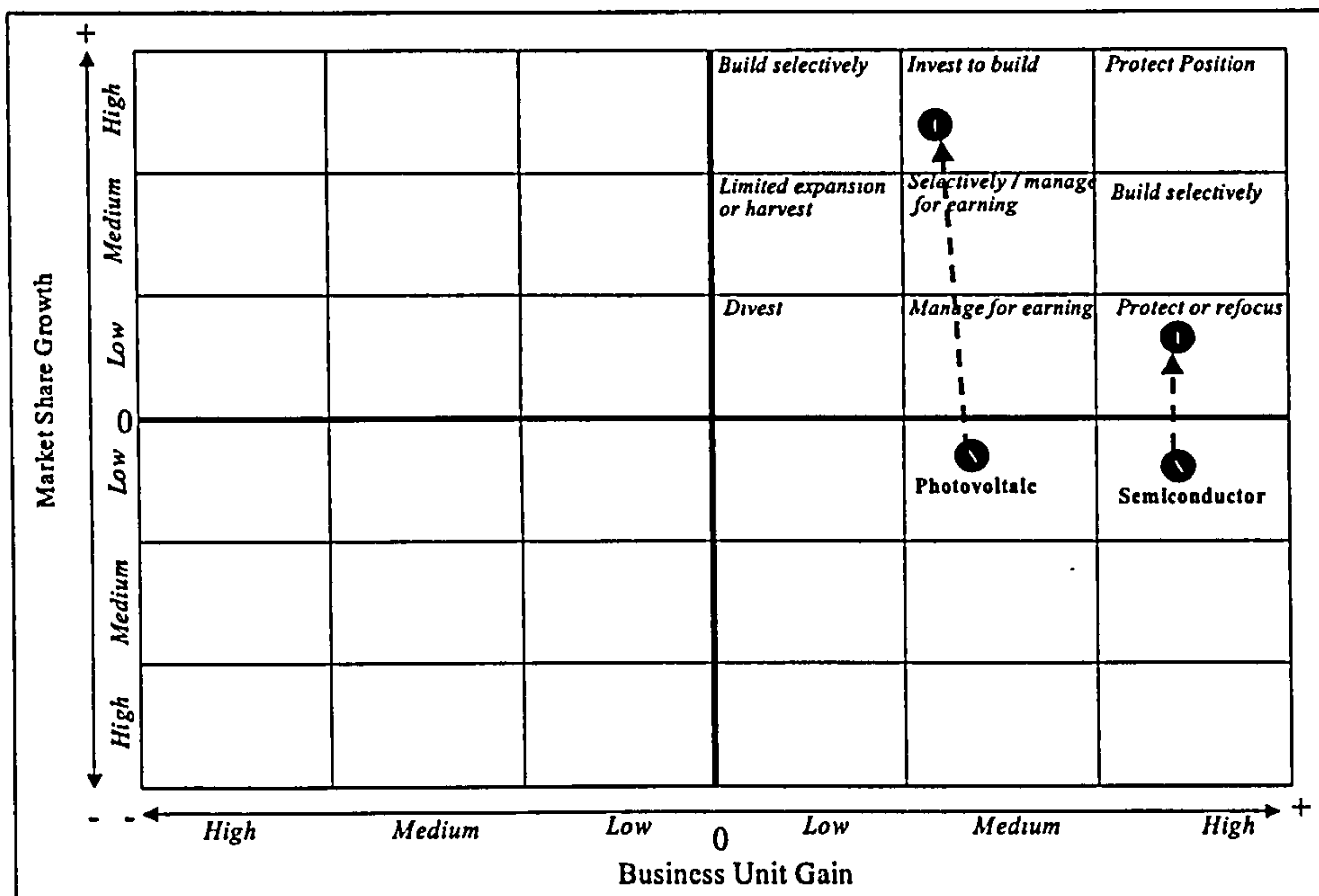


Figure F.11. Business Unit Gain/ Business Unit Market Growth

In summary (Figure F.11), the Photovoltaic business unit is revealed as the most attractive one for growth, as its markets are also growing rapidly. This suggests that a competitor is 'offering', that is, concentrating investment and build selectively on

strengths. Moreover, one Semiconductor business unit is shown to be in such a dismal position that the worthwhile strategy seems to be withdrawal because of the market fluctuations. Although this business unit seems more attractive than Photovoltaic in terms of business unit gain, it has a very vulnerable position in terms of growth and market share market because of market uncertainties. This suggests keeping an eye on this business unit (in terms of cost base) by cutting fixed costs and avoiding big investment.

F.4.2. Trade-off Business Unit objectives

Business Unit objectives need to be made explicit to eliminate or manage them. Therefore, each business objectives considered against one another to resolve conflicts when possible (Potential conflict: PC, positive relationships: +).

PART 7: STRATEGY IMPLEMENTATION						
7.2. Identify and Eliminate (whenever possible) Conflicts Between the Business Unit Objectives						
Please compare all Business Unit Objectives in the matrix according to C – conflict, + Positive relationships						
		Business Unit <i>Semiconductor</i> Objectives				
		<i>Improve customer service</i>	<i>Improve delivery time</i>	<i>Improve quality of machine (precision)</i>	<i>Improve brand image</i>	<i>Improve product customisation</i>
Business Unit <i>Photovoltaic</i>	Objectives					
	Improve delivery time		+		+	PC
	Introduce new product		PC	PC	+	+
	Improve co-operation	+	+		+	
	Improve customer relationship	+			+	+

Figure F.12. Trade-off Business Unit objectives

Figure F.12 showed that many Semiconductor business unit's objectives have positive relationships with Photovoltaic business unit's objectives. Partnerships and networks have been formed between many companies in the Photovoltaic market in order to gain

access to valuable knowledge. Once the specifications of the new development have been completed in the Photovoltaic business unit, the development time necessary and the most appropriate starting date are analysed, taking into account the developments already in place. This new product development in the Photovoltaic business unit will take employee time as well as resource usage for this development. This might be a negative impact to Semiconductor business unit improvement in terms of machine precision and delivery time in a fluctuation market.

One of the most important characteristics to be highlighted in both business units will be the time to market, the total time the company takes, from when the proposal is approved, to putting the product on the market. For Meyer & Burger, time to market is much more important for the Photovoltaic Business Unit because of rapidly changing technology. The company should incorporate new functions that do not exist in the machine available on the market. In that sense, they should allow for inter-communication with other systems and also provide complete information on the operational conditions. Therefore, when the Photovoltaic business unit has improved co-operation with suppliers and customer actions, these improvements would apply automatically to the Semiconductor business unit's improvement in its customer service, brand image and product customisation.

Appendix G Applecross Case Study (Chapter 9)

G.1. Introduction

This appendix presents details of the application of the PROPHECY process in Applecross Ltd. This appendix is structured as chapters E and F. Although the management team in Applecross defined three business units, they wanted to analyse two business units (attractive) and focus on one business unit's process analysis. Therefore, a detailed account is given only for the application of two companies' business unit analysis and one business unit's processes applications.

G.2. Input

The input stage is concerned with collection of relevant information to facilitate strategy formulation. Inputs stages consist of the following:

G.2.1. Company Profile

This section provides general background information about Applecross Ltd., such as ownership, time of establishment, location and so on. Examining Applecross' history also enables managers to see what management teams accomplished to get where it is now. Applecross Ltd. was established in 1979 and has been building quality homes in and around Edinburgh's most sought after locations. Over the years, they have built an enviable reputation for creating highly desirable homes.

The commitment to individually design each development to suit its surroundings and to improve the overall quality of an area is one of the main reasons for Applecross' continued success. Commitment to traditional values and consistently exceeding the most stringent planning and building requirements provides a home with unique standards.

Such is Applecross' reputation, clients on its mailing lists reserve many of the properties from brochures. Indeed a number of their developments have been sold prior to, or very soon after completion. Distinctly different, their homes serve as a testimony to the many qualities, which make Applecross a simply superior choice. Applecross' developments and their locations are illustrated in Figure G.1.

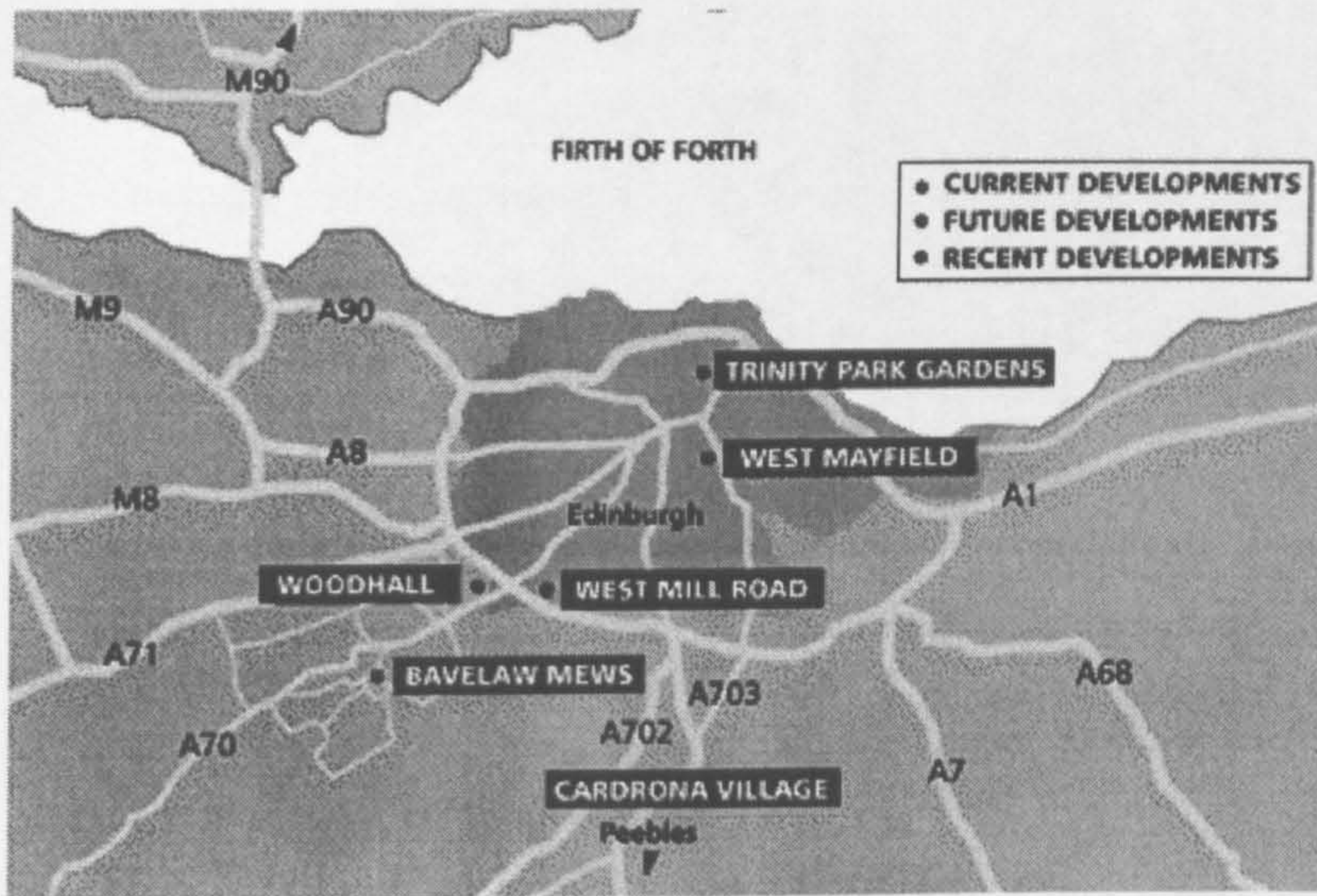


Figure G.1. Applecross developments

Managers were asked to define scope as the choice of products and services offered by Applecross Ltd. and the customer it requests to serve:

- Product and Service Scope: Company's products and services can be defined as follows: *Design, construction and sale of luxury*
- Geographical Scope: Company's geographic locations: *Edinburgh*
- Main markets: Company's main markets are as follows: *Luxury and expensive houses*

G.2.2. Mission

The mission of Applecross is: *'To continue to be the leading provider of design, construction and sales of luxury residential properties'*. Applecross is subscribed to the following principles:

- To provide innovative design for luxury high quality houses in a way which confronts changing market conditions
- To encourage our managers, employees and suppliers to stand alone
- To make employees aware of their improvements by providing sales, production and financial information, and also encouraging their participation in suggestion schemes

G.2.3. Culture

The managers defined what they think Applecross' current culture is and where they want to see their culture, as shown in Figure G.2.

Current Culture	Aspects of Culture	Desired Culture
Change From Low High	•The extent to which the organisation is market oriented, giving customers high priority	Change To Low High
Close Open	•The relationships between management and staff, manifested, for example, through communications and participation systems	Close Open
Fear Committed	•The extent to which people are target oriented and committed to achieving agreed levels of performance	Fear Committed
Inert Multi-faceted	•Attitudes towards innovation	Inert Multi-faceted
Accepted with resignation Accepted	•Attitudes towards costs and cost reduction	Accepted with resignation Accepted
High, as a measure of personal initiative Low, as a measure of personal initiative	•The commitment and loyalty to the organisation felt and shown by staff	High, as a measure of personal initiative Low, as a measure of personal initiative
Content Instructive	•The impact of, and reaction to, technological and technological change and development, including information technology	Content Instructive

Figure G.2. Applecross's culture

G.2.4. Business Unit Definitions

The managers are asked to define the following stages:

- *Create market group*: Different customers with the same differentiator combinations are clustered and form a market group (Table G.1.).
- *Associate product and product groups through each market group*: Upon creating the market groups, the existing product ranges of the company by different

manufacturing type, are associated with those markets and market-product profile are established (Figure G.3.).

- *Place market group on the complexity and uncertainty matrix:* Each market group is mapped on the complexity and market uncertainty (Figure G.4.).
- *Evaluate market group:* Market groups are evaluated, based on each of the quadrants in the complexity-uncertainty in contact with customers and products.
- *Place product groups on the product-process matrix:* Each product or product group is then placed in the product-process matrix (Hayes and Wheelwright, 1979) for each market group (Figure G.5.)
- *Define business unit:* Here, market groups formed the business units for the company. With a similar number of products from each product type with similar process variety (i.e. project type production or job shop) all of those market groups indicated that these groups can be regarded as separate Business Units. Eventually, the following business units were identified for Applecross, as shown in Table G.2.

CSM

PART 1 BUSINESS UNIT DEFINITION												
2.1. Customer & Market Profile												
No	Customer	Which of these characteristics would help a customer choose your product over the competitors? Please do not qualify more than 3 Differentiator (D), 3 Qualifier (Q) remarks for each customer										Market Group
		Quality	Low Cost	Delivery Time	Product Support	High Reliability/Availability	Flexibility	Investment Support	Customized Product	Manufacturing Process	Value for Money	
1	Village range (Big Res-116+)	D		Q			Q	Q			D	Village range
2	City range (Small Res-66-116)			Q		D	Q	Q			D	City range
3	Detached house	Q				D	Q	D		Q		Detached house

APPLECROSS

Table G.1: Competitive Criteria

Products and Product Groups	Market Groups		
	Market Group 1 Village Range	Market Group 2 City Range	Market Group 3 Detached House
1 bedroom			
2 bedrooms		✓	
3 bedrooms	✓	✓	
4 bedrooms	✓		✓
> 5 bedrooms			✓

Figure G.3: Product Groups

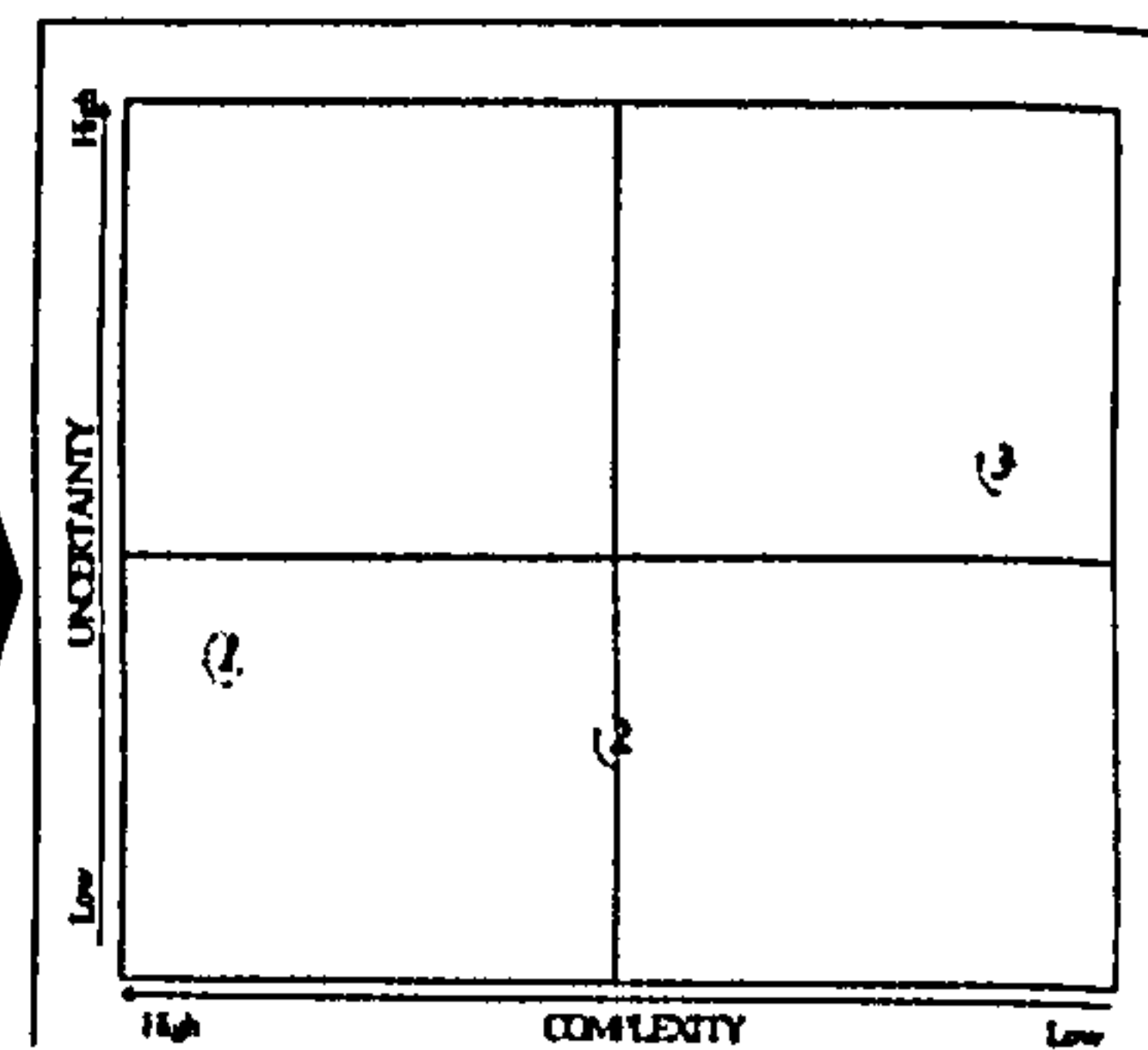


Figure G.4. Complexity / Uncertainty Matrix

BUSINESS UNIT	Competitors Factors	Customers	Product Groups	Sales £ x 1,000
Business Unit 1 Business Unit Name Village range	Quality - D Location - D Delivery time - Q Flexibility - Q Customer support - Q	Village range	3 bedrooms 4 bedrooms	20 %
Business Unit 2 Business Unit Name City range	Design - functionality - D Investment value - D Delivery time - Q Flexibility - Q Customer support - Q	City range	2 bedrooms 3 bedrooms	70 %
Business Unit 3 Business Unit Name Detached house	Design - functionality - D Customized product - D Quality - Q Customer support - Q Value for money - Q	Detached house	4 bedrooms 5 bedrooms <	10 %
Business Unit 4 Business Unit Name				

Table G.2. Applecross' Business Unit

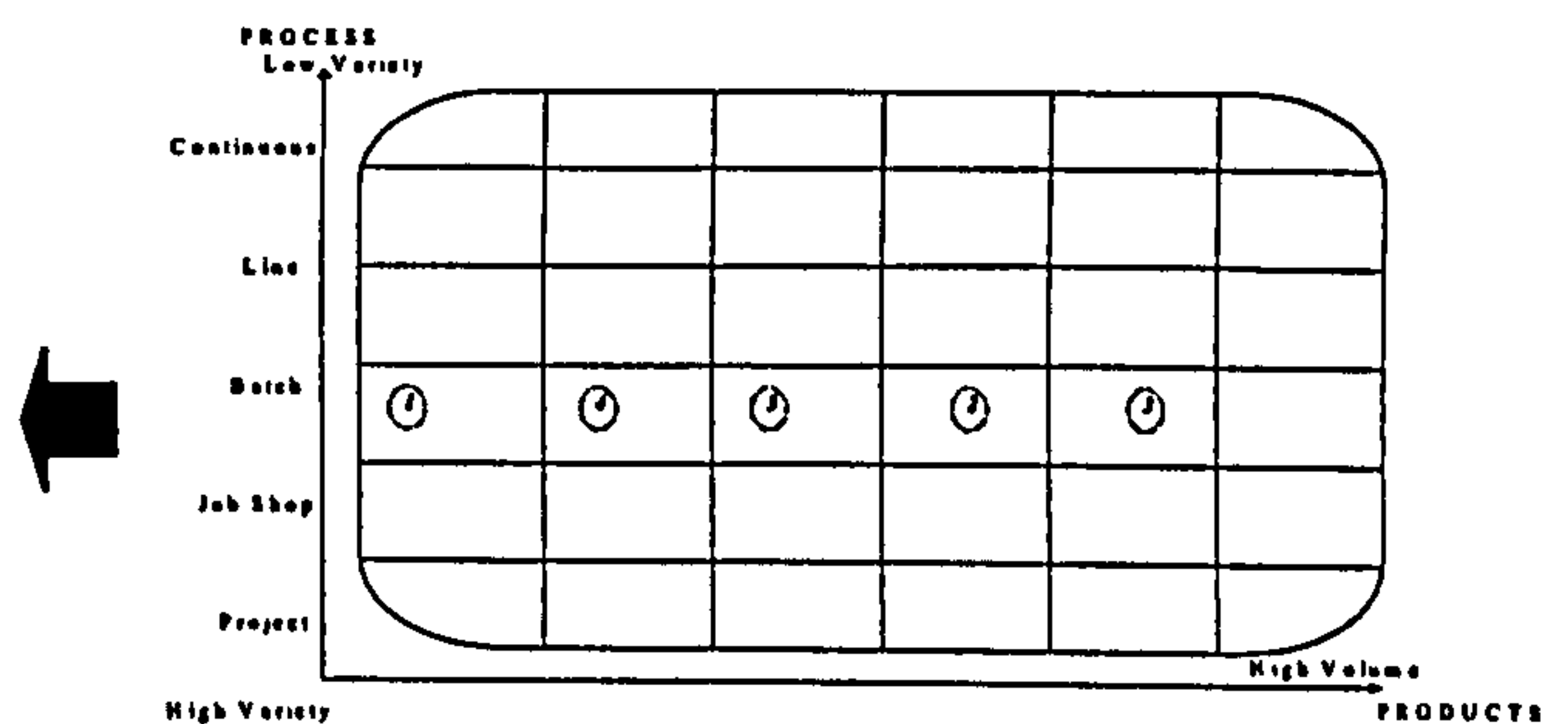


Figure G.5. Product / Process Matrix

G.2.5. Profit and Loss Account

The Applecross management would like to keep company's profit and loss account confidential.

G.2.6. Objectives

Objectives are the goals that are to be achieved to successfully implement strategy. Specific performance measures have to be applied to the objectives of Applecross Ltd. and the priorities of objectives are listed in Figure G.6.

Key Performance Results	Business Objectives	Rank	Measured By...
•Growth	→ Increase sale 25% per annual	1	Turnover
•Profitability	Improve profitability by 25% gross profit before overheads •by reducing overheads 1% per year •by increasing net profit from 10% to 15% (15% of construction cost, 10% over a 5 year period)	2	Profit %

Figure G.6. Applecross' Objectives

G.3. Strategy Formulation

Applecross has three business units. Applecross decided to consider two major business units namely Villa range and City range because of their profitability. Each business unit and its business process strategy formulation will be explained separately, as follows:

G.3.1. Villa Range

G.3.1.1. Villa Range Business Unit's Analysis and Value Propositions

Strategic History: Historically, the Villa Range Business Unit is unsuccessful to deal with reducing price sensitivity by increasing price, although location and a good reputation are the Business Unit's strengths. A dynamic environment with high competition leads to more expensive buildings. The Villa Range Business Unit has the

ability to understand local customer requirements and local knowledge for 15 years (Figure G.7.).

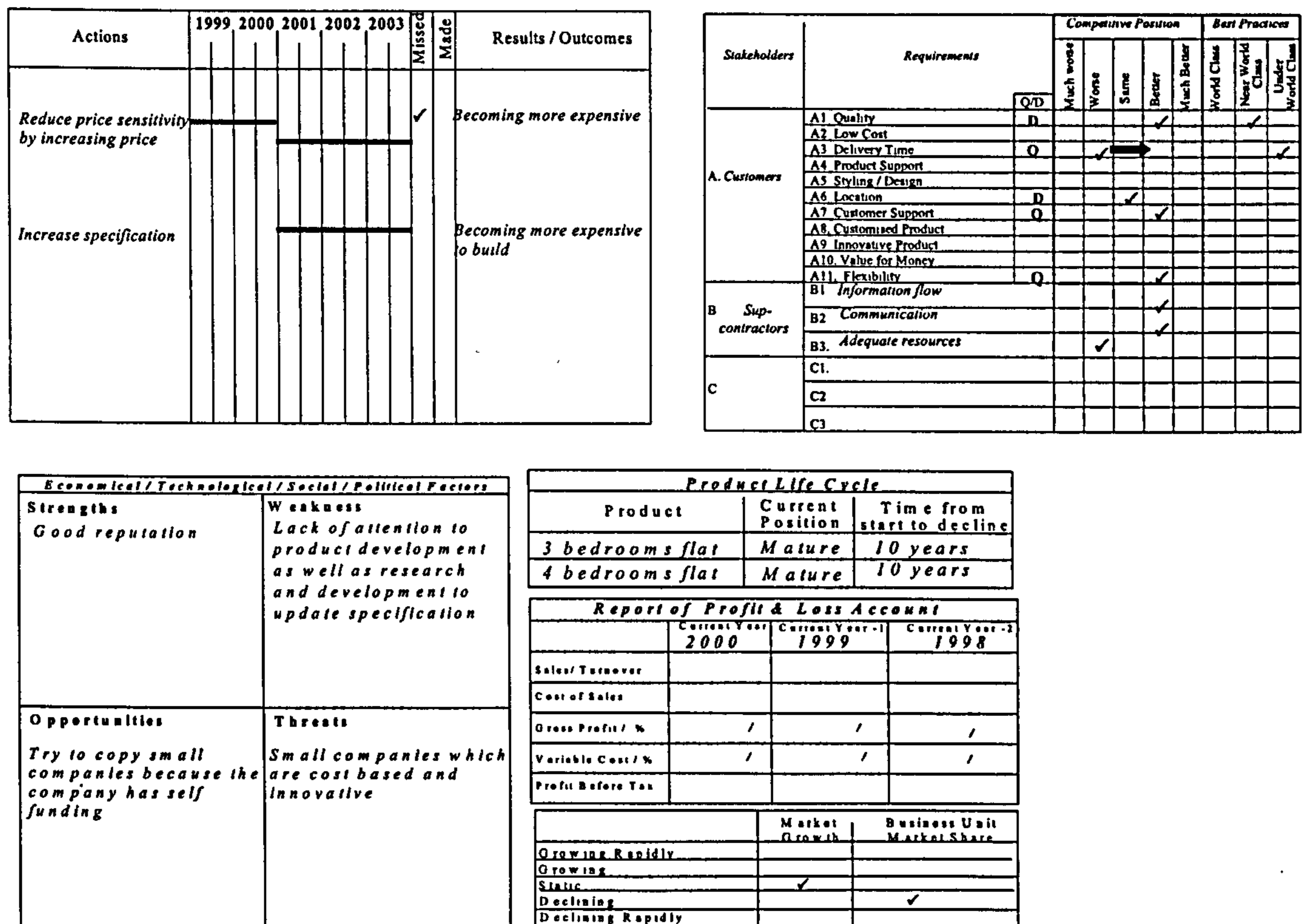


Figure G.7. Villa Range business unit's analysis

Market and Product Analysis: The Villa Business Unit's market is static and its market share is declining because of small companies that are cost based and very innovative. Although both flat types (3 and 4 bedrooms) are mature within this Business Unit, their life cycle is 10 years. With these products, the Business Units contribution to the business profit is average.

Competitors and Best Practice Analysis: The differentiators reflected *product leadership* in terms of offering lifestyle innovative houses to enhance responsiveness, and also reflected *customer intimacy* by customizing the houses, depending on customer's preferences.

Strategic Objectives and Priorities: Contribution to business objectives by increasing market share and margin through product leadership value strategy. It is going to achieve this by:

Product Leadership / customer intimacy - increasing market share by improving delivery time, houses location and specification

Discussion and justification: The innovation process is fundamental to sustaining product leadership strategy. The Villa Business Unit has to continuously lead in the development of superior houses. Third-party relationships are another source for new products (Table G.3.).

The customer management processes sought to exploit the benefits from new houses by migrating traditional, after sales service, as well as offering more up-to-date specifications (e.g. internet connection) to the new information set now available on the CDs (e.g.). Furthermore, the Villa Business Unit needs to differentiate itself by building houses in good locations. It needs to consider the problems that might have arise if each regional location has local characteristics (e.g. environmental issues, government regulations).

Villa Range Objectives	Measured By	Current Performance	Target performance	Constraints
• Increase market share	% of the market share	20% of Edinburgh (50 total)	40% of market	
• Improve delivery time	Building time	12 months building time	10 months	
• Better differentiation of product	Aesthetically different room		At least one aesthetically different room	
• Better location than competitors	Price per ft ² (£over paid)	£ 220 ft ²	£ 250 ft ²	

Table G.3. Villa Range business unit's performance measures

G.3.1.2. Villa Range' s Business Processes Analysis

In summary, the Villa Range “*Product Leadership/ Customer Intimacy*” value strategy consists of four overlapping strategic themes (objectives):

1. Increase market share
2. Improve delivery time
3. Better differentiation of product
4. Better location than competitors (Figure G. 8.)

PART 6. ANALYSE BUSINESS PROCESSES					Business Unit Title Villa Range		
6.1. Define Process Objective Against Each Business Unit Objective							
Business Unit Objectives	Operate Processes				Support Product		
	Generate Demand	Acquire Land	Pre-construction	Construction	IT	Finance	Human Resource
1. Improve market share	Better market information	Communicate customer requirements	Develop new innovative design	Improve construction resource usage	CD room	£ spend	Training sales teams
2. Improve delivery time		Faster acquire land by making quick decisions	<ul style="list-style-type: none"> • Quick adaptation of design to market • Determine delay point of customization • Design products (build) so that they are easily customized near the end of the construction process • Improve partnership with specialist design sub-contractors 	<ul style="list-style-type: none"> • Construction lead time reduction • Reduction in customization planning lead time 			Labour time utilization
3. Better differentiation of product	Communicate specification advantages + brand advantages						Good work instruction Clarity of employees job
Better location than competitors	Communicate location advantages	Search for better location					

Figure G.8. Villa Range Business Unit's objectives deployment

Generate Demand: Better market information on customer requirements would maximise creativity of housing design and improve market share. One of the most important characteristics to be highlighted in this process is to specify customer personal information through market research, which would increase sales of villa range. As Applecross has been located in Edinburgh for fifteen years, it has gained good experience to understanding local knowledge and customers' requirements. Until now, Applecross has never undertaken any research (based on statistics); their knowledge of the market is anecdotal. This might cause some problems in the future when the nature of demand changes in terms of not recognising and acting very quickly. Therefore,

surveys using questionnaires should be used to understand customer requirements and their location choices, based on their life styles, ages and other personal information. A good knowledge of the market, customer personal information and location advantages would manage contacting and gaining more customers (Table G. 4).

Generate Demand objectives	Priority	Measured By	Current Performance	Target performance
• Better market information	3	Review customer information (e.g. age, occupation, marital status etc)		100% all customers profile in place
• Communicate specification advantages + brand advantages	2	% of customer recognizing the advantages of building	Not known	90%
• Communicate location advantages	1	% of anticipating location advantages	%90	100%

Table G.4. Generate demand performance measures

Acquire Land: After distinguishing the vendors' requirements and needs, Applecross requires to spend time in negotiations to acquire lands. The flat structure of the company makes negotiations very flexible, making quick decisions, which is one of the company's strengths. On the other hand, not having enough capital sometimes results in not bad deals (Table G.5.).

Acquire Land Objectives	Priority	Measured By	Current Performance	Target performance
• Understand vendor requirements	1.1	% of successful negotiation completed	% 50 reduction	% 75 reduction
• Faster acquire land by making quick decision	1.1			
• Search for better location	2	price per ft ²	-	% 10 more per ft ²

Table G.5. Acquire land performance measures

Pre-construction process: Developing new innovative design does not just require customer personal information, but it also needs to achieve standard building regulations (e.g. reduce heat loss, sound insulation, IT facilities etc.). The number of new re-designs during the pre-construction process affects pre-construction process time. Therefore, Applecross' aim is not to have re-design in the future, which would lead to a reduction

in pre-construction time from nine months to six months. Although being a small company, it is an advantage for the pre-construction process because of flexible management and quick decision-making. It also has a disadvantage in not building partner arrangements with design companies. In addition, big companies manage to spend time and money on market research for innovative design or up-to-date technology (Table G.6.).

Pre-construction Objectives	Priority	Measured By	Current Performance	Target performance
• Develop new innovative design	3	% better than building regulation (heat, isolation etc.)		
• Quick adaptation of design to market	2	Not decided		
• Determine delay point of customisation	4	Schedule for customers	Stick on schedule date	On time
• Improve partnership with specialist, design, sub-contractors	1	Reduction in pre-construction process time	9 months	6 months

Table G.6. Pre-construction performance measures

Construction: The construction process' main objective is to improve building time. Therefore, the success of the construction process is believed by reaching the expenditure in line with the planned expenditure during that time (Low expenditure = slow down on the building programme). Applecross believes that when they improve the pre-construction process that will automatically improve construction process. Furthermore, improving co-ordination between these two processes (parallel processes) would lead to a reduction in construction time. The construction process' strength is to have well-motivated staff with good technical knowledge. People's responsibilities overlap each other (Table G.7.)

Construction Objectives	Priority	Measured By	Current Performance	Target performance
• Improve construction resource usage	1	Expenditure is line with the planned expenditure in that time and quality	5-10% of over budget	Best by being on time and quality
• Construction lead time reduction	2			
• Reduction in customisation planning lead time	3	Reduction on no. of customisations	Everything	Allow only kitchen and bedrooms customisations

Table G.7. Construction processes performance measures

IT: Making available a CD giving all information about the building (e.g. white goods, heaters, wallpaper colours emergency numbers, solicitors, etc.) would make the customer's life easier when moving into the accommodation. Currently, no other companies are offering this. Therefore, this would enable Applecross to build a good brand image in the market.

Furthermore, transferring design information to the database would reduce paper work and improve efficiency.

Finance: Applecross' aim is to increase turnover and margins by 25% annually.

HRM: Applecross is planning to make some investment in training staff to ensure that their strategies are executed at the point of better quality, sales order process and customer support. Job descriptions for each employee would lead to many improvements in quality and delivery time.

The Villa Range process action plan can be shown in the following Tables (G.8. & G.9.)

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G.3.1.3. Villa Range's Business Processes Action Plan

PART 5. ANALYSE BUSINESS PROCESSES		Business Unit Title		Villa Range			
6.4. Establish Business Processes		Strategy		Application Plan			
Business Process Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001	2002	2003	Owner
				Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1
1. Obtain better market information	High						Sales
1.1 Improving demand forecasting	High						Sales
1.2 Anticipating customer's design requirements	High						Sales
1.3 Communicate specification	High						Sales
2. Develop advantages	High						Sales
2.1 Differentiate products being practical/feasible	High						Sales
2.2 Communicate specification	High						Sales
2.3 Advertise benefits of location	High						Sales

PART 5. ANALYSE BUSINESS PROCESSES		Business Unit Title		Villa Range			
6.4. Establish Business Processes		Strategy		Application Plan			
Business Process Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001	2002	2003	Owner
				Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1
1. Understand/anticipate vendor requirements through interview experience in the market (e.g. lawyers etc)	High						CC
1.1 Faster acquire lead by making quick decision	High						CC
1.2 Use of appropriate priority rules (cost-threshold)	High						CC

PART 6. ANALYSE BUSINESS PROCESSES		Business Unit Title		Villa Range			
6.4. Establish Business Processes		Strategy		Application Plan			
Business Process Pre-construction Recommended Action	Priority High Medium Low	Max. Days	Cost Estimate £	2001	2002	2003	Owner
				Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1
1. Develop new innovative design because of new traditional market	High						ICAR, BM, PCAR, CC, Arch.
1.1 Identify customer requirements by establishing customer focus groups and carrying out brain storming session internally	High						ICAR, BM, PCAR, CC, Arch.
2. Quick adaptation of design to market	High						CC, Arch
2.1 Include specific steps and pre-construction programming	High						CC, Arch
2.2 Determine delay points during customization	High						ICAR
3. Learning from the previous experience, patterns	High						ICAR
4. Improve partnership with specialist design sub-contractors	High						BM
4.1 Create a list of partners and consider their design and technical abilities	High						BM

Table G.8. Villa Range business processes action plan

PART 5. ANALYSE BUSINESS PROCESSES																
6.4. Establish Business Processes																
Business Process Recommended Action																
Business Process Recommended Action	Priority High Medium Low	Man. Days	Cost Estimate £	Application Plan												
				2001				2002				2003				
				Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Owner
1. Improve construction resource usage	High															ICAR, PM
1.1 Improve scheduling of resources	High															ICAR, PM
2. Construction lead time reduction	High															PR
2.1 Introduce pre-construction program to identify delay points clearly	High															ICAR, PM
3. Reduction in customization	High															ICAR, PM
3.1 Introduce time-table which ties up with customization construction and customisation program (where customisation during construction process, delivery time should be extended)	High															PR
	High															ICAR, PM

PART 6. ANALYSE BUSINESS PROCESSES																
6.4. Establish Business Processes																
Business Process Recommended Action																
Business Process Recommended Action	Priority High Medium Low	Man. Days	Cost Estimate £	Application Plan												
				2001				2002				2003				
				Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Owner
IT Introduce CD rom	High															ICAR, PM
1.1 Transfer all design information to CD	High															ICAR, PM
2. Reporting about customer complaints	High															ICAR, PM
2.1 (Give feedback to design and shift) Plannee	High															ICAR, PM
HR Introduce / extend employee training	High															ICAR, PM
1. Budget allocation	High															ICAR, PM
2. Good work instruction	High															ICAR, PM
3. Labour time utilization	High															ICAR, PM

Table G.8. Villa Range business processes action plan

G.3.2. City Range

G.3.2.1. City Range Business Unit's Analysis and Value Propositions

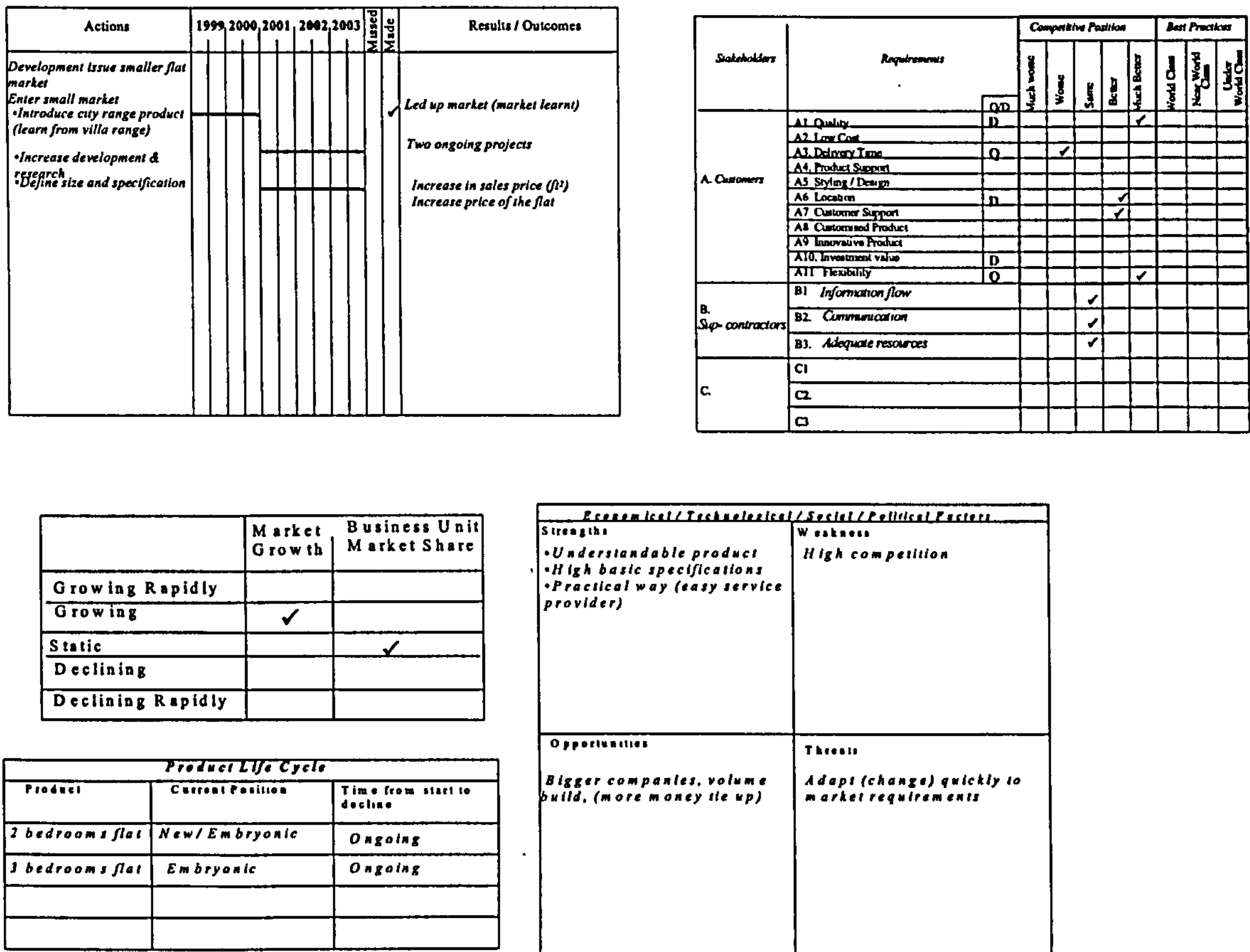


Figure G.9. City Range Business Unit analysis

Strategic History: Applecross recognised the potential market in the small flat market in the city. Applecross managers believe that market research will help the team to identify the targeted markets with their relative sizes and specifications, as well as opportunities for growth and turnover (increase sales price -ft²).

Market and Product Analysis: The City Range Business Unit's market is static and its market share is growing because of big companies that are volume builders and have more money than Applecross. Therefore, competition is very high.

Both flat types (2 and 3 bedrooms) are new / embryonic within this Business Unit and their lifecycle is an ongoing process.

Competitors and Best Practice Analysis: The differentiators reflected a *product leadership* in terms of offering life style innovative houses to enhance

responsiveness, and also reflected *operational excellence* by reducing the price and completing on time.

Strategic Objectives and Priorities: Contribution to business objectives by increasing market share and margin through product leadership / operational excellence value strategies. This will be achieved by:

Product Leadership /operational excellence- improving margin by improving quality- specifications and improving delivery time, house location and specification.

Discussion: The approach to the market will be determined by the personal profile (e.g. age, education, occupation, marital status etc.) of the client and with a ‘step-on-up’ approach being used to build credibility with the larger, more professional buyers.

G.3.2.2. City Range’ s Business Processes Analysis

In summary, the City Range “*Product Leadership/ operational excellence*” value strategy consists of four overlapping strategic themes (objectives):

1. Improve quality (specification)
2. Better location than competitors
3. Improve delivery time
4. Improve margin (Table G. 10)

PART 6. ANALYSE BUSINESS PROCESSES							
							Business Unit Title
							City Range
6.1. Define Process Objective Against Each Business Unit Objective							
Business Unit Objectives	Operate Processes				Support Product		
	Generate Demand	Acquire Land	Pre-construction	Construction	IT	Finance	Human Resource
1. Improve quality (specification)	Better market information	Identification emerging location	•Better knowledge of suppliers capacity •Proportion of parts that are standard	•Level of consideration mfg. & lead times •BOM accuracy			
2. Better location than competitors	Searching for land	•Better understanding of vender requirements •Search for better location					
3. Improve delivery time			Quick adaptation of design to market	•Improve Level of BOM accuracy •Reduction in number of changes to purchaser orders •Improve partnership with specialist design contractors			Flexible workforce
4. Improve margin			•Reduction in product complexity	•Improve lead times •Improve flexibility, delivery, speed	Reliable databases	Reduce process investment cost	Stakeholder involvement
				Better coordination			

Table G.10. City Range Business Unit objective deployment

As stated in section G.1. City Range business processes analysis is not considered because Applecross decided to focus on only one business unit's (Villa Range) processes analysis and strategies.

G.4. Strategy Implementation

Strategy implementation consists of two stages:

- Trade-off and consolidation of business unit's objectives
- Validate chosen strategy

G.4.1. Business Unit Gain/ Business Unit market Growth

Based on analysis of each business unit situation and its business processes, several alternative strategies and tactics are available to each business unit, as explained below (see Figure G.14.):

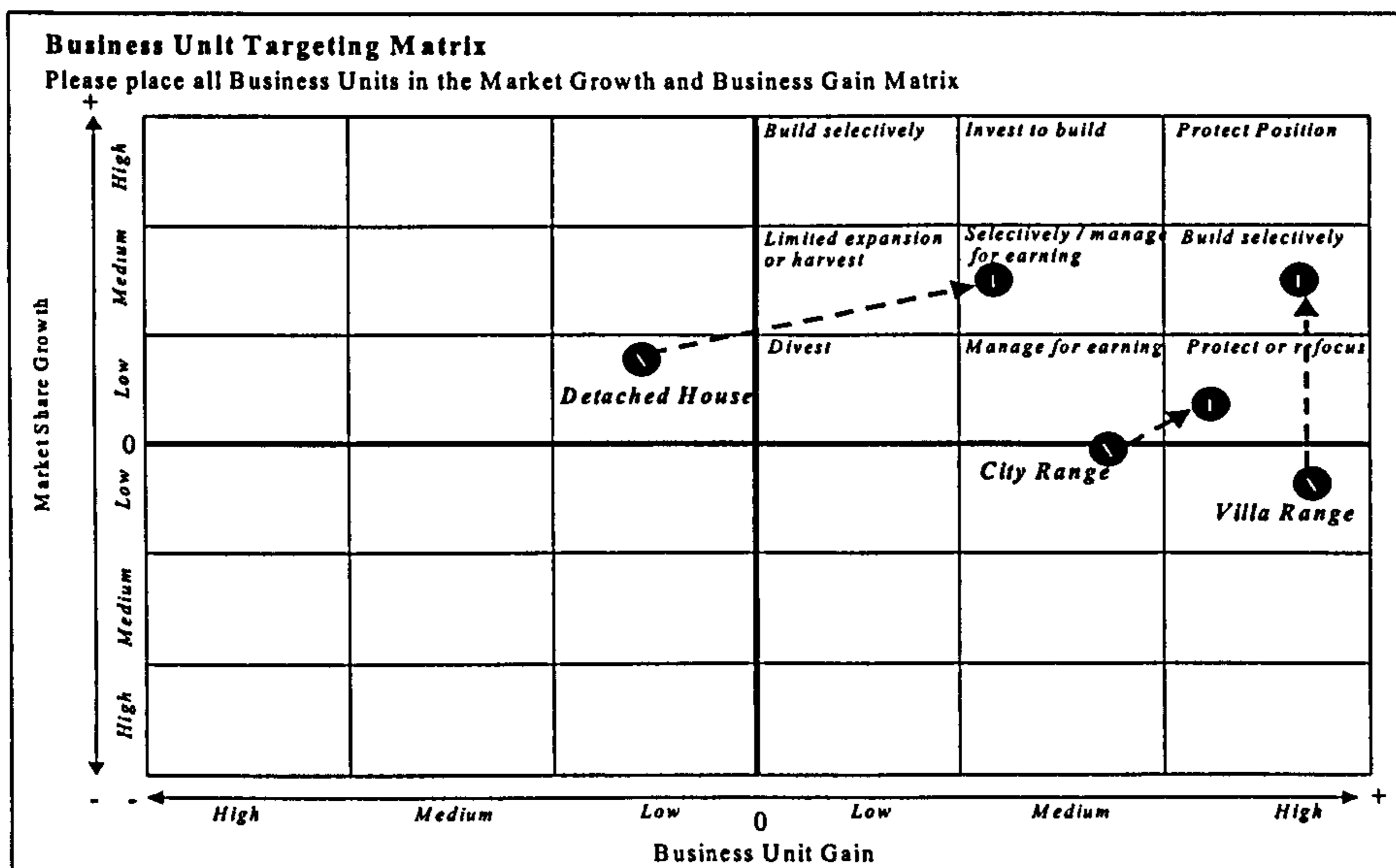


Figure G.14. Business Unit Gain / Business Unit Market Growth

In summary, two business units (City Range and Villa Range) are revealed as the most attractive ones for profits, as their market shares' target will also grow. Applecross considers buying good locations for houses (not for city range flats). They want to differentiate their product in terms of specifications. On the other hand, detached houses are not standard products, which are different in terms of style and design.

Applecross believes that *‘As people buy houses rarely, people have no brand loyalty. People want to see good facilities in their house’*. Therefore, Applecross is targeting investment in soft issues (e.g. brand loyalty, market research through questionnaires, etc.).

G.4.2. Trade-off Business Unit Objectives

Applecross wants to trade-off only two business units (Villa Range and City Range).

PART 7: STRATEGY IMPLEMENTATION					
7.2. Identify and Eliminate (whenever possible) Conflicts Between the Business Unit Objectives Please compare all Business Unit Objectives in the matrix according to C – conflict, + Positive relationships					
		Business Unit Villa Range Objectives			
		Improve market share	Improve delivery time	Better differentiation of product	Better location than competitors
Business Unit City Range Objectives	Improve margin	PC			
	Improve delivery time	PC	PC	PC	+
	Better location than competitors				+
	Improve quality (specification)			+	

Figure G.15. Trade-off business unit objectives

Figure G.15 shows that almost all Villa Range and City Range business objectives have positive relationships or possible conflicts in the future. Possible conflicts might occur when Applecross increases the Villa Range business unit’s market share.

Villa Range market share can be improved by reducing city range business unit’s margin. Furthermore, when Applecross improves one business unit’s delivery time, it needs to use staff and resources for this business unit. Therefore, this might cause a possible conflict between two-business unit’s delivery time improvements.

Appendix H Network Storage Operations Engineering Case Study (Chapter 10)

H.1. Introduction

Appendix E,F,G gave a detailed description of PROPHECY's application to the whole company. Although the three case study companies are different in terms of industry, situations, market, activities, technology etc., the initial three case studies show that the PROPHECY's process helped management to

- Elucidate and clarify business development needs
- Generate a better understanding of the important value added processes of the company

This Appendix's aim is to demonstrate the PROPHECY process flexibility by presenting a case study in one department (Network Storage Department) in Sun Microsystems . it relates to the collection of relevant information about the department to facilitate department strategy. A formulation stage is then presented by defining each department unit's value propositions.

H.2. Input

The input stage is concerned with the collection of relevant information to understand department's values, objectives and strategies. Throughout the input stage, information is collected on department's mission, department's profile, and department's customers. This stage consists of the following:

H.2.1. Company Profile

In less than a decade the world in which we live and work has changed forever. Sun Microsystems was a major force in the dot com revolution. Today it is in a unique position to help companies gain a huge competitive advantage in the new economy. Crucial to that success is it's state-of-the-art manufacturing plant at Linlithgow.

Defining the department's business units generated extensive and interesting discussion that was primarily focused on identifying the customers for the Network Storage Department.

H.2.2. Mission

Firstly, the manager was prompted to define current important issues to the company by using a list of headings requested as shown in Figure H.1. The managers were then asked what they thought about Network Storage Department's current culture and where they want to see it in the future as illustrated in Figure H.2.

Critical Components of Mission Statement	Mission Set
Field of Operation	San Micro systems (SMD) • World wide operations (WWOP)-Network
Products and Services	<ul style="list-style-type: none"> •Product knowledge/ technical support •Escalation management, Global solution •Continuous improvement in areas of product quality
Technology	<ul style="list-style-type: none"> •Engineering tools- project plans, timeliness etc./ Quality management tools-databases •Product life cycle process, SLIV systems, yield analysis, market place
Market:	<ul style="list-style-type: none"> •USA/UK •Europe - Japan customers base for NWS •Manufacturing, Sales field, cost quality, supply management, design, US-manufacturing
Enablers/ Drivers (Competitive Criteria)	<ul style="list-style-type: none"> •Product quality •Technical support •Supportive- fast support •Escalation management •Finance- cost/ overhead rates/ budgets •Product performance to specifications •Technical training •Design- feedback DF * •Crisis management
Leadership	Team focused leadership
People Management	<ul style="list-style-type: none"> •Quality IPK process •Yearly appraisal •Mobility •Performance feedback •Ongoing T-D cost classes
Resource	<ul style="list-style-type: none"> •Headcount only- TBD (to be determined) •Building / machines etc. all in place

Figure H. 1. Critical components of mission statement

Current Culture	Aspects of Culture	Desired Culture
Change From: Low (1-5) Change To: High (1-5)	•The extent to which the organisation is market oriented, giving customers high priority	Change From: Low (1-5) Change To: High (1-5)
Close (1-5) Open (1-5)	•The Relationships between management and staff, manifested, for example, (through communications and participation systems	Close (1-5) Open (1-5)
Poor (1-5) Committed (1-5)	•The extent to which people are target oriented and committed to achieving agreed levels of performance	Poor (1-5) Committed (1-5)
Isolated (1-5) Need Understanding (1-5)	•Attitudes towards innovation	Isolated (1-5) Need Understanding (1-5)
Accepted with reservations (1-5) Accepted (1-5)	•Attitudes towards costs and cost reduction	Accepted with reservations (1-5) Accepted (1-5)
High, as a means of survival (1-5) Less loyal but more committed as fortunes improve (1-5)	•The commitment and loyalty to the organisation felt, and shown by staff	High, as a means of survival (1-5) Less loyal but more committed as fortunes improve (1-5)
Cautious (1-5) Improving (1-5)	•The impact of, and reaction to, technology and technological change and development, including information technology	Cautious (1-5) Improving (1-5)

Figure H. 2. Network Storage Department culture

As a result of these two figures the mission statement can be defined: *'To continue to be a provider of technical support in Network Storage Business Units products, to achieve best in class in quality while maintaining efficiency on cost'*

H.2.3. Business Unit Definition

Create segment groups: In order to create segment groups, each customer group is evaluated against various dimensions of supply competitiveness on which they are chosen. Different customers of the Network Storage Department with the same criteria combinations are clustered to form a segment group as illustrated in Figure H.3.

Associate product and service groups to each segment group: Upon creating the segment groups, the existing product ranges and services of the department are associated to a segment which is established against each segment group (Figure H.4).

Define business unit: In order to define business units, the final segment groups were reconsidered. Here, segment groups form the business units for the department. Eventually, the following business units identified for the Network Storage Department is shown in Figure H.5.

No	Customer's of the Storage Department	Which of these characteristics would help a customer choose your product and service? Please do specify criteria for each department's customer.													Segment Group	
		Quality	Technical Product knowledge	Lead time	Flexibility/ support	Customized Product	Innovative Product	Budget constraints	Customer Product Support	Availability	Infrastructure development	CI	Design for manufacture / test	Test stability		Cost
1	Manufacturing	✓	✓		✓					✓	✓	✓	✓	✓		Global Manufacturing / Supply Management
2	Customers	✓		✓										✓		Customers
3	Suppliers (EM)		✓		✓		✓					✓	✓	✓		Suppliers
4	Design engineer					✓	✓						✓			Design engineer
5	Supply management	✓	✓	✓	✓					✓		✓				Engineering
6	Cost quality	✓	✓		✓				✓							
7	US Manufacturing	✓	✓		✓					✓	✓	✓	✓			
8	Finance													✓		
9	Japan Engineering		✓		✓							✓				

Department Product and Service Groups	Segment Groups			
	Segment Group 1 Global Manufacturing- Supply Management	Segment Group 2 Customers	Segment Group 3 Suppliers	Segment Group 4 Design engineer
1. Product knowledge	✓	✓	✓	✓
2. Product specification		✓		✓
2.1. Manufacturing processes	✓			
3. Continuous improvement	✓	✓		
3.1. Yield improvement	✓	✓	✓	
Escalation management	✓	✓		
Engineering innovation	✓	✓	✓	✓
Design for * feedback	✓		✓	✓

Figure H.3. Network Storage Department's Customers

Figure H.4. Product and Services of Network Storage Department

BUSINESS UNITS	Competitors Factors	Department Customers	Product and Service Groups
Business Unit 1 Business Unit Name Global Manufacturing- Supply Management	<ul style="list-style-type: none"> Escalation management Infrastructure Test stability Global solution Technical support knowledge Availability Flexibility/ Support Quality CI 	<ul style="list-style-type: none"> Manufacturing US Manufacturing Customer quality Japan engineering 	<ul style="list-style-type: none"> Knowledge CI Escalation Management Manufacturing Process Yield improvement Engineering Design for *
Business Unit 2 Business Unit Name Customers	<ul style="list-style-type: none"> Quality Lead time Cost Technical product Flexibility/ support 	<ul style="list-style-type: none"> Customer quality Japan engineering Customers 	<ul style="list-style-type: none"> Conformance to specification Quality delivery Cost Failure analysis Product support RCCA process
Business Unit 3 Business Unit Name Suppliers	<ul style="list-style-type: none"> Technical product Escalation management Flexibility/ support Innovative product CI Design for test Test stability 	<ul style="list-style-type: none"> Suppliers (External manufacturer) 	<ul style="list-style-type: none"> Training CI Escalation management Support development
Business Unit 4 Business Unit Name Design engineer	<ul style="list-style-type: none"> Customized product Innovative product Design for manufacture / test 	<ul style="list-style-type: none"> Design engineering 	<ul style="list-style-type: none"> DF * feedback Problem solving Planning

Figure H.5. Network Storage Department's Business Units

H.3. Business Unit Analysis

H.3.1. Business Unit 1 Analysis: Global Manufacturing- supply management

Historically: Global manufacturing was unable to deal with quality improvement because of global supplier performance. Flexible work schedule, commitment, technical skills set and product knowledge are global manufacturing's strengths, therefore, these led productivity improvement in terms of test and assembly processes as well as new products introduced on time although quality is questionable. Storage group in Sun-Scotland used to support both external and internal manufacturing. Sun headquarters introduced the front line support engineering group, which deals with internal support. Until now, escalation management within the storage group has been tackled with the internal problems when acquired, the progress of escalation management was made as above, but not at a satisfactory level.

PART 4: ANALYSE BUSINESS UNIT							Business Unit Title: <i>Global Manufacturing-Supply Management</i>	
4.1. Business Unit Past and Current Strategy: The left side of questionnaire responses the previous and current strategy issues, the right relates to the outcomes or result of actions. Please specify the time table for each action.								
Actions	1999	2000	2001	2002	2003	Not Made	Not Made	Results / Outcomes
•Improve quality								Supplier performance globally
•Improve test/assembly process (Improve production)								Process has improved (yield)
•Transfer products to external manufacturing (EM)								Products transferred to EM on time
•Introduce products								Products introduce on time, but quality questionable
•Provide technical support								Team in place to support
•Escalation management								As above, but progress to be made

Figure H. 6. Global manufacturing' current and past strategy

PART 4: ANALYSE BUSINESS UNIT				Business Unit Title: <i>Global Manufacturing-Supply Management</i>	
4.2. Business Unit Past and Current Environment:					
Past Business Unit		Present Business Unit		Future Business Unit	
Environment		Environment		Environment	
•Product knowledge in several areas/ group		•Product knowledge from one focused group		•Product knowledge 'potentially' getting shared	
•Products manufacturing in one Europe site		•Still in one Europe side		•Product moving to EM	
•Test development coming from central function		•Test development coming from focussed test group		•Test development under 'threat'	
•Escalation management from central functions		•Escalation management from dedicated group		•Escalation management is in question	
		•Greater product focused organisation		•Product charter needs reviewed	

Figure H.7. Global manufacturing's environment analysis

PART 4: ANALYSE BUSINESS UNIT				Business Unit Title		Global Manufacturing-Supply Management							
				Product Life Cycle									
Product and services				Current Position		Time from start to decline							
Knowledge				Mature/ Growing		1-2 years							
CI				Growing		Ongoing/ 1-2 years per product							
Escalator management				Growing		Ongoing							
Manufacturing process				Introduction		1-3 year							
Yield improvement				Growing		Ongoing							
Engineering innovation				Introduction		1-2 year							
Design for				Growing		Ongoing							
Stakeholders	Requirements	Comparison with US Best Practice								Economic / Technological / Social / Political Factors			
		Much worse	Worse	Same	Better	Much Better	World Class	Next World Class	Below World Class	World Class	Strengths	Weakness	
A. Global Mfg Supply mana	Quality											•Support focused •Flexibility (work schedule employees) •Commitment •Product knowledge •Technical skill set •CI)	•Technical skill set •CI •Time/ task management •Clear objectives/ expectation •Leadership in group •Process stability
	Escalator management												
	Technical support												
	Support												
	Continuous improvement												
	Test development												
B. Employee	B1 Satisfaction/ morale											Threats •Change in manufacturing strategy (external management) •Front-line support engineering •External management capabilities •Overheads (3) •Technical knowledge	Opportunities •Develop new UK charter •Quality/ external management •CI/ external management •Product quality- delivered •Improved (make shorter) test times •Better / more stable test process
	B2												
C.	B3												
	C1												
	C2												
	C3												

Figure H.8. Global manufacturing's competitive position

Environment: The potential competitive advantage of global manufacturing (basically, quality, continuous improvement, knowledge of the product and support), came up against some important movements in the context of future environment (Figure H.7):

- Product knowledge moved from several areas to one focused group and in the future would be 'potentially' getting shared with several groups
- Product manufacturing will transfer from one side of Europe to external manufacturing
- Test manufacturing as well as escalation management initially used to come from central function. Currently, they are coming from focused test group or a dedicated group within the storage group. Moreover, the latest development in the uses of the front line engineering is that of converting the transmission of manufacturing problems directly to the front line engineering group, which aims to be a buffer between manufacturing and the storage group. Therefore, in future, test development and escalation management will be under threat in terms of necessity.
- Because of changes in the organisational structure, in future, product charter needs to be reviewed to understand how each group adds value to organisation.

Products and Services: The global manufacturing and supply management is product based with high level of product knowledge, which can be considered with two different perspectives matured in general or growing for each product (1-2 year life cycle) as follows:

- Continuous improvement provides the understanding of failures and assembly infrastructure.
- Yield improvement and design for * (world-class design) is growing, ongoing issues in general and their life cycle per product is changing from one to two years. Manufacturing engineering and engineering information is in the introduction stage with one to two year life cycle (Figure H.8.).

Global Manufacturing – supply management requirements: The main requirements of global manufacturing and supply management are explained in order of their importance:

- quality of the product (complete box)
- continuous improvement
- technical support
- escalation management
- test stability and support
- global solution and so on.

The main aspect of all of above issues can be seen along with the question of how the storage group influences quality of the product (complete box). Influences are performed by: test, assembly, training, skills, test times as well as yield analysis.

Discussions: When Sun thought of developing a new range of products and services, a box with various pieces of equipment was being used for each complete product. This led to a large number of pieces within the box, and caused highly unpractical quality control. The storage group realised that improved tool set (e.g. procedures, complete

tools) would be able to support manufacturing with a better solution than the existing one. This solution consists of **three objectives** as follows:

1. Improved tool sets
2. Improved procedures and processes (simpler and computer based test process)
3. Transfer of knowledge

Providing strategic support to global manufacturing and supply management in order to *increase efficiency and effectiveness in terms of quality, cost, lead times higher quality in new product introduction process with less hassle and self-sufficiency*, can be obtained by

- making them self sufficient in day to day operation by providing robot tool sets, procedures (that are simple) and transfer of knowledge (about the tool set and process)
- focusing on development of next generation tool set processes

H.3.2. Business Unit 2 Analysis: Customers

Historically: The basic objectives of the storage group are defined based on external customer expectation such as delivery quality, conformance to specification and rapid problem resolution to augment customer confidence (Figure H.9.).

Network Storage Department was able to deal with a product, which conforms to specification; managers felt that these would be better in some cases. Until 2000, delivery quality improvement could not be achieved as an ideal in terms of functions. Function means in storage group after purchasing the product, how they work. One of the Network Storage Department's responsibilities is to find the reasons behind the problem if the product fails. After 2000, improvement has been achieved in delivery quality (functional). Until now, delivery quality in terms of non-functional, (do not deliver products with all pieces to the customers e.g. getting put mouse) has not been as

satisfactory as desired. Improvement in support service lead times and support product cost has recently been considered.

Until this year, the storage group was not sufficiently capable to manage continuous improvement in terms of customer quality improvement. This caused some problems in products quality performance. Although DOA (Dead on Arrival) metric has been used satisfactorily for continuous improvement, it is necessary to give more consideration/focus to the metric in order to provide a better quality performance product. Problem solving and customer problem resolution for customer quality has been at an adequate level since last year because there was no team in place. Customers, who are located in Japan, are visiting and giving a presentation as needed.

Environment: The potential competitive advantage of global manufacturing (basically, quality {problem solving and conforms to specification}, lead time and cost), came up against some important movements for future environment (Figure H.10.):

- The past storage group had been unsuccessful in confirming product specification. Although product performance is getting better, this department's aim in the future environment is to confirm all product specifications.
- Up to now Sun-storage reputation has been harmed.
- Although non-functional delivery quality has been improved by comparing the past, quality could still not reach the higher levels desired.
- Internal processes have difficulties in managing the prediction when units are shipped to customers.
- Currently, test and process overheads are too high. In the future, it seems that the new improvement in lead-time could manage to diminish internal cost.
- Up to now, internal metrics have been used against customer requirements. The storage group's aim for the future environment is to drive product quality through customer requirements.

- In the past, customers' requirements have not been understood very well. In the future, storage group will give more awareness to customers' requirements.
- Currently DOA (Dead on Arrival) metric is being used very well, although there has not been enough data on products in the past. The storage group is preparing to be data driven in the future to improve product quality.

Although customers visit and the presentation was received very well, it is necessary to understand Japanese customer requirements.

Products and Services: Storage group's external customers are located in Europe and Japan. Their expectation is to get high quality product service which associations with problem solving (growing 1-year life cycle) and better-delivered quality (functional or non-functional quality 1-2 years). Internal customers are demanding better support service, which is ongoing progress and further growth.

Failure analysis and product support is growing and life cycle per product is changing from zero to two years. Planning in design engineering is now in the introduction stage. Visiting support and escalation management is more advanced. RCCA process is growing and it is an ongoing issue (Figure H.11.).

Customers' requirements: The main requirements of customers are seen in order of their importance:

For *external customers*:

- Quality in the light of problem solving and conforming to specification
- Lead time
- Cost
- Technical product knowledge
- Flexibility/support
- CI/problem solving

For *internal customers*:

- Level of support
- Communication
- Flexibility

PART 4: ANALYSE BUSINESS UNIT						Business Unit Title: Customers
4.1. Business Unit Past and Current Strategy:						
Actions	1999	2000	2001	2002	2003	Results / Outcomes
• Improve product conforms to specification						Conforms to specification
• Improve delivered quality is acceptable (functional)						Process has improved (yields)
• Improve delivered quality is acceptable (non-functional)						Products transferred to EM on time
• Improve support service lead times						Products introduced on time, but quality questionable
• Improve support product cost						Team in place to support
• Escalation management						As above, but progress to be made

Figure H. 9. Customer current and past strategy

PART 4: ANALYSE BUSINESS UNIT			Business Unit Title: Customers
4.2. Business Unit Past and Current Environment:			
Past Business Unit Environment	Present Business Unit Environment	Future Business Unit Environment	
<ul style="list-style-type: none"> • Product knowledge in several areas/ group • Products manufacturing in one Europe site • Test development coming from central function • Escalation management from central functions 	<ul style="list-style-type: none"> • Product knowledge from one focused group • Still in one Europe site • Test development coming from focussed test group • Escalation management from dedicated group • Greater product focused organisation 	<ul style="list-style-type: none"> • Product knowledge 'potentially' getting shared • Product moving to EM • Test development under 'threat' • Escalation management is in question • Product charter needs reviewed 	

Figure H.10. Customer's environment analysis

PART 4: ANALYSE BUSINESS UNIT						Business Unit Title: Customers
Product Life Cycle						
Product and services	Current Position	Time from start to decline				
Knowledge	Mature/ Growing	1-2 years				
CI	Growing	On going/ 1-2 years per product				
Escalator management	Growing	Ongoing				
Manufacturing process	Introduction	1-2 year				
Yield improvement	Growing	Ongoing				
Engineering innovation	Introduction	1-2 year				
Design for...	Growing	Ongoing				
Stakeholders	Requirements	Comparison with US	Best Practices	Economic / Technological / Social / Political Factors		
		Much worse, Worse, Same, Better	Much better, World Class, New World Class, Below World Class	Strengths <ul style="list-style-type: none"> • Support focused • Flexibility (work schedule employees) • Commitment • Product knowledge • Technical skill set 	Weakness <ul style="list-style-type: none"> • Technical skill set • CI • Time/ task management • Clear objectives/ expectation • Leadership in group • Process stability 	
A. Global m. Supply mana	Quality Escalator management Technical support Support Continuous Improvement Test development Test stability Global solution			Threats <ul style="list-style-type: none"> • Change in manufacturing strategy (external management) • Front-line support engineering • External management capabilities • Overheads (\$) • Technical knowledge • Customer buys other products 	Opportunities <ul style="list-style-type: none"> • Develop new UK charter • Quality/ external management • CI/ external management • Product quality-delivered • Improved (make shorter) test times • Better / more stable test process 	
B. Employee	B1 Satisfaction morale					
	B2					
	B3					
C	C1					
	C2					
	C3					

Figure H.11. Customer's competitive position

Discussions: Storage group can espouse a strategy of developing value-added customer relationships by choosing internal and external business process measurements, which focus on quality of services (assurance) to increase customer confidence. Storage group can also identify two new constituencies in the internal business perspective—customers confidence and the quick response team. The success of quality depends on having better relationships with customers. When outstanding confidence in conformance to specification is critical to strategy, this objective should be incorporated in the

operations service of the internal perspectives. Therefore, creating quick response team makes it easy to manage resources, respond and manage the problem by providing long-term job as well as short-term support manufacturing.

This solution consists of **three objectives** as follows:

1. Improve delivery quality
2. Conformance to specification
3. Maintaining and improving customer confidence in rapid problem solution and corrective and preventive action (for whole action)

To increase customer satisfaction in order to *increase confidence in conformance to specification, delivery quality and problem resolution, can be obtained*

- by providing tool sets, procedures (that are simple) and transfer of knowledge (about the tool set and process) (objective 1)
- by developing engineering knowledge on product and manufacturing process characteristics (objective 2)
- by working with design, understanding product characteristics, sensitivity and developing manufacturing assembly processes to ensure and check conformance to specification
- by effectively transferring tool set and knowledge to manufacturing supply base
- by providing rapid reaction resource to respond and manage problem (objective 3)
- by providing customer support via site visits/SUN customer visit/Customer Quality Assurance (objective 2)

H.3.3. Business Unit 3 Analysis: Suppliers (External)

Historically: Network Storage Department was unable to deal with process stability as desired because of supplier's performance. In order to have continuous improvement, outgoing quality and process stability needs to be given more attention. As a result of continuous improvement, technical support can be improved. Furthermore, problem

solving and a new training programme would help to augment technical support. When the problem occurs, purge support (stop ship –SS) takes place. Storage group has managed to purge support actively. This would lead to an improvement in escalation management by focusing more on customer support and manufacturing yield problem (Figure H.12.).

Environment: The potential competitive advantage of suppliers (basically, technical product knowledge, escalator management, flexibility/support, innovative product, continuous improvement, design for manufacture/test, and test stability) came up against some important movements in the future environment (Figure H.13.):

- In the past, there was no clear set of metrics to review supplier quality and performance. Currently, suppliers' quality and performance are being presented towards standard metrics and tried to engage operations engineering to suppliers. To enhance supplier's performance in the future environment, the storage group would need to get supplier to test process to screen out early failures.
- Previously, support was limited from Sun headquarters. It is necessary for training to take place in the storage group in terms of suppliers.
- In the past, obvious remedies to the problems are encountered because suppliers did not supply complete box and external manufacturing had not been in place to build complete box and give feedback to design groups. At the present time, sourcing at the storage group began as external manufacturing has identified a potential complete box builder. In the future, selected external manufacturing would offer more 'value adding process' to the storage group in terms of continuous improvement feedback and input which is currently 'upstream'

Products and Services: The storage group's suppliers are located in UK and other places. As the suppliers are based in different locations, the storage group has introduced training (growing 0-2 years) and escalation support (introduction 0-1 year). Continuous improvement provides an understanding of the failures and assembly infrastructure, and supports development in growing issues with one-year life cycle (Figure H.14.).

Suppliers' requirements: The main requirements of suppliers are explained in order of their importance:

- Technical product knowledge
- Escalator management
- Flexibility/support
- Innovative product
- Continuous improvement
- Design for manufacture/test
- Test stability

The main aspect of all of the above can be seen along with the question of how suppliers can have close working relationships with external manufacturers, who would be able to give feedback to design groups without any real problem and improve quality of the product (complete box). With this close relationship, it is highly possible that the storage group applies better standard metrics with frequency into a supplier facility. Better employee commitment and skills set also might positively influence suppliers' performance.

PART 4: ANALYSE BUSINESS UNIT							Business Unit Title: Suppliers	
4.1. Business Unit Past and Current Strategy:								
Actions	1999	2000	2001	2002	2003	Mixed	Mark	Results / Outcomes
<ul style="list-style-type: none"> •Improve technical support in terms of: <ul style="list-style-type: none"> •Training •Problem solving •CI 								<ul style="list-style-type: none"> Need to be developed Area offocus Area offocus
<ul style="list-style-type: none"> •Improve escalation management in terms of: <ul style="list-style-type: none"> •Stop shop (SSS)/ Purge support •Customer support •Manufacturing yield problems 								<ul style="list-style-type: none"> Purge well active / managed Done in the past, but need focus Needs more focus Ongoing
<ul style="list-style-type: none"> •New processes developed •Continuous improvement <ul style="list-style-type: none"> •Process stability •Outgoing quality 								<ul style="list-style-type: none"> Suppliers process needs reviewed Needs more focused

Figure H.12. Suppliers' department unit' current and past strategy

PART 4: ANALYSE BUSINESS UNIT			Business Unit Title: Suppliers	
4.2. Business Unit Past and Current Environment:				
Past Business Unit Environment	Present Business Unit Environment	Future Business Unit Environment		
<ul style="list-style-type: none"> •Suppliers quality not reviewed •No clear set of metrics •CI not applied •No real Sun training / support given •No box build external manufacturing in place •No box build External manufacturing giving feedback to design groups 	<ul style="list-style-type: none"> •Driving towards standard metrics •Trying to engage operations engineering to suppliers •Work more CI "upstream" •Provide SUN training •Box build External manufacturing selected 	<ul style="list-style-type: none"> •Need to get supplier in it processes to screen out failures earlier •Provide needed Sun training •Box build change, External manufacturing •Looking for external manufacturing to give more 'value add' in terms of CI feedback / input 		

Figure H.13. Suppliers' department unit' environment analysis

PART 4: ANALYSE BUSINESS UNIT										Business Unit Title		Suppliers					
										Product Life Cycle							
Product and services					Current Position					Time from start to decline							
Training					Growing					0-3 years							
CI					Growing					1-2 year							
Escalation support					Introduction					0-1 year							
Support development					Growing					1 year							
Stakeholders	Requirements	Competitive Position				Best Practices				Economic / Technological / Social / Political Factors							
		Much worse	Worse	Same	Better	Much Better	World Class	Very World Class	World Class	Very World Class	World Class	Very World Class	World Class	Very World Class			
A. Suppliers	Technical product knowledge																
	Escalator management																
	Flexibility / support																
	Innovative product																
	Continuous improvement																
	Design for manufacturability																
	Test stability																
B. Metrics	B1 Standard form																
	B2 Frequency																
	B3																
C. Employees	C1 Engagement																
	C2 Skill set																
	C3																
										Strengths				Weakness			
										• Cost overhead				• Location (some)			
										• Flexibility				• Box build product knowledge			
										• Location (some)				• Quality focus			
										• Product knowledge (some)				• CI			
										• Resources							
										Threats				Opportunities			
										• Box build outsource				• Clear metrics			
										• Resources (SUN)				• CI @ EM			
										• Engagement (SUN)				• Increased product knowledge (EM)			
														• Design feedback			
														• Process stability			

Figure H.14. Suppliers' department unit' competitive position

Discussion: In order to collaborate effectively and be partners with suppliers/external manufacturers, three objectives have been agreed on as follows:

1. To introduce a single contact person between design engineering and external manufacturer,
2. To develop employee involvement with external manufacturer,
3. To improve quality at parts levels.

Providing strategic support to external manufacturer, to *increase their efficiency and effectiveness in terms of quality parts, and also using more efficiently Sun Engineering time in terms of supplier/external manufacturer's problems resolution*, can be obtained by

- Creating an environment for motivated and empowered employees to meet customers' requirements
 - by working closely with external manufacturers
 - by developing incentives for external manufacturing collaboration/cross company projects with external manufacturers
 - by providing training/career development aligned with supply audits, seminars, and visits
 - by increasing employees' skills for customer problem-oriented placing

- Bridging the gap between customer requirements and external manufacturer through metrics review,
- Improving external manufacturing service quality
- By responding to customer complaints and requesting resolution before they got to the box level

H.3.4. Business Unit 4 Analysis: Design Engineering

Historically: Network Storage Department was unable to give desired feedback to design group, which is located in United States, when the problem occurred. The reasons behind the poor feedback are:

- No product engineer role,
- Product teams are limited to support product design engineer

The storage group's aim is to improve design for * feedback in order to improve future product. Engineering change process and problem solving are the ongoing issues as problem arises in design engineering. Purge and stop ship feedback has not been reached a satisfactory level at present, this issue should be improved in the future. New product introduction has not been supported in terms of building and timeliness, therefore, planning needs to be improved (Figure H.15.).

Environment: The potential competitive advantage of design engineering (basically, customised product, innovative product, design for manufacture/test, purge/stop ship feedback, NPI schedule, problem solving) came up against some important movements in the future environment (Figure H.16.):

- In the past, there was no need to design feedback. Currently, the storage group is trying to establish better linkage with the design group in order to give more feedback
- Recently, introducing the role of new product engineer has provided more value to design for * initiatives.

Products and Services: Design for * feedback and problem solving is growing with ongoing issues in general and their life cycle per product is changing from one to two years. Planning in design engineering is now in the introduction stage (Figure H.17.).

Design Engineering Requirements: The main requirements of design engineering are explained in order of their importance:

- NPI schedule
- Problem solving
- Design for manufacture/test
- Purge/stop ship feedback
- Customised product
- Innovative product

PART 4: ANALYSE BUSINESS UNIT							Business Unit Title: Design engineering	
4.1. Business Unit Past and Current Strategy:								
Actions	1999	2000	2001	2002	2003	Missed	Made	Results / Outcomes
•Improve design for * feedback								•No product engineer role •Product teams more limited to product design engineer
•Improve purge / stop ship feedback								Not doing
•Improve problem solving								On going as problem arise
•Improve "engineering change process"								On going as problem arise
•Improve new product introduction support (build/ timeliness)								Planning needs to be better

Figure H. 15. Design engineering's current and past strategy

PART 4: ANALYSE BUSINESS UNIT				Business Unit Title: Global Manufacturing-Supply Management	
4.2. Business Unit Past and Current Environment:					
Past Business Unit		Present Business Unit		Future Business Unit	
Environment		Environment		Environment	
•Product knowledge in several areas/ group		•Product knowledge from one focused group		•Product knowledge 'potentially' getting shared	
•Products manufacturing in one Europe site		•Still in one Europe site		•Product moving to EM	
•Test development coming from central function		•Test development coming from focused test group		•Test development under 'threat'	
•Escalation management from central functions		•Escalation management from dedicated group		•Escalation management is in question	
		•Greater product focused organisation		•Product charter needs reviewed	

Figure H.16. Design engineering's environment analysis

PART 4: ANALYSE BUSINESS UNIT										Business Unit Title: <i>Design engineering</i>				
										Product Life Cycle				
Product and services										Current Position	Time from start to decline			
DF * feedback										Growing	Ongoing (0-6 mth per product)			
Problem solving										Growing	Ongoing (0-6 mth per product)			
Planning										Introduction	0-1 year			
Stakeholder	Requirements	Competitive						Best Practices				Economic / Technological / Social / Political Factors		
		Market	Price	Cost	Quality	Service	Speed	Market	Work	Use	Cost	Value	Strengths	Weakness
A. Design engineering	Customized product													
	Innovative product													
	Design for manufacture / test													
	Purge / stop ship feedback													
	NPI schedule													
	Problem solving													
	B1													
	B2													
	B3													
										Threats		Opportunities		
										*Resources / Bandwidth		*Increased bandwidth		
										*NPI schedule		*Process development for feedback loops		

Figure H.17. Design engineering's environment analysis

Discussion: In order to offer effective and timely support to design engineering, three objectives have been agreed on as follows:

1. To maintain time-line slippages,
2. To give timely, accurate feedback on NPI production process to support overall NPI schedule,
3. To create knowledge management in order to obtain faster learning earlier in the product life cycle.

Providing strategic support to design engineering in order to *increase time to market by offering higher quality robot products to customers*, can be obtained by

- Developing systems for improvement and learning related key processes in product life cycle,
- Creating alignment in NPI by
 - setting up open line communication between NPI design engineer and storage group engineers,
 - increasing satisfaction from design engineering as regards NPI and monitor resources,
- Trying to match project plan time by
 - focusing on the initial project plan to understand how resources and time can be used efficiently and

- improving design retention in two ways, giving feedback information results and quality timely service,
- Delivering value propositions and actions from other business units