

**Resources, Autonomy and Strategy: Perceptions
of Competitive Advantage in the UK
Automotive Components Industry**

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ABSTRACT

Theory building in strategic management has traditionally suffered from strong demarcation lines. The case of the resource-based view of firm (RBV) which has emerged as an alternative approach to industry-based explanations of how organisations develop and sustain competitive advantage, particularly demonstrates this divide. Since then, these alternative views of competitive advantage have often been portrayed as mutually exclusive antagonists.

This study sets out to examine the perceptions of strategic managers in the UK automotive components industry in relation to these two competing schools of thought which advocate advantage through resources (RBV) or advantage through residence (industry approaches). This industry has been chosen due to the clear potential for industry structure and internal competencies to influence competitive advantage. Using quantitative techniques, data from senior managers is analysed in order to establish the extent to which the views of industry practitioners converge or diverge with the theoretical or anecdotal offerings of the strategy literature.

The findings of this thesis suggest that a complex hybrid of perceptions tends to prevail among respondents from the industry. This can be attributed to historical, operational and supply chain factors. Furthermore, the study finds that the lexicon of competitive advantage and the priorities of resources advocated in the literature are not shared by strategists in the industry. Accordingly, the study finds, strategic management theory in relation to the resource-based view requires further research using the methodology developed in this thesis as a foundation.

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Chapter 1 – Introduction

1.1 INTRODUCTION TO THE STUDY

In the 100 years since the birth of the automotive industry the transatlantic axis of production has now become a global concern, with the assembly of vehicles located in South America, Australia and the Indian subcontinent, in addition to the well known triad of the US, Europe and South-east Asia. Since its infancy, this industry has been a risky one. Mergers, acquisitions, corporate failures and strategic alliances have been present throughout as the demand for vehicles has grown. In 1903, global demand totalled approximately 100,000 vehicles. By 1996 global demand had reached nearly 52,000,000 vehicles (Bessel, 1990; Willings, 1998).¹

From the outset, this industry has been characterised by high levels of competition and wherever organisations have found that their offerings have been challenged by those of other organisations, the notion of competitive or comparative advantage has formed an important part of future planning and production/marketing considerations. The notion of competition is inextricably linked to the concept of firms developing a relative advantage in order to improve performance.

This study deals with differing views of competitive advantage and the perceptions of managers towards such views. In particular, the study examines whether the 'resource-based view' of the firm (RBV) is reflected in the way that managers perceive the potential sources of competitive advantage that can be exploited either implicitly or explicitly by an organisation in its strategy.

The title of the thesis – Resources, Autonomy and Strategy: Perceptions of Competitive Advantage in the UK Automotive Components Industry – reflects three issues that are central to this thesis:

- 'Resources' refers to the body of theory that is to be subjected to investigation, namely the resource-based view;

¹ Bessel (1990) notes that of the 220 UK-based car manufacturers that had existed at the turn of the century, around 80 of these had ceased trading by 1905.

- 'Autonomy' refers to the question of whether automotive component suppliers remain strategically independent in a highly coordinated supply chain that is dominated by the final assembler of vehicles; and
- 'Strategy' reflects the influence of managers' perceptions upon their decisions.

1.1.1 RESEARCH DOMAIN

To provide a context for the study, the automotive components industry has been chosen to examine the research questions proposed later in the study. Other studies have chosen multi-industry samples (for instance, Miller and Friesen, 1986; Robinson and Pearce, 1988; Carter *et al.*, 1994). This is deemed inappropriate since many industry-specific issues may alter the sources of competitive advantage. The inevitable trade off between generalisability among different industries and representativeness and relevance must take into consideration the subject matter to be studied. In this case, the study deals with unique capabilities whose essence, nature and composition can only be clearly understood in conjunction with the contingency and competitive variables which face organisations within the same industry. It also allows the verisimilitudes of the industry to provide a foundation of understanding, rather than a source of variance in the findings.

Furthermore, the choice of the automotive components industry as the domain for the study has been informed by the impact it has had on national economies and other sectors. Product complexity and the tight coupling of the supply chain have provided conditions in which many different corporate strategies have been observed, including, partnership collaboration, merger, acquisition and strategic alliance. The specific industry conditions which are pertinent to this study are considered in Chapter 3.

The problem which this study seeks to address is one which has plagued the academic study of organisations and their environment. Many theories and models have been developed by academics within the strategic management field and intended for use by practising managers. In use however, such theories and models may have been transformed, either as a result of thoughtful re-interpretation but also as a result of misinterpretation. The latter, it is argued, is a

less satisfactory outcome since it reduces the credibility of the academic contribution to organisational improvement, a goal which is sought by management research.

The aims of this study are two-fold. First it indicates if and how RBV concepts are reflected in managers' thinking, therefore having some impact on the strategic management process. A secondary (and supplementary) aim is to use the findings of this study to propose where future work in the RBV could most beneficially be directed (Chapter 8).

There is some irony that RBV thinking could be construed as an about turn in the way in which competitive advantage is interpreted. The notion of competition led to the 'competitive advantage gestalt' and the emphasis on external factors as determinants of such advantage. An understanding of the industry and the environment allowed planners to identify whether a skill or resource deployed in one organisation was more effective than in another. A wide variety of techniques have been developed in order to undertake an analytical study of the external environment. The 'relativity approach' is also reflected in many internal audit models used prior to the development of RBV approaches (Chapter 4). However, since the RBV is predicated on organisational and resource uniqueness, there is the implication that no comparison to rivals or the environment is necessary other than to determine that the resource, skill or asset is possessed by any other firm. Consequently, the RBV approach to competitive advantage suggests that the only external variable that matters is the customer, since they will ultimately judge the value of the unique competency by paying premium prices, manifesting buyer-loyalty or switching to the product.

1.1.2 STRUCTURE OF THE THESIS

Chapter 2 sets out the macro-theoretical context (strategic management) and clarifies terminology that will be used throughout subsequent chapters. The chapter considers the evolution of strategic management as a practitioner and academic discipline whilst recognising the critique offered by advocates of strategy formation. In continuation of this, the relationship between managers' perceptions and their subsequent decisions is observed, leading to the research

stimulus of the study – *To examine managers' perceptions of competitive advantage.*

Chapter 3 introduces the industry context (the automotive components industry) and its parent industry, automotive assembly. In addition, it explores some of the important historical developments in the buyer-supplier relationship and current trends and factors influencing the automotive components sector. The chapter ends by proposing the principal research question:

*Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?*²

The micro-theoretical context is introduced in Chapter 4, where the resource-based view of the firm, a view of advantage through resources, is contrasted with its antecedent, a view of advantage through residence. The resource-based view is disaggregated into four components, and four additional research questions for study are generated:

Research question 2:

Do managers perceive resource accumulation to be part of the RBV construct?

Research question 3:

Do managers associate portfolios of resources with product platforms, families and technology convergence?

Research question 4:

Do managers recognise the importance of resource management?

Research question 5:

Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?

Chapter 5 examines the methodological parameters for the study. It begins with an examination of methodological issues pertaining to strategic management and those which apply generally to social science research. Following this, the research strategy is introduced and justified, followed by an explanation of the

² Hereafter referred to as Research Question 1.

data-analysis techniques to be used, consisting mainly of principal components analysis. Important aspects of the research strategy such as the development of an original database and the pre-testing of the data collection instrument are fully detailed.

In Chapter 6, the thesis shifts from the precursors to the study and the research results to the primary research phase. The chapter provides a detailed insight into the respondent organisations and respondent managers. In so doing, the study can be confident that the data is derived from senior managers (strategists) from the UK automotive components industry. Following a brief discussion of non-response issues, where no significant differences are reported, the chapter focuses upon the salient characteristics of suppliers in terms of their origin, size, products, human resources, turnover, supply chain position, research and development approaches, and strategic alliance involvement. The chapter continues with an examination of the respondent managers' backgrounds and length of tenure, ending with a consideration of sampling adequacy and data factorability.

Having confirmed the suitability of the data set to be subjected to principal components analysis, Chapter 7 presents the empirical analysis of data which deals with the five research questions developed in earlier chapters. Principal components analysis reveals a nine-factor structure which portrays the perceptions of industry strategists in relation to theories of competitive advantage based on residence and resources. Each of the factors is examined in detail and interpreted through the lens of the industry conditions, practices and developments introduced in Chapter 4. Following this, analysis of variance (ANOVA) is used to examine the language and priorities of managers.

The discussion of the findings in chapter seven continues with the presentation of a cartography of competitive advantage designed to visualise the perceptions of the respondent managers. This is used to address the principal research question. Subsequent to this, research questions 2 to 5 are addressed. The chapter explains how the perceptions of managers neither reflect a resource-based view nor a residence-based view of competitive advantage. Instead, a hybrid set of perceptions can be said to prevail among managers in the industry. These findings

are considered alongside the prevailing literature considered in Chapter 4. Furthermore, the chapter examines the differing priorities of managers in relation to the strategic significance of resources and the favoured terminologies to describe such resources.

The thesis concludes, in Chapter 8, with an appraisal of the contributions of the study to the wider field of strategic management. It begins with a discussion of the consequences emanating from the primary research findings and the implications of the study for the automotive components industry. Next follows a reflection on the methodology used and its strengths and weaknesses following its deployment. Possibilities for further study using the methodology as the first step in a multi-stage methodology and new research questions arising from the analysis and discussion of the findings are then identified. The chapter ends by contemplating the position of this study within the wider field of strategic management.

Chapter 2 – Setting the Research Agenda

2.1 INTRODUCTION

The elevation of strategy within organisations and classrooms in recent decades is without doubt. Connoting rigour, clarity and foresight, the interpretation of strategy itself has often lacked these characteristics. Indeed, controversy and division have been at its side. In this chapter, the study examines the nature, role and application of strategy and strategic management. Its purpose is to provide a foundation upon which to position the study in terms of the management/business literature and to clarify concepts that will be necessary in the empirical analysis developed in subsequent chapters.

2.1.1 ORIGINS OF STRATEGY

The origins of the word strategy can be found in the Greek words *stratos* (army) and *ego* (I am).³ These components form *strategos* meaning the art of military command. Between the times of the Greek empire and the present time, strategy in a general sense has come to signify the means by which to attain predetermined goals through a detailed consideration of assets available and operating conditions.

In the twentieth century, strategic, corporate, or long range planning and strategic management can most clearly be traced back to two events. The first was the introduction of a ‘business policy’ course at the Harvard Business School in 1912 (Arben, 1997).⁴ The second, and more influential (in organisational terms), was the efforts of professional managers during the 1920s to deal with the growth and control of multi-business, multi-national organisations. The practitioner development of strategy originates from the turn of the century when a number of American firms found themselves in a privileged yet precarious position. Companies such as General Motors, Ford and Dupont had become the first

³ The strict etymology of the word *strategos* is *stratos* and *ego* (“I am the army”). However, many writers (for instance Bracker, 1980; Evered, 1983; Whittington, 1993; Grant, 1995; McMillan and Tampoe, 2000) have suggested a different etymology derived from *stratos* and *ag or agein* (to lead).

⁴ It should be noted that many other writers have attributed the Ford Foundation Report (Gordon and Howell, 1959) as the impetus for the introduction of business policy into the university business degree curriculum.

multinationals with operations and sales beyond US geographical limits (Whittington, 1993). For example, the Ford Motor company opened its first overseas factory in Manchester, England in October 1911 (although mass production through moving track assembly only followed in 1914). The challenge for senior management at the time was to develop methods by which such a large and complex organisation could be co-ordinated, controlled and developed in a systematic manner. In the early 1920s and 1930s, General Motors faced the challenge of organisational complexity and the effects of the 1929 Stock Market crash which sent many industrialised nations into economic downturn. Alfred Sloan, Chairman and Chief Executive Officer (CEO) of General Motors during this period called for a “factual approach to business judgement” (1963:xxvii) in contrast to the “seat of the pants” (1963:52), more instinctive approaches taken by the senior managers who had preceded him in the company. This led to the introduction of methodical approaches to business analysis and strategic options which then came under the umbrella term ‘business policy’.

Subsequently, structured policy and planning approaches developed and played a major part in many industrial organisations making a rapid switch from civilian to military production during World War II. Companies such as Ford and General Motors produced a variety of military equipment – personnel carriers, machine guns and aircraft components. In pre-war Japan, Toyota had been predominantly a manufacturer of looms and textile manufacturing equipment. With Government help, the company began its first large scale vehicle production during the war.

By the mid 1950s, American firms faced unprecedented challenges from companies and countries that found themselves in the midst of economic and industry reconstruction following World War II. The approach to policy development which incorporated production planning with long term financial budgeting could no longer deal sufficiently well with the dynamic changes to industries, technologies and markets.

By the 1960s, formal planning techniques based on private sector organisations were introduced into the public sector. At the time, the US Department of Defence introduced the Planning-Programming-Budgeting System (PPBS). Hailed as a panacea for public sector planning, it adopted an approach in which objectives would be met through the analysis and subsequent choice of plans which would create a positive benefit in relation to cost. The objective of PPBS was to use profit creation principles to ensure that government budgets could yield maximum benefit, rather than simply spending budget allocations. PPBS never fully succeeded in its goals because of the resistance generated by the large changes which the new system demanded. Without continuity of leadership to marshal constant support for the controversial PPBS, a return to previous approaches to planning soon followed (Mintzberg, 1994). In spite of the failure of PPBS, it marked the period in which policy and planning became highly formalised and analytical.

Despite the transfer of strategy from the military domain to the civilian and commercial one, the combative tone and terminology of its origins still remain, particularly given the increasingly competitive and international nature of business. In this regard, Evered cites Lenin who said that “the soundest strategy in war is to postpone operations until the moral disintegration of the enemy renders the delivery of a mortal blow both possible and easy” (1983:64). The commercial equivalent to this maxim is the rise to prominence of Japanese manufacturers on the world stage. In their case, the mortal blow was dealt by gaining a command over higher priced market segments after having dominated lower priced segment for many years (allowing them to further improve their experience curve and gain economies of scale and scope - Chapter 4). The relative decline of consumer electronics and automobile industries based in Europe and the USA in the face of Japanese competition are further testimonies to this. The claims of unfair competition, Trojan horses and double standards in east-west trading relations confirms a suspicion that civilian strategy has borrowed more than merely structure from its military origins, but indeed part of its philosophy. As Evered describes:

The history of strategy ... is a saga built on bluff, feint, distraction, camouflage, ruse, surprise, guile, illusion, trickery, traps, bait, decoy, ambush, disguise, misinformation and secrecy (1983:64).

Indeed, a commonly used term is that of 'the marketplace is a battlefield', a term which originates from ancient China. Sun Tzu's (400BC) and Machiavelli's (1521) 'The Art of War', and Von Clausewitz' 'On War' (1832) have been widely used in the business context and highlight the importance of the military to strategy philosophies (Cleary, 1991; Hou, 1994; Chen, 1995).

Endemic throughout the history of strategy is a mismatch between the understanding of what strategy is and what it should be used for. The latter is well known; to enable the growth of the organisation in the face of competition and a changing operating environment. What strategy *is* has been more problematic, with as many definitions of strategy as there are authors on the subject and practitioners of the discipline.⁵ This question has been compounded by the debate between the 'existentialists', advocating a process of strategy formulation, and the 'emasculators' which emphasise the formation of strategies. This debate is important within the ambit of this study since the way in which strategies develop is an important factor in normative theories of strategy.

2.1.2 STRATEGY FORMULATION: THE EXISTENTIALISTS

The most popular view of strategy is that it is the outcome of strategic management (or planning) which is a predetermined process of planning and analysis which is rational and systematic. Rational signifies that the information used to both inform and form the basis of decisions arises from data collection which is not influenced by speculation, inaccuracy, judgements and intuition. Such information is balanced and taken from a wide variety of sources in order to provide a consistent and thorough understanding in which the user of the information can have confidence. The process is systematic because information is taken through a series of pre-defined, well-established and inter-related stages

⁵ The economist Joan Robinson remarked that "there is no advantage (and much error) in making definitions of words more precise than the subject matter they refer to" (1956:361).

of analysis to arrive at an integrated understanding of complex themes and actions. Accordingly, strategy is *formulated* and is a conscious and deliberate choice made by managers:

The determination of the basic, long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out those goals (Chandler, 1963:13).

Corporate strategy is the pattern of decisions in a company that determines and reveals its objectives, purposes or goals, produces the principal policies and plans for achieving those goals and defines the range of business to pursue, the kinds of economic and human organisation it is or intends to be, and the nature of the economic contribution it intends to make to its shareholders, employees, customers and communities (Andrews, 1980:8).

The pattern or plan that integrates an organisations major goals, policies, and action sequences into a cohesive whole (Quinn, 1980:7).

Common within each of these definitions is the explicit chronology of activities that should be undertaken; goal setting followed by the choice of strategy and continued by its implementation. Before a choice of strategy can be made, an analysis is undertaken to determine the feasible strategic options. Consequently, the traditional strategy formulation approach involves three distinct stages; analysis, choice and implementation.⁶ The strategy formulation process has, at its heart, the notion that managers deliberately think about the organisation, environment and rivals. Clearly, in this context, managers' perceptions of which strategies are most expedient may not be derived from the most rational analysis. Managers set out to think deliberately but this should not be confused with rationality (Section 2.3).

The strategy formulation approach has been shaken by the forced entry of uncertainty and discontinuities into planning paradigms. Consequently, the approach's proclaimed efficacy in dealing with unforeseen eventualities has been

⁶ This approach (or caricature of the process) can be seen in the 1970s (e.g. Cohen and Cyert, 1973; Vancil, 1976) and remains the case today (Hunger and Wheelen, 1992; Hill and Jones, 1995, Johnson and Scholes, 1997).

challenged. Mintzberg (1994:299) suggests that “creativity by its very nature creates categories or rearranges established ones ... that is why formal planning can neither provide creativity nor deal with it when it emerges by other means”. Even one of stalwarts of the formulation approach, Porter (1987), recognises that tradition and inertia have set in:

Corporate strategy ... is both the darling and the step-child of contemporary management practice - the darling because CEOs have been obsessed with diversification since the early 1960s, the step-child because almost no consensus exists about what corporate strategy is, much less about how a company should formulate it (1987:42).

Porter (1987) found in his study of the diversified companies' corporate strategies a greater number of acquired companies had been divested rather than had been retained as part of the overall organisation, denoting a failure of the corporate strategy, be this in the choice itself or in the understanding of prevailing competitive conditions. Whittington (1993) argues (based on the premise that CEOs or senior management are the organisational incumbents responsible for strategic choices) that diversification as a popular growth mechanism arose from the distinction of ownership from control. As a result of this, the professional manager, who in attempt to gain recognition for his success (in the cause of his own self-interest) would chose diversification as a way to attain greater recognition in a shorter period of time. In other words, formulation is not a by-word for success and strategies are often impeded by the incumbents and the act of implementation. Furthermore, implicit within this suggestion is the notion of a manager's perception (diversification leads to greater recognition) leading to a decision (Section 2.3).

A further problem with the formulation approach is that no explicit contingency is made for crises and disasters. A growing literature dealing with this issue has shown that organisations face business interruptions due to or in spite of strategic planning. The impact of an interruption will vary according to a wide variety of organisational characteristics and decisions (Pauchant and Mitroff, 1988; 1992)

with often unpredictable consequences.⁷ Strategy formulation, however much its advocates would suggest or desire it to be, cannot provide the comprehensive provision of long-term organisational development. Instances may arise where strategies may emerge from beyond the strategic planners' ambit.

2.1.3 STRATEGY FORMATION: THE EMASCULATION OF FORMULATION

The evolution of organisations in the absence of formal planning has long been recognised. Alchian (1950:211) observed that "adaptive, imitative and trial and error in the pursuit of ... profits is utilized rather than its sharp contrast, the pursuit of 'maximized' profits [based around certainty and full information]". Honda's entry into the US market (Pascale, 1984; Benjamin, 1993; Mintzberg, 1996) and Sun Microsystems's development of the Java language (Alsop, 1997) are stark illustrations of company success which has occurred despite the failure of the deliberate strategy chosen by the organisation. Honda's failed intended strategy was to launch a motorcycle to rival Harley Davidson's products. Instead, the Honda Supercub, never intended for the US market, was enormously successful. Sun Microsystems' Java was originally intended for set-top television decoder boxes. When the company withdrew from the market, the internet provided an opportunity for the technology to be applied within internet browsers.

Whilst there is agreement that 'strategic' includes reference to policies, plans and actions which are long-term in nature and company-wide in influence, there is less agreement about whether or not a strategy is always the conscious product of strategy formulation. Often it is assumed that strategy is synonymous with planning and that planning is therefore associated with success. Mintzberg, the arch-critic of orthodox planning systems, contends that planned strategies can only find a degree of success in an environment that is stable and predictable. In practical planning environments, strategy is irrevocably trapped between the potentially restrictive deliberate type and the potentially chaotic emergent type (Mintzberg,

⁷ For instance, assumptions about small car design, an alleged media conspiracy and poor media management led to the delayed launch of the Mercedes A class car in autumn 1997. The company lost an estimated £100 million, delayed re-launch for twelve months and negatively affected its parent company's stock price by 32% (Prowse, 1998).

1990). “We seem to have to choose between ‘extinction by instinct’ and ‘paralysis by analysis’” suggests Mintzberg (1994:390).

Organisations may choose strategies which subsequently fail or lead to other unforeseen possibilities. Such outcomes of strategy formulation are no less ‘strategic’ since they have company-wide effects over a long period of time. This is a view of strategy as something which occurs in spite of planning. Additionally, luck, unexpected events and even errors may conspire to move an organisation in a very different direction than originally intended, known as ‘strategy formation’. The term originates from Lindblom (1959) who described how public sector managers discovered new methods of administration in what he termed ‘muddling through’. Hedberg and Jönsson (1977) propose that the strategy formulation was punctuated by an emotional dimension (myth, fantasy, will and creativity), thereby influencing behaviour and the outcome of the strategy process. In Quinn (1977), the author suggested that managers should adopt an approach to strategy implementation in a logically incremental manner, since:

Unlike the preparation of a fine banquet, it is virtually impossible for the manager to orchestrate the internal decisions, external environmental events, behavioural and power relationships, technical and informational need, and actions and intelligent opponents so that they come together at any precise moment (1977:17).

Quinn also acknowledged the possibility of strategies emerging in his definition of strategy as “the pattern or plan that integrates an organisation’s major goals, policies, and action sequences into a cohesive whole” (Quinn, 1980:7). The use of the concept of pattern in the definition of strategy reflects this. Many decisions, actions and events that are seemingly unrelated conspire to change the course of an organisation in spite of an intended strategy developed through a formal strategic management process.

Johnson (1988) took the notion of readjustment and environmental change, and called it ‘strategic drift’. Mintzberg (1973; 1977; 1978; 1983) suggested that organisations’ strategies could arise from other than a predetermined and formalised planning process, and Van Cauwenbergh and Cool (1982) attributed

strategy formation to the less systematised approaches to planning employed within Japanese corporations.

The pivot between obscurity and notoriety is undoubtedly the seminal work on strategy formation by Mintzberg and Waters (1985) who labelled the phenomena 'emergent strategies'. Emergent strategies are the amalgamation of strategy as a plan (the traditionally held view of strategy being a vehicle by which the company reaches a desired and intended future state) and strategy as a "pattern in a stream of decisions" (Mintzberg and Waters, 1985:257).⁸ This view challenges the traditional assumption that strategic ideas and options are the sole preserve of senior managers and planning departments. Indeed, emergent strategies emasculate those responsible for organisational strategy. Mintzberg and Waters (1985) argue that new and unforeseen opportunities can emerge at any level in the organisation and beyond it. A salesperson's idea for a new customer segment, an engineer's idea to modify the design of a product or an accounts clerk's idea to offer a different finance package to customers or suppliers could form the basis of an entirely new, yet equally successful, alternative to the strategies formally developed at the most senior level in the organisation. Acknowledging the emergent nature of strategy does not mean the abandonment of formal strategic management. Rather, it calls for a balance between the sometimes rigid direction, analysis and control of deliberate strategies, and the flexibility and responsiveness of emergent strategies.

Emergent strategies are the manifestation of a transcendence from strategy as a plan, the traditionally held view of strategy being a vehicle by which the company reaches a desired and intended future state, to a less predictable and controllable source of organisational opportunities. It is proposed that the dichotomy between direction, analysis and control of deliberate strategies on one hand, and the flexibility and responsiveness of emergent strategies on the other should be reconciled in order that "strategy formation walks on two feet, one deliberate, the other emergent" (Mintzberg and Waters, 1985:271). This allows for an awareness of turbulence in the business environment and in doing so, encourages strategic

⁸ A similar definition of an emergent strategy can be found in Miller and Mintzberg (1974).

learning which permits the strategy (and indeed the process) to be moulded according to the specific needs of the company at a given moment.

In the 1980s, organisations fabled for their large strategic planning departments, such as Royal Dutch/Shell and General Electric, began to reduce the scale of their strategic planning activities. In 1983 Jack Welch, Chairman of General Electric, virtually eliminated the planning department (which at one time had as many as 30,000 planners) in favour of a few strategists, recognising that the company had far exceeded the point of diminishing returns in terms of planning department size. Nonetheless, Welch's view of strategy, however, remained the same, "trying to understand where we will sit in tomorrow's world, and not where we hope to sit, assessing where we can be, and then deciding where we want to be" (Ansoff and McDonnell, 1990:35).

The notion of emergent strategies has been met with a mixed reception. Ansoff (1991) interprets strategy formation as an endorsement "a world free of explicit strategy formulation and free of strategic managers" (1991:454) and "advocating trial and error in diversification programmes" (1991:456) which he suggests is questionable given that an organisation taking such an approach would increase its exposure to risk in the face of competitors which had systematically planned. However, he does offer some limited support for the notion of strategy formation:

It is possible to show that the 'emerging strategy' model is a valid *prescription* for success in incremented environments, a valid *description* of poorly performing firms in discontinuous environments, and a valid *description* of the behaviour of a majority of not-for-profit organisations (1991:460 emphasis added).

In response, Mintzberg (1991) suggests that the view of planning as strategy and learning as an unnecessary adjunct has been promoted through the two dominant factors; The assumption of rationality and rigour:

We think that we are so awfully smart. We can work it out all in advance, so cleverly, we "rational" human beings, products of the "age of enlightenment." We can predict the future, identify the non-starters, impose our minds on all that matters (1991:465).

And the teaching of the subject in the classroom :

The danger of the [strategy formulation approach] may be in providing a seductive model whose superficial “rationality” in the classroom can so easily get promoted into the executive suite (1991:465).

Goold (1992) supports the formulation approach by suggesting that the unstructured experimentation advocated by the notion of ‘emergent’ strategies essentially suggests the abandonment of formalised planning approaches. Instead, he suggests, planners should be willing to refine their formulated strategies as conditions change in the planning process, in order that the final strategy reflects prevailing competitive and organisational conditions more accurately. Kenyon and Marthur (1993) position emergent strategies within the implementation phase of a formulated strategic management approach rather than ascribe credence to the idea that an entirely novel strategy appears from somewhere other than the boardroom or the planning department. They also add that emergent strategies are not strategies since they are not deliberate and often subconscious. Furthermore, they can only be identified *ex post*.

Problematic among many rejections of emergent strategies are two main assumptions. The first is that where a strategy emerges from an unexpected source, it cannot be labelled as such or credited with existence or importance. This is similar to rejecting any new scientific discovery.⁹ The second is the comparison of an emergent strategy against the traditional view of strategy characterised by rationality, predetermination, rigour and procedure, with its military origins largely responsible for this.

The deliberate-emergent debate still remains within strategic management. Inkpen and Choudhury (1995) proposed that the ‘absence’ of strategy in organisations, rather than the study of unexpected strategies is a relatively under-researched area of research within the field. A strategy of absence could be explained as a failure of managers to undertake any systematic process of strategic planning, as a period

⁹ The discovery of penicillin is one such example, where the decay of organic matter can indeed produce something that is useful for counteracting illnesses.

of transition between strategies and necessary in developing industries (such as information technology), or as a 'virtue' where managers deliberately avoid conscious planning in order to stimulate the emergence of strategies from other sources. This suggestion of anything other than strategic planning being undertaken by organisation still generated a reaction. Bauerschmidt (1996:667) argues that a strategy of absence cannot be a strategy since "the strategic paradigm – any strategic paradigm – depends on the presence of strategy". Strategy should be seen as the property of the organisation and must therefore be recognisable as such. Emergent strategies only become strategies in retrospect. In response, Inkpen (1996:670) argues that "a firm may start with an intended strategy that is very conscious. If that strategy is displaced, an emergent strategy may take its place".

At the very heart of the debate lies one preconception of what strategy is. If it is a predetermined, systematic vehicle for achieving long-term organisation-wide growth, then the notions of emergent strategies or strategies of absence (when associated with high performance) are an anathema. If one's view of strategy is broader, and less dependent upon a deliberate process, these notions become more acceptable, especially since strategy has been adopted for use in wider range of contexts than commerce and conflict.

Fundamentally, all writers engaging in this debate are attempting to explain the differences between organisational performance, between means and ends, and between emancipation and existentialism. It could be suggested, however, that whilst a valuable debate, the incumbents have themselves been 'boxed-in'. In whatever way organisations grow, develop and improve their performance (or otherwise), they each gather, exploit and deploy resources. It is perhaps these resources, as much as the strategy involved which determines organisational performance and competitive advantage.

2.1.4 IMPLEMENTATION AND FORMULATION

A formulated approach to strategy implies that the rigour of antecedent planning activities lead to unproblematic implementation. However, one of the difficulties for theorists and practitioners alike has been the placing of the strategy into effect - implementation. As Giles (1990) succinctly describes:

If it were possible for an entire organisation to sing the same song from the same song sheet and face in the same direction at the same time, that would be a powerful force. If the song were good, the direction true and the timing right, it would be a serious threat to competitors (1991:75).

This analogy reflects the orthodox view of strategic formulation and implementation. But taking into account the notion of strategy formulation, on returning to Giles' choral analogy we find a number of unanswered questions. First we have a query about the origins of the song and who wrote it. It is naive, indeed dangerous to believe that CEOs, given their self-interests and subjectivity (Anderson and Payne, 1975; Ireland *et al*, 1997), and outside planners with little tacit knowledge of the firm and using almost universally applicable analytical techniques and models (Capon *et al*, 1980) can have total domination over the planning process. What may be required is a hierarchical synthesis of the process in order that the feasibility and implementability of the strategy can be gauged. Mintzberg comments that "the classic view of the manager as planner is not in accord with reality. If the manager does indeed plan, it is not by locking his door, puffing his pipe and thinking great thoughts" (1994:99). A corollary of this is developed in Section 2.3.

Next we find that improvisation has not been considered, a process that can be as healthy in strategic planning as it can be for musical arrangement. It allows fine tuning to take place according to the relative strengths of the group (or organisation) within the bounds of needs, abilities and aspirations of members. Improvisation emanates in an emergent fashion when errors are identified and possibilities are considered and scrutinised. It is once this process takes place that the choir or organisation can take the same song (agreed and feasible), knowing that alternative versions (differing agendas) have been eliminated or minimised,

then face the same direction with the timing (knowledge and intent) that will indeed pose a threat to competitors. It is better for a reasonable strategy to be implemented fully and collectively than for an idealistic strategy to fail, either due to the unreasonableness of its demands or the failure of implementation.

Mintzberg (1994) expounds the thesis that plans can arise without planners and planning, planning can take place without planners and without producing a plan, and that planners can exist without producing plans and without indulging in formal planning. He contends that while plans are often made to include flexibility, the process governing planning can be inflexible. In this regard he points to the climate of planning, noting how Henri Fayol saw planning as a way to constrict flexibility in order to specify a predetermined path towards which resources could then be accurately directed. Mintzberg argues that the explicit articulation of strategies also form the roots of inflexibility given that managers and planners want their strategies to be successful and assume that they are perfect. Any subsequent changes that may be needed as a result of externalities will face stiff resistance because of the effect of undermining the manager/planner's competence, however justified the changes may be. It is ironic that the aversion to change that is so often to blame for the failure of implementation may be present in the people who formulate the strategies at risk. Another source of inflexibility is to be found in the conservatism of the process itself (and which inspired Jelinek and Amar's (1983:1) comment about "corporate strategy by laundry list"). Mintzberg considers formally planned change to be incremental (marginal and limited) in contrast with quantum change which may entail an upheaval in the organisation. It is also generic in form, often based on the structure of the organisation (Strategic Business Units). Difficulties then occur because of the inextricable link between structure and strategy so that when the company requires a rapid strategic response to discontinuities in the environment, both strategy and structure are subjected to changes which, as have been noted, provoke resistance. The dichotomy between internal stability and external volatility becomes paradoxical as planning processes (and the planners themselves) strive for an easily understood and passive environment in which

their well structured company with its 'grand plan' can position itself and gain superiority.

In addition to the changes identified by Mintzberg in the classical planning approaches is the disposition of managers who tend to opt for predetermined strategies, thus bypassing the option of creating new strategies. The pertinent causes of this are the previously mentioned conservatism of organisations and the desire to engage in operationalisation rapidly. The 'off the shelf' strategies to which he refers fall into what he calls the 'positioning school' (Generic Strategies and Portfolio Management are two cases in point). This approach to strategic management has undoubtedly been successful to varying degrees but has come under increasing scrutiny recently because of the negative effects it has on managers to engage in strategic creativity (Snyder and Ebeling, 1993; Foss, 1996; Finlay, 1998). It could be argued that this could lead to a choice of strategy that has been well proven in particular industries but does not fulfil the requirements or indeed take into account the idiosyncrasies of the industry in which it is to be implemented. Prahalad and Hamel further this line of criticism:

It is not very comforting to think that the essence of western strategic thought can be reduced to eight rules for excellence, seven S's, five competitive forces, four product life-cycle stages, three generic strategies and innumerable two-by-two matrices (1989:71).

Whereas Mintzberg's (1994) criticisms are aimed (at first sight) at the theorists, Prahalad and Hamel's comments are directed to those responsible for planning in companies because it is they who have the tacit knowledge of the organisation and its environment, from which they can tailor the strategy to their needs. The detailed exploration of the failure of strategic planning forwarded by Mintzberg does, upon closer inspection, follows the view that planners are ultimately responsible for the failure to plan effectively (besides all the problems of implementation) because of their lack of creativity in such matters. He concludes that two types of planners exist, one right-handed and the other left-handed. The right handed planner is analytical and participates in strategic programming, suiting categorisation as a classical strategic planner. Conversely, the left handed

planner (with dominant right sided neural motors influencing cognitive processes) pursues synthesis planning in the knowledge that analysis should not preclude synthesis as elaborate and thorough analyses are incapable of detecting discontinuities.

It is precisely because analysis is not synthesis that Mintzberg proposes that strategic planning is not strategic formulation, leading him to suggest that the term “strategic planning” is an oxymoron. This is the basis upon which he calls the process “a grand fallacy” (1994:321). A little reactionary perhaps but it is interesting to note Whittington’s observation that there is no equivalent to the term ‘Corporate Strategy’ in the Japanese language (1993:30), partly because of the connotations of the word strategy. While in western culture strategy is seen as a manner in which to achieve a future desired state, enshrined in eastern philosophy is the belief that the arrival at a future state arises from a combination of both luck and fate, forces beyond the control of mortal beings.

Irrespective of the differences between advocates of formation or formulation, strategy necessarily implies the deployment of an organisation’s resources. In the next section, the study establishes what is understood to be meant by the term resource, since this will become increasingly important as research questions are developed in subsequent chapters. Furthermore, the links between resources, process and competitive advantage are briefly considered.

2.2 RESOURCES AND ADVANTAGE

Central to this study are the following themes and concepts:

- Resources and assets
- Processes
- Competitive advantage

Their importance throughout this study makes it expedient to provide some elaboration in order to avoid confusion and ambiguity.

2.2.1 RESOURCES AND ASSETS

Two terms are generally used to describe the property or possessions of an organisation; assets and resources. Assets are “all the things accountants like to write on the balance sheet” (Hay and Williamson, 1991:11) and differ in terms of whether they are fixed (to be used in the business and not designed to be resold immediately) and current (short life and designed to be converted into cash). Assets, from an accounting perspective, are characterised by their tangibility and liquidity. Tangible assets normally include land, buildings, plant, machinery, trading stock, fixtures, debtors, and cash/investments.

Resources can be considered to include all assets, capital equipment, raw materials, organisational processes and attributes, information, and various kinds of expertise, skills or knowledge that are controlled by the organisation (Wernerfelt, 1984).

Resources are also seen to encompass “all assets, capabilities, organisational processes, firm attributes, information, knowledge, *etc.* controlled by a firm that enable the firm to *conceive of* and implement strategies that improve its efficiency and effectiveness.” (Barney, 1991:101 emphasis added). Barney further suggests three categories of resources with examples:

- (a) Physical capital resources; technology, machinery, location, factor input access.
- (b) Human capital resources; “training, experience, judgment, intelligence, relationship, and insights of *individual* managers and workers in a firm” (1991:101).
- (c) Organisational capital resources; stakeholder relations, planning and decision making systems, control and reporting systems.

For the purposes of this study *resource* will be the term which refers to organisational possession of value, unless a distinction is required or where another writer has used the term asset.¹⁰

¹⁰ ‘Possession’ is used to imply ownership and to ensure a distinction, where necessary, between resources and intellectual property, i.e. through licensing.

2.2.2 PROCESSES

A process is a series of inter-related activities in which inputs are converted into outputs. Essentially, the term process refers to activities which lead to the transformation of resources. For instance, in the manufacture of a vehicle body panel, the activities of melting, shaping, soldering and painting constitute the process in which steel is transformed from ingots into the finished subassembly (the door). In a service sector organisation such as a tour operator, the process of combining flights, accommodation, insurance, transfers and excursions transforms these individual inputs (some in-house, others from external suppliers) into the product of a packaged holiday. Indeed, the strategic management 'process' accords with this definition. In the classical sense, strategic management involves certain inputs from internal and external evaluations which leads to a choice of strategy and its subsequent implementation. The knowledge from these strategic evaluations is transformed into a decision.

2.2.3 COMPETITIVE ADVANTAGE

Competitive advantage is a commonly used term which describes an organisation's position of superiority relative to its rivals. It is not, however, a static term. Rather, the dimensions of time and space determine its adequacy as a descriptor of an organisation's prevalence within its competitive domain.

Consequently, *sustainable* competitive advantage is seen when a firm is "implementing a value creating strategy not simultaneously being implemented by any current or potential competitors *and* when these other firms are unable to duplicate the benefits of this strategy." (Barney 1991:102: original emphasis). Rouse and Daellenbach (1999) have proposed that competitive advantage is inferred from sustained periods of above-normal performance.

The identification of whom those rivals are against which an organisation's advantage is given its relativity can be identified in a number of ways:

- Incumbent rivals in the industry's structure (Porter, 1980),
- Organisations within the same strategic group (McGee and Thomas, 1986)
- According to the cross elasticity of demand (Herbane and Rouse, 2000)

The degree (or outcome) of competitive advantage is a multifarious concept. It could be measured in many ways including, *inter alia*, financial performance, market share, brand loyalty, revenue growth, intellectual property rights, and the inimitability of resources. Whilst performance is clearly a function of both performance relative to rivals and the use of resources by managers, competitive advantage suggests that there is an optimal use to which resources can be put in the most attractive and profitable markets (Porter, 1980). Such an optimal use of resources suggests the ability to identify and use those resources on the part of managers responsible for strategic management (*i.e.* the top management team). In turn, this presupposes rationality in the strategy formulation (although it is recognised that strategy formation often lacks rationality by virtue of the absence of a strategic decision). Next the literature surrounding managerial perceptions and cognitive limitations is considered, leading subsequently to the stimulus for this research study.

2.3 PERCEPTIONS AND STRATEGIC DECISIONS

Characteristic of strategic decisions is the uncertainty of outcome (Schwenk, 1984). Despite the systematic nature of a strategy formulation process, the fact that no two strategies are precisely the same and their outcome cannot be known *ex ante*, combined with the complexity of the organisation and its environment, render the analysis and choice of a strategy an ambiguous, if not, problematic process for senior managers (Mintzberg, *et al.*, 1976). Anderson and Payne (1975:814) summarise the problem as follows: "In strategy formulation the critical area is not uncertainty *per se* but the processing of accurate information to deal with uncertainty". However, the decision making problem resides principally in that the accuracy of the information may be compromised by human actions and intentions, and the subsequent use of the information is also constrained by the individual's ability to make value of it (*i.e.*, arrive at an optimal decision).

The notions of rationality in managerial behaviour and decision making have been challenged since the early work of Simon (1957) and the behavioural theory of the firm from the Carnegie School (March and Simon, 1958; Cyert and March, 1963) through the notion of bounded rationality. This is where the individual (or a

collective) is cognitively impeded due to the inability to process infinite amounts of information in a limited period of time, compounded by the differing perspectives that individuals may have of a situation or environment. Festinger (1957) proposed that 'cognitive dissonance' could be said to exist where an individual seeks consistency in their beliefs by interpreting information or external stimuli in such a way that existing beliefs are supported whilst conflicting information is effectively (though subconsciously) disregarded. Although this should not be taken to suggest that managers act irrationally in strategic decision making, limited rationality presents what Eisenhart and Zbaracki (1992:22) term a "heuristic perspective", whereby aspects of the decision making process can be rational whilst others cannot. Indeed, early works in the field of policy and planning suggested that the perception of the environment was as important as the objective assessment of it (Weick, 1969).

The perceptions of managers and their influences on strategic decision making have been the focus of much attention in the management literature, and latterly in the strategic management literature. Studies by Child (1972) and Miles *et al.*, (1974) have both suggested that managers' perceptions of the environment influence the choice of strategies designed to meet with changes which take place beyond the organisation's boundaries. More recently, the view that perceptions influence behaviour (*i.e.*, decisions and actions) has been refined to include a consideration of experiential influences, values and beliefs, and the filtering of information in the development of managers' perceptions (Hambrick, 1984; Day and Lord, 1992; Finkelstein and Hambrick, 1996). Others have examined the links between managers' perceptions of the environment and organisational performance (Dutton and Dukerich, 1991; Thomas, Clark and Gioia, 1993), suggesting that there is a clear link between how managers perceive their organisation and environment and how they subsequently act to achieve predetermined goals. It has also been suggested that external influences have a greater impact on manager's perceptions than functional experience and conditioning (Chattopadhyay *et al.*, 1999).¹¹ Furthermore, the link between

¹¹ Nonetheless, associations between functional conditioning/experience and cognitive bias have been reported (Walsh, 1988; Hogkinson and Johnson, 1994), as have the impact of functional differences upon the perceptions of issues arising in a planning context (Barnes, 1984; Norburn, 1986; Ireland *et al.*, 1987).

managers perceptions and their relationship to specific strategies such as diversification and new service development has been examined (Song, 1982; Bantel and Jackson, 1989).

Furthermore, several studies have indicated that attempts to simplify the complexity of planning activities leads to cognitive simplification which generates perceptions that subsequently lead to decision making. For instance, Huff (1982) suggests that the actions or decisions of rivals may lead senior managers to 'reformulate' their strategy because of strategic concepts borrowed from industry experience, *i.e.* how other firms solved problems. In addition, concepts and ideas may be transferred from past analogous experience and may also emanate from the wider business environment (*e.g.* business press and industry associations). The proposition of 'borrowed experience' is that the industry context influences the manager's perceptions of strategic opportunities, ideas and concepts.

Schwenk (1984) proposed that cognitive simplification is observable in a variety of ways; denying trade-offs, single-outcome calculation, reasoning by analogy, representativeness, the illusion of control, prior hypothesis bias and escalating commitment. The supporting work of Roll (1986), Tang (1988), Porac *et al.*, (1995) and Sellers (1997) indicate that when manager's perceptions of competitive strategy are simplified through cognitive simplification or bias, subsequent decisions or actions can lead to discernible shortcomings in performance *vis a vis* the intended or existing strategy of the organisation (Chapter 4).

It is axiomatic that the perceptions of managers and the priorities which they hold will have an influence upon the strategic decisions they take (Knight *et al.*, 1999) and the impact of such perceptions will be determined by the extent to which the individual is subjected to cognitive distortion in group-decision making environments and the degree of control over the strategic decision that she or he can exert (Miller *et al.*, 1998).

Moreover, the importance of the understanding that researchers have of managers' perceptions has far reaching consequences for both normative and positive theories in the management field. As Sutcliffe and Huber (1998) suggest:

Given that organisational actions are based in part on top managers' perceptions of their organization's environment, our ability to analyze, understand, and predict organizational actions and performances may be seriously constrained unless we recognise and account for differences in these perceptions (1998:794).

Perceptions of the external environment will reflect the manager's view of the nature and degree of competition which the company faces, combined with a perception of the resources with which the organisation must compete. This suggests that managers will not only perceive both the internal and external environments individually but may also have a specific perception of competitive advantage – how an organisation can successfully achieve its goals using its resources in the face of competition. Accordingly, such a perception of competitive advantage will, it is suggested by the antecedent literature, have an influence on the choice of strategies adopted by the organisation.

Bearing in mind that the understanding of managers' perceptions is an important precursor to the evaluation of decisions and actions taken by them on behalf of the organisation, we have, in essence, given rise to the major question that this study sets out to address – how do managers perceive competitive advantage? Those theories of competitive advantage that are the focus of this study, a residence-based view and a resource-based view, are reviewed in Chapter 3. Meanwhile, the industry environment which, it is also argued, may influence perceptions of competitive advantage is discussed in the next chapter. The choice of a single industry as the domain for this study is clearly important to provide the opportunity to capture, identify and explore industry-level factors which may explain the perceptions of managers since not only will they influence their perceptions, they may have given rise to them in the first instance.

It is no coincidence that there should be a study of perceptions of competitive advantage that examines the resource-based view (RBV) of the firm. Well regarded as one of the founders of the RBV, Penrose (1960:22-23) made the observation that the rate and method of growth (*i.e.*, strategies) of a firm are constrained by the knowledge and experience (coloured by the perceptions) of its

managers. Although her observation has not been reported in other RBV studies, it is with this in mind that the study is fomented.

However, for the purposes of this study, actual performance is not a central issue, since the focus resides in the perceptions of managers about the sources (and theories) of competitive advantage, rather than its outcome.

2.4 CHAPTER SUMMARY

Strategic management is concerned with the use of resources to achieve predetermined goals achieved through a process of strategy formulation to achieve competitive advantage. Terms within this definition have been examined and clarified since they will be used frequently during the progression of this thesis.

Although advocates and observers of strategy formation suggest that important strategies may emerge, the suggestion is not that formal planning should be abandoned but rather that planning activities are, by their very nature, limited by the managers involved. Indeed, it has been suggested that the perceptions of managers influence not only the analytical activities of the planning process but also the choice of strategy that the organisation may subsequently follow. Accordingly, the research stimulus for this study is:

To examine managers' perceptions of competitive advantage.

In the next and following chapters, the research stimulus is developed into a series of testable research questions. In the next chapter we examine the industry context in which the study is domiciled.

Chapter 3 – The Industry Context

3.1. INTRODUCTION

This chapter examines the specific nature of the automotive industry given that it is the industry within which the study is domiciled. Combined with the micro-theoretical context (Chapter 4) a basis is formed for the development of the research strategy, data collection and analysis. Furthermore, this chapter provides a foundation for the interpretation of data in Chapters 6 and 7.

The automotive industry, and specifically the automotive components sector, has been chosen due to the significant changes that have taken place in the last one hundred years. Important for this study is that this industry provides a research setting where changes in industry structure (through consolidation, strategic alliances and changing buyer-supplier relationships) have clearly been undertaken in the search for further sources of competitive advantage through position or residence. Equally, the way in which organisations use their resources (whether focussed in terms of final assembly or in a broad manner with integrated supply chains) has also changed. Accordingly, this chapter leads to the development of the principal research question which addresses the impact of industry structure upon competitive advantage and the use of resources to gain competitive advantage.

This chapter commences with by a historical overview of the automotive industry, theories of outsourcing and market exchanges, and developments in the buyer-supplier relationship which have become a model of best practice employed in other industrial sectors.

3.1.1 DEFINITIONS

The ‘automotive industry’ is a term of such clarity and ambiguity that it could be defined in terms of all organisations involved in the production, distribution and supply of motorised vehicles. For the purposes of this study, there is a need to distinguish between differences in motor vehicles and differences among those

organisations with the supply chain and between original equipment and aftermarket components.

Broadly speaking, two markets exist within the automotive industry; cars and car-based light vans represents the first with commercial vehicles such as buses, articulated lorries, rigid trucks and non car-based vans within the second (Trade and Industry Committee, 1985). However, this nomenclature exists alongside others which distinguish between passenger cars, light commercial vehicles (LCV) and heavy goods vehicles (HGV). LCVs cover car-derived vans (less than 1.8 tonnes) and vans (between 1.8 tonnes and 3.5 tonnes). The HGV market includes vehicles over 3.5 tonnes, such as fixed and articulated trucks, buses and coaches but excludes military and agricultural vehicles (SMMT, 1999).

The House of Commons Select Committee Report (1987:1) defined the motor components industry as subcontractors and suppliers of “components forming part of or fitted as standard to on-road vehicles powered by internal combustion engines¹², but excluding in-vehicle entertainment, accessories and liquids”. Original equipment (OE) refers to components which are fitted to the vehicle at the time of manufacture, whereas aftermarket (AM) components are replacements, often non-durable and, in some cases, may not be produced by the same manufacturer of original equipment.

3.1.2 THE SCALE AND SCOPE OF THE UK AUTOMOTIVE INDUSTRY

Of the 10,000 to 15,000 components in a passenger car, around 70 per cent of its value is represented by the cost of components (Womack *et al.*, 1990). In 1998, UK based car production stood at 1,748,305 units in proportion to the 2,247,402 vehicles registered (Table 3.1).¹³ This level of production represented over 12 per cent of total EU production. In general automotive terms, the UK has some 40

¹² This term refers to power generated through the combustion of petroleum liquid and air. Such engines can take four forms; two-stroke, four-stroke, diesel and rotary (Wankel).

¹³ In the UK market sales are based on registrations, *i.e.* the number of new vehicles whose ownership has been transferred from the assembler via the Driver and Vehicle Licensing Agency (DVLA). This does not always equate to sales to the consumer or the fleet buyer as many motor vehicle dealerships ‘pre-register’ the vehicle and store the ‘registered’ vehicle until its sale. However, the number of pre-registered vehicles is not measured.

assemblers of cars, vans, trucks and buses (SMMT, 1999).¹⁴ The Society of Motor Manufacturers and Traders (SMMT) estimates that 330,000 people work directly in the assembly or supply stages of the industry in the UK, with another 460,000 employed in retail, wholesale and distribution. Combined with automotive assembly, the motor industry has a turnover of around £40bn per annum, representing over 5 per cent of UK gross domestic product, comparing favourably to the EU average of 1.6 per cent (SMMT, 1999). It has been estimated that there are 7,000 automotive component manufacturers employing 150,000 people, with a combined turnover of £12bn (Auto Industry, 1999).¹⁵ In 1995, exports of UK manufacturing components were valued at £6.2bn from its level in 1993 of £4.8bn. In spite of this, the trade deficit has widened with little amelioration associated with favourable exchange rates in the mid-late 1990s.

Year	UK Registrations	UK Production	EU Production
1988	2,215,574	1,226,835	
1989	2,300,944	1,299,082	
1990	2,008,934	1,295,611	
1991	1,592,326	1,236,900	
1992	1,593,601	1,291,880	
1993	1,778,426	1,375,524	
1994	1,910,933	1,466,823	
1995	1,945,366	1,532,084	12,636,067
1996	2,025,450	1,696,134	13,061,348
1997	2,170,725	1,698,015	13,451,272
1998	2,247,402	1,748,305	14,510,472

Table 3.1: UK/EU Motor Vehicle Production and UK Registrations 1988-1998

Sources: Society of Motor Manufacturers and Traders (SMMT)
European Automobile Manufacturers Association (ACEA)

Among the UK volume producers, capacity utilisation (*i.e.* the proportion of production capacity actually used at a given point in time) varied between 47 and 96 per cent in 1997 (Table 3.2). Notably, greenfield plants account for some of the best capacity utilisation figures (75-96%), although it should be noted that this is in part due to the lower number of models produced in the plant, which tends to reduce the variability of demand.

¹⁴ The seven major volume manufacturers are Ford, Nissan, Vauxhall (General Motors), Honda, Toyota, MG Rover, and Peugeot (PSA).

¹⁵ The number of automotive component suppliers is difficult to determine accurately. Chapter five, however, addresses this issue and its implications for sampling.

Company	Plant	Model	1998 Production	Capacity	Capacity Utilisation
BMW (Land Rover)	Solihull	Defender, Discovery Freelander, Range Rover	153,495	200,000	77%
BMW (Rover)	Cowley	Rover 600, Rover 800	47,221	110,000	47%
BMW (Rover)	Longbridge	MGF, Mini, 100, 200 & 400	281,438	440,000	64%
Ford (Jaguar)	Coventry	XJ8, XK8	43,551*	50,000	87%
Ford	Dagenham	Fiesta, Mazda 121	250,351	278,000	90%
Ford (Aston Martin)	New Pagnell	DB series	662*	1000	66%
GM (Vauxhall)	Ellesmere Port	Astra	105,400	120,000	88%
GM (Vauxhall)	Luton	Vectra	154,800	210,000	74%
GM (IBC)	Luton	Frontera	25,000	30,000	83%
Honda	Swindon	Accord, Civic	112,303	150,000	75%
Nissan	Sunderland	Micra, Primera	288,871	300,000	96%
Peugeot	Ryton	306	n/a	n/a	n/a
VW (Rolls Royce)	Crewe	Rolls Royce	1918*	4200	46%
Toyota	Burnaston	Carina, Avensis	172,000	200,000	86%

* 1997 figures

Table 3.2: Vehicle Production in UK-based Plants (1998)

Data source: Financial Times Automotive (1998:1999)

3.2. THE AUTOMOTIVE INDUSTRY

3.2.1 CHANGING NAMES, PLACES AND WAYS

The automotive industry has undergone a myriad of changes over the past century, seeing the shift from craft to mass to lean production, technological innovation and the entry of far-eastern manufacturers to the global market. The outcome of the past three decades of intense competition has been a significant change in the relative competitive power of the members of the triad of car producers (U.S.A., Europe and Japan). As Cusamano (1985) observed, the US automotive industry in 1950 produced 30,000 cars in one and a half days – the equivalent of Japan's annual output in the same year.¹⁶ This radical upheaval notwithstanding, the motor vehicle industry came to represent some ten per cent of world exports, of which the triad held 75 per cent of production and exports in the late 1980s (Wilkinson 1991:182). The industry still remains an essential employer although the structure of employment has changed substantially.

¹⁶ Cited in Garrahan and Stewart (1992:28).

The reasons for the relative changes of power within the triad (and the emerging 'Asian Tiger' nations) have frequently been attributed to low wages, workaholic employees, a 'mysterious culture' and a competitive currency, but increasingly there has emerged the realisation that these explanations have been too simplistic at best and naive at worst. The relative changes have come about because of different strategies between incumbents in the east and west. As Samson succinctly describes:

Japanese strategy was (and is) simple and rather straightforward: First the Japanese came to the United States to study techniques, make contacts, become aware of marketing problems and uncover weaknesses. The second stage involved returning home to train workforces in foreign ways while adapting native Japanese practices to the new technologies and simultaneously enter into licensing agreements with the Americans. During this period Japan's government would erect import barriers to foreign competitors. The third stage involved Japanese firms uniting, under MITI's direction, to attack the American market. The product was sold underpriced with the aim of conquering a large market share as soon as possible. During the fourth phase, the Japanese would upgrade their product to take over higher priced segments (1993:60).

However, in November 1980 the U.S. International Trade Commission concluded that the US automotive industry was not being affected simply by Japanese imports *per se*, but that it had brought upon itself demise through not altering its production to smaller cars when the demand for such vehicles was in fact rising. The loss of market share to the Japanese resulted when the latter provided products to fill the gap (Wilkinson 1991:186). In addition to this, Japanese assemblers' greenfield based plants integrating lean manufacturing and flexible manufacturing systems (the ability to produce different models using essentially the same machinery and tooling arrangements) allowed them to efficiently produce a differing range of products such as Multi-Purpose Vehicles (MPVs), Four Wheel Drive vehicles (4WD), sports cars and city cars, each appealing to different niches in the market as and when they appeared. The Japanese manufacturers' view of the car market pays scant regard for the view that the car industry is mature. Indeed, it reflects the views of Hamel and Prahalad who note:

What most executives mean when they label a business mature is that sales growth has stagnated in their current geographical markets for existing product sold through existing channels. In such cases it is not the industry that is mature but the executives' conception of the industry (1989:73).

More recently the industry has experienced a spate of strategic alliances and mergers, as a result of which American and European assemblers have become more competitive in the short term, General Motors (G.M.)/Toyota and the now-defunct Honda/Rover alliances are cases in point. In the former alliance GM improved dramatically as a result of a temporary alliance and started 'afresh' with the Saturn subsidiary manufacturer based on a greenfield site in Nashville, Tennessee. It now produces a sub-compact (hatchback) sized car that rivals Japanese equivalents in both price and quality. In the late 1990s, Daimler and Chrysler merged (1998) and Ford acquired Volvo and Land Rover (1999 and 2000 respectively).

The full effects of the industry's upheaval are not fully clear but American motor managers are finally re-assessing the reasons for their previously indomitable self-confidence. It is clear however that the producer of the twenty-first century now requires well established J.I.T. (Just-in-time) delivery and lean manufacturing systems, a flexible and highly skilled workforce and far reaching ties with component suppliers in order to facilitate a rapid response to changing customer requirements (increasingly seen through 'lean retailing'). The principle of high volume production will be replaced by shorter production runs as a result of more frequent product changes. The core skills of the Japanese automobile industry are succinctly described by Carr and Truesdale (1992):

Japan's car industry is highly competitive. The car assemblers take only 17 hours to assemble a car compared with 25 hours for US assemblers and 37 hours for European assemblers. New car models take an average of only 43 months to develop compared with 62 in the U.S.A. and 63 in Europe.¹⁷ (1992:49)

¹⁷ R&D lead time is often measured from 'styling freeze' (the decision to proceed with a given design of vehicle) to 'job 1' (production). Measures of R&D include time, cost, percentage of 'carry-over' parts from other or previous models, and R&D man hours.

Table 3.3 shows the structure and ownership of the European automotive assembly industry in the late 1990s, denoting a degree of consolidation which has implications for suppliers (Section 4.6). Further, it indicates that seven ‘parent’ assemblers account for the ownership of 25 of the 29 volume produces located in Europe. Renault and the Japanese producers are the exception with Renault ranking fourth in terms of units produced. By virtue of the lack of merger/acquisition activity and the relative brevity of their presence in Europe, Honda, Nissan, Toyota and Suzuki occupy positions nine to twelve. Unlike their dominance globally, Ford and General Motors occupy rankings four and six, behind the European leader, Volkswagen AG and PSA.

	Parent	Rank	Production (1997)	Subsidiary/Division of:
Alfa Romeo				Fiat
Aston Martin				Ford
Audi				Volkswagen
BMW	✓	7	1,120,450	
Chrysler Benz	✓	8	908,773	
Citroen				PSA
Ferrari				Fiat
Fiat	✓	5	1,542,610	
Ford	✓	3	1,780,079	
General Motors (GM)	✓	6	1,440,794	
Honda	✓	10	108,097	
Jaguar				Ford
Land Rover				Ford
Magna Steyr Puch				GM
Maserati				Fiat
Mercedes Benz				Daimler Benz
Nedcar			197,000	Mitsubishi/Dutch State/ Volvo
Nissan	✓	9	357,430	Renault (36.8% stake 1999)
Opel				GM
PSA	✓	2	1,897,643	
Renault		4	1,632,382	
Rolls Royce				Volkswagen
Rover				BMW
Saab				GM
Seat				Volkswagen
Skoda				Volkswagen
Suzuki	✓	12	92,256	
Toyota		11	104,615	
Vauxhall				GM
Volkswagen	✓	1	2,449,754	
Volvo				Ford

Table 3.3: Structure and Ownership of the European Volume Assemblers (1997)

Source: Production data: FT Automotive (1998)

Author's analysis

3.2.2 THE CASE OF EUROPE AND THE CHANGING SUPPLY CHAIN

Before the mid-1980's, the European market for assemblers could have been described as 'insular' with indigenous assemblers commanding a great proportion of the home market-share (Austin Rover in the UK, Renault in France, Fiat in Italy and Seat in Spain). In 1986, however, the status quo was shattered by the opening of Nissan's Sunderland plant, a move prompted by the Japanese manufacturers' need to circumvent tariff barriers for non-EC produced cars (Garrahan and Stewart, 1992). The choice of country was, in part, influenced by lower relative wage costs, weakened trade unions and a pro free-market government that welcomed overseas investment.

Other factors such as the high value of the Yen and lower overseas production rates played their part in this type of growth/market penetration strategy, also assisting in the hedging of currency and economic risk. In the following years, Honda (having collaborated with Rover since 1979), Toyota and IBC moved to Britain. By 1997, Honda, Nissan and Toyota accounted for 27.4 per cent of UK passenger vehicle production, comprising of 484,416 units of production (FT, 1998a).

Nevertheless, fears regarding local parts content (the value of the vehicle on completion less overseas input elements) and the possibility of the Japanese quickly gaining market share at the expense of indigenous assemblers, were voiced. Consequently the Japanese assemblers agreed to self limitation in addition to mandatory market share restrictions (the same concept but known as the Voluntary Export Restraint had been self imposed by the Japanese in the case of the US market).¹⁸ The European Commission ruled in 1991 that the European market would gradually be opened to the Japanese, from 11 per cent to 16 per cent in 1999.

¹⁸ Many arguments in respect of parts content and the location of value-added creation mirror those associated with transfer pricing (Cravens, 1997).

There are problems arising from the dichotomy of views of the pro-Japanese and anti-Japanese nations (for reasons of the aforementioned ‘insularity’), the most vociferous of the latter coming from France and Italy. Further to this is the question of the nationality of cars produced in ‘transplant’ factories. The European Commission has been evasive in the clarification of this grey area but it appears that any excessive (or threatening?) transplant production will be offset against Japanese imports to the European Union. The parts content debate has always aimed to appeal to partisan feelings but oncemore, the Japanese have learnt from their US experience and have initiated production with parts content values of between 60 and 83% (the Nissan Micra), far above the initial levels in the US.

3.3. INCREASED OUTSOURCING

3.3.1 TO MAKE OR BUY?

Before examining the increased level of outsourcing, it is appropriate to consider a broader theoretical discussion of why organisations within the automotive industry choose to develop in-house or outsourced operations for the provision of inputs such as components, parts and raw materials.

Coase (1937) proposed that the existence of firms was predicated on the ability to reduce the costs of economic coordination. When the benefits of using market coordination (*i.e.* third party buyers and suppliers) rose above those incurred by in-house operations, the latter would be chosen. However, the limits of growth, Coase argued, would arise when marginal bureaucratic costs – the costs of coordinating an ever larger organisation – exceeded the benefits achieved from growth and internalised resource and activity coordination.

Since Coase’s propositions, the degree to which an organisation should pursue integration along its supply chain (vertical-forward or vertical-backward) has been informed by a number of different perspectives, including transaction costs, asset specificity, and the differential between market and transfer prices. Clearly, an organisation must have requisite resources to do so, but the factors noted above

have been deemed worthy indicators of the value and feasibility of vertical integration.

Since all organisations carry out transactions, whether internally through its value chain, or externally in buyer-seller exchanges there must be costs associated with carrying out such exchanges other than those directly linked to the unit cost of production. The importance placed on the choice of vertical integration in the context of transaction costs originates from the work of Williamson (1975) who, in a development of Coase's work, proposed that efficiency could be maximised by the governance mechanism which minimised the cost of exchanges (or transaction costs) of the firm. This 'transaction costs' approach posits a choice between a market relationship with upstream and downstream firms, characterised by the possibility of opportunism and power-dependency levels, or incur the immediate costs of vertical integration (hierarchies) followed by the costs of increasing the size and structure of the organisation. The assumption of 'markets' as a governance mechanism is that such exchange relations are governed by irrationality and self-interest seeking with guile connoting that loyal behaviour cannot always be elicited from suppliers or buyers compared with internal 'hierarchies'. In addition to the supposed risk of external exchange relations, Williamson suggests that several types of costs are associated with a contractual relationship with an external organisation upstream or downstream:

- i. search and information costs (for initially selecting suppliers or buyers)
- ii. drafting, bargaining and decision costs
- iii. costs of safeguarding an agreement (legal expenses)
- iv. monitoring and enforcement costs
- v. bonding costs (learning about the supplier)
- vi. maladaptation costs (Williamson, 1979).

These costs combine to constitute transaction costs. A co-operative and ongoing relationship with organisations is necessary to reduce the impact of the six costs identified above. Initiatives such as supplier development programmes, 'open book accounting' (where a buyer is entitled to view the supplier's detailed

accounting information) and ‘cost transparency’ (where a buyer is able to scrutinise the supplier’s costs of manufacture) have indirectly contributed to the lowering of transaction costs (Lamming, 1993). Furthermore, organisations may find that they must also invest in relationship-specific assets in order for a trading relation to commence and progress. These could take the form of specialised plant and equipment, proprietary software or dedicated logistics systems. Such ‘asset specificity’ (Riordan and Williamson, 1985) arises where some of the assets and resources of an organisation are uniquely associated with servicing a specific supply relationship with another firm and could not be put to alternative use without significant modification and cost. The traditional notion of asset specificity signified assets specifically designed for use in exchanges with a single buyer organisation. The supplier bought and owned the asset thereby presenting the risk that the owner of the assets may face opportunistic acts from a buyer or supplier in the appropriation of further revenue due to shifts in the power-dependence relationship. A development of this can be seen in the automotive industry where a car assembler may pay for the tooling costs and owns the equipment used by a supplier of components situated in a dedicated production cell. Whilst the tooling could be adapted for use with other variants for other assemblers this is practically impossible. Ownership of the tooling assets by the buyer allows it to repatriate the equipment from the supplier’s factory in exceptional circumstances. In this case, idiosyncratic assets are owned by both the supplier (the production cell) and the buyer (the tooling).¹⁹

From a supply chain perspective, transaction costs suggest that managers within organisations trading goods and services will not only face bounded rationality but will act on the basis of foresight, self-interest and opportunity – they will seek to achieve the best outcome in terms of the reduction of transaction costs underpinned, wherever possible, by transaction specific assets. The motives of the human actors concerned, coupled with the transaction as the basis notion of analysis are important considerations in the transaction costs approach. So, whilst this would seem to advocate the pursuance of selfish and extortionate relationships with firms in the supply chain, where transaction costs are lower in-

¹⁹ Based on an interview with a UK plastic mouldings company supplying to the car industry.

house such integration should be sought since “governance is a means by which to infuse *order* in a relation where potential *conflict* threatens to undo or upset opportunities to realise *mutual gains*” (Williamson, 1999:1090 original emphasis).

The decision to integrate activities within an organisation or to outsource them to external parties is commonly known as the ‘make or buy’ decision. Amongst the factors under consideration are the proprietary value of activities, the availability and capability of external sources of supply, the strategic impact of the activity in the context of the organisation’s operations and the differential between transfer prices and market prices. Market prices are based on the actual (or forecast) prices charged by supplier and include overheads and a ‘mark-up’ In contrast, transfer prices are internal prices charged within the divisions of an organisation as throughputs pass along the internalised supply chain. Where the transfer price of a component or product is less than the market price, vertical integration can be justified in terms of direct financial benefit. Transfer prices are normally found in organisations with divisionalised structures which operate a profit centre approach to internal financial control. Generally, there are two ways in which transfer prices are determined. In the first, prices are determined on the basis of market prices. Here divisions simply trade throughputs between themselves, charging prices to the receiving division which reflect external prices for equivalent throughputs. The problem surrounding this method is that whilst creating a relatively uniform and well understood approach to setting prices, it achieves little to encourage improved linkages between divisions. The second method, using cost based accounting measures, enables managers to measure the actual cost of throughputs traded between divisions in the internalised supply chain, identify areas in which inefficient practices and activities are located, and thereafter initiate improvement measures.

Standard costing methods also ensure that an upstream division does not inflate its transfer price in order to create the impression that it adds greater value than other parts of the internal supply chain. In particular, those divisions which are located downstream would face the predicament of receiving parts from upstream which already has an inaccurate and inflated transfer price. Do they set their own transfer price incorporating the already inflated transfer price charged to them upon receipt

of goods from upstream? If so, this would maintain their contribution to the transformation process but exacerbate the problem as they subsequently charge a transfer price to a downstream division receiving its outputs. Alternatively, they could set their transfer price at a level which reflects the true value of the goods produced thus far within the internal supply chain (if they knew the amount by which their upstream division had inflated its prices by). In so doing, this would lower the apparent 'contribution' made by this division within the context of the overall transformation process. Such divisional behaviour could lead to inaccurate reporting and comparisons between divisions, with an augmented potential for conflict. The strategic importance of transfer prices can be seen in terms of the way in which an organisation grants autonomy to divisions that are still reliant on the acquisition of inputs and the dispersal of outputs within the larger company structure, enabling each division to develop a true picture of its performance relative to other divisions and rivals within its industry (Hay and Williamson, 1991).

Beyond the boundaries of an organisation, transfer pricing systems have ramifications for stakeholders and are subject to macro-environmental influence. For instance, transfer pricing has been used by multinational organisations as a method by which a higher proportion of added value is retained in the country of origin, simultaneously reducing some of the resistance to FDI in other countries and the corporate tax burden in overseas locations with higher fiscal rates than in the home country. This is achieved by raising the transfer price at the point at which goods are sold to the overseas division located in a high tax country. Whilst fiscal objectives remain a predominant driver of transfer pricing, it is suggested that it encourages division or subsidiary managers to seek internal sources of supply rather than external sources and provides a partial hedge against currency fluctuations for multinationals companies. Finally, it allows organisations to sustain operations in countries facing economic difficulties by lowering the transfer price to the country concerned, reducing the impact of the poor economic conditions and retaining operations in order to maintain good relationships with local governments and employees (Cravens, 1997).

Agreed upon motives for vertical integration include strategic considerations, output/input price discrepancies and uncertainties about costs/prices (Mahoney, 1992). Strategic considerations include creating barriers to entry and the ability to control supply to smaller rivals in an industry. A reduction in the number of suppliers could also lead to an increase in the prices faced by rivals that have not pursued vertical integration. Vertical integration eliminates the need to pay the prices set by a supplier, which may be exacerbated if the supplier enjoys a commanding position within the market (monopoly, duopoly, *etc.*). Vertical integration also appeals to those organisations which seek to reduce uncertainty in terms of price and quantity of supply, which can affect production scheduling and price setting to downstream organisations. It has been suggested elsewhere that the cost of securing supply in the form of backward integration should be considered a proxy insurance premium (Adelman, 1949). Vertical integration is also argued to reduce uncertainty concerning the quality of components, products, and retailing, and reduces the unexpected expropriation of technical know-how.

It has been proposed that five main advantages of vertical integration exist: profit, co-ordination and control, audit and resource control, motivation and communication (Mahoney, 1992). Senior managers have the authority to control and organise the behaviour of managers within the organisation. Beyond its boundaries, senior managers have to rely on good relations at best and litigation at worst. Vertical integration enables the organisation to make resource allocations with more complete information about activities since one firm's senior manager has no automatic legal right to audit the activities of another. It is suggested that as vertical integration increases so too does the number of intra-organisational exchanges, generating a greater sense of collective benefit and security. Finally, the use of standardised and established communications (I.T. and financial systems) within an organisation is preferable to the link between two organisations with incompatible systems. Were a supplier to have compatible systems, a transaction cost approach would argue that the risk of opportunism would favour the choice of vertical integration.

Three major areas of cost disadvantages may accrue to vertically integrated organisations; structural, strategic and production. Vertical integration,

particularly where this is through acquisition or merger which accelerates the speed of change, inevitably increases the size of an organisation's structure. In so doing, vertical integration raises the costs of control and co-ordination. Vertical integration requires the management of a wider variety of tasks. A lack of familiarity with these tasks and a dilution of managerial skill sets may also raise costs in terms of lower effectiveness relative to the pre-integration structure. In removing the competitive market pressures which previously drove areas of the business to continuously improve, the creation of a secure market for a supply division may lead to complacency which erodes the advantage of market prices. The 54-day long strike at General Motors in June-July 1998 was provoked by the decision of senior managers to reduce internal supply division costs which were comparatively higher than those from external suppliers, otherwise outsourcing would occur. Taken together, the suggestion is that internal costs may be higher than those available from third parties and may lead to an outsourcing decision. One solution (albeit a partial one) is tapered vertical integration, whereby an organisation has simultaneous in-house and an external sources of supply (Porter, 1980).²⁰

Exit barriers (Harrigan, 1980) and costs may rise as an organisation increases its strategic, financial and operating commitment to specific industries, markets or products. This will depend on the degree to which the vertical integration is focussed on few or many products. Vertical integration may also lower an organisation's access to valuable tacit information from independent buyers and suppliers who may well also transact with the organisation's direct rivals. The investment in idiosyncratic assets may also depress financial performance.

The resources directed toward vertical integration could be more usefully deployed in creating process improvements elsewhere in the organisations core processes. Furthermore, if production capacity is under-utilised, the over-capacity is spread across a longer series of processes compared with a less integrated organisation which can simply reduce the quantity of supplies it requires to meet

²⁰ Albeit advocated originally by Porter as a way of strategically managing a manufacturing capacity deficit or signalling that an organisation poses a credible threat of integration to shift bargaining power (1980:319-20).

downstream demand. It has been estimated that over-capacity in the global automotive industry stood at between 25-30 per cent in 1998, with Europe facing 30 per cent overcapacity in the same period (Brown, 1999).

The lessons to be learnt from a high level of in-house production have been available since the early years of the automobile industry. Abernathy and Wayne (1974) recount the development of the Ford Motor Company and its River Rouge plant in their longitudinal study to derive the 'limit' of the learning curve (which they contend is the point at which a new product introduction is made). The excessive degree with which Ford sought to develop economies of scale and production based learning so as to steepen its experience curve created manufacturing and production inflexibility. The Model T was first produced in 1907 and retained its original chassis and engine compartment throughout its life whilst peripheral improvements were made as a result of increased buyer education and an improved road network.

By this stage however, the Model T had become a technologically outdated product and in May 1927, the River Rouge Plant was closed for an entire year in order to re-organise and re-tool production facilities, a period in which market leadership was conceded to General Motors (Abernathy and Wayne, 1974:115). This is a harsh and early lesson of growth based on extensive vertical integration.

There are many compelling reasons to engage in the outsourcing of activities. Some are more beneficial in a strategic (*i.e.*, long-term and organisation-wide) way. As a method by which managers can reduce wage costs, industrial disputes and higher productivity, outsourcing is only a short term-solution. Outsourcing based upon a focus on expertise and technology is, perhaps, more beneficial than the former.

3.3.2 AN INDUSTRY PERSPECTIVE

The transaction costs perspective (section 3.3.1) suggests that in the absence of lower 'hierarchy' costs, transactions should be undertaken using the 'market' as a governance mechanism.²¹ In the latter, exchanges can be thought to resemble a form of collaborative self-interest, where asset specificity and repeated exchanges suggest collaboration/commitment but where the self interest of the human actors (*i.e.* senior managers) may become manifest as they seek to achieve their own organisation's objectives.

The 1980s and 1990s were characterised by sweeping changes in the automobile industry on a global scale. By this time, components from outside suppliers had come to constitute between 50 and 70 per cent of the production costs of a vehicle (the former applicable to non-Japanese assemblers and the latter to Japanese assemblers. Bertodo, 1991a). Despite this however, core and high added-value components such as major engine components, chassis and body panels have remained a strictly in-house activity.²² Component costs have, during much of this time, been far from the controlling grip of the assemblers but with the overcapacity crisis in the developed world's car market becoming ever greater (Brown, 1999), most car manufacturers have placed greater importance upon re-evaluating the relationship between themselves and their suppliers. This process has been underway in the US since the early 1980s and by 1990 the shakeout in the US sector has reduced the number of players by a third to 2000.

Throughout the global automotive industry, purchasing operations have become a target for reducing and shifting the cost burden of assemblers. Among the suppliers, many of them have found themselves facing the dilemma that in order to secure long term contracts with assemblers they must cut prices, show an earlier commitment toward product development and finance the R&D for

²¹ Further expositions of the transaction costs approach include: Williamson, 1979; Williamson, 1983; Williamson, 1985; Hill and Kim, 1988; Williamson, 1988; Walker and Poppo, 1991; Alvesson and Lindkvist, 1993; Zajac and Olsen, 1993 and Williamson, 1999.

²² What is generally understood to be a 'chassis' in a motor vehicle (the subframe onto which major mechanical components are fitted) is currently referred to as the 'automotive underbody'.

appropriate components. This change from in-house production to outsourcing during the 1980's is well documented (Bertodo, 1991a-f, Lamming, 1993).

Additionally, there have been increasing pressures from suppliers to introduce commonality of components for extensive use across model ranges and the new demands for modular production whereby the component forms part of an integrated system or 'sub-assembly' (e.g. Fuel Injection and Anti-lock Braking systems).²³ Suppliers have also felt the demands for improved component quality given the importance placed on defect and 'hospital bay' rate reductions by the US and European assemblers that have placed great priority on this as it has become one of the Japanese assemblers' key sources of competitive advantage (Womack *et al.*, 1990).

A significant and polemic figure in the automotive industry in recent years is Jose Ignacio Lopez de Arriortua, the former worldwide parts purchasing chief at General Motors who in 1993 left the Detroit-based car giant for a similar position at Volkswagen. His 'defection' is neither anecdotal nor trivial. He is the embodiment of the new emphasis being placed on component manufacturers in order to improve quality, costs and overall competitiveness. After the automation debacle at G.M. in the late 1980's (in which G.M. invested heavily in automation in the view that it was the key to competitiveness), the assembler learnt, partly as a result of their joint venture with Toyota (NUMMI), that new relationships with suppliers would be beneficial to company health and competitiveness. Lopez set out to secure price cuts for components of around 20 per cent, in return for which the supplier would be rewarded long-term supply contracts. Within a year, the Spaniard's new policy had saved G.M. over a billion dollars.²⁴ However, these effects were as counterproductive as they were short-lasting. Jones (1998) comments that "the Lopez shock tactics approach may have woken up lots of suppliers but did not lead to sustained improvements" (1998:10). Supplier development and relationship models such as those used by Toyota and Nissan

²³ Prior to Ford's introduction of rolling track assembly in 1914, cars were unique in that parts were not interchangeable between the same model due to the lack of absolute uniformity and tolerance of components. The uniformity of replacement components actually arose in the ordnance and munitions industry in the mid-nineteenth century, when the mass production of bullets and shells began in earnest.

²⁴ Comprehensive coverage (beyond the remit of this study) of the incident of alleged industrial espionage can be found in Elkind (1997).

have been found to be far more beneficial for the parties concerned over extended period of time.

No longer does it seem appropriate or wise to maintain the adversarial nature of relations between component suppliers and assemblers. Whilst in the past, assemblers would often rely on their bargaining power to select the lowest cost supplier, the advent of Just-in-Time management and manufacturing, and quality and flexibility requirements have created a need for a modern, strategic relationship, with the resultant outcome being sole-sourcing. Here, a supplier exclusively provides components for the entire production life of the model. The difficulty for suppliers in Europe has been to balance the demands of the shared destiny relationship such as FMS, CAD/CAM, EDI (Electronic Data Interchange), SPC (Statistical Process Control), FMEA (Failure Mode Effect Analysis), logistics development and organisational change costs, with the effort to reduce the productivity gap with Japanese component manufacturers.

Despite higher wage costs, Carr (1992) found that in the mid 1980's, German component manufacturers had productivity levels twice that of the British. Notwithstanding this, he asserted that British productivity had improved substantially but not enough to reduce the differential. Confirmation of this view is provided in the research reporting a 2:1 productivity gap between British and Japanese component manufacturers in productivity and a 100:1 gap in quality. Following the full implementation of lean manufacturing, productivity could rise by 10 to 15 per cent a year (Oliver *et al.*, 1994).

The finding of Carr's research (1992) suggests that attention should not be paid to differentials between Britain and Germany but between British and Japanese component manufacturers: "One automotive battery producer suggested that whilst the most efficient battery plants in Western Europe were now generally up to six or seven batteries per man hour, Japanese manufacturers were producing ten" (1992b:82).

The situation for suppliers in Europe is similar but not identical to that of the US. One fundamental difference, however, is that the Japanese manufacturers have set up complementary component manufacturing facilities in the US in order to

circumvent the requirements of local parts content regulations. In Europe however, the Japanese have found that there exists an established, innovative and high quality components sector upon which to rely (as well as having had relatively easy access).

The innovative element of the European sector has in part come from large companies (such as Siemens, Bosch, Magnetti Marelli and Mannesmann) utilising their key strengths in automotive applications. Additionally, there has been a spate of acquisition activity leading to increased economies of scale and scope (T & N's purchase of Goetze, the German piston ring producer is one example). In 1990, 25 of Europe's component manufacturers had related sales of over \$1bn, of which six were British (GKN, Lucas, BTR, Pilkington, T&N, BBA.) However, the European market in the 1990s remained highly fragmented with over 10,000 suppliers, among which only 250 had 500 employees or more (Bertodo 1991a). More recently, GKN, Lucas (now Lucas-Varity) and T&N have retained their position of flagship suppliers in both a UK and European context (Table 3.4).

Company	Turnover 1995-1996 US\$ 000s
GKN Plc	5,666,208
Lucas Varity Plc	4,282,144
T&N Plc	3,321,278
UGC Ltd	1,716,673
Unipart Limited	1,384,061
Michelin Tyre Plc	1,194,521
European Motor Holdings Plc	635,504
Automotive Products Group Ltd	552,188
Echlin Europe Ltd	459,145
TRW UK Ltd	378,244
Johnson Controls Automotive Ltd	325,326
Brown Brothers Ltd	342,781
Allied Signal Ltd	297,628
Automotive Products Plc	312,940
Aeroquip-Vickers Ltd	296,750
Quinton Hazell Pc	254,355
Calsonic International (Europe) Ltd	258,945
Arvin International (UK) Plc	263,352
Carclo Engineering Group Ltd	238,217
Eaton Ltd	225,716
Meritor Light Vehicle Systems Ltd	168,526
Quinton Hazell Automotive Systems Ltd	161,960

Table 3.4: Leading Automotive Component Companies located in the UK

Source: FT Automotive (1998b).

3.4. THE CONDUCT OF BUYER-SUPPLIER RELATIONSHIPS

3.4.1 THE ADVERSARIAL NATURE OF SUPPLY RELATIONSHIPS

Frey and Schlosser (1993) provide a clear discussion of the limitations of the traditional competitive bidding process in the automotive industry. They argue that competitive bidding is an effective mechanism for receiving low price bids from suppliers at any given moment. However, the process fails to stimulate innovation (instead, incremental improvements occur) because of the risk of recovering R & D investments. Hence, established designs find their life-cycle extended and innovations are pursued by assemblers (though it is a costly activity). However, problems arise because assemblers know that many homogenous components and many substitutes. Accordingly, it is suggested that in the case of product development three situations may arise:

- (1) The component supplier gambles on bidding low for a project requiring development but is unsuccessful, creating difficulties and delays for the parties.
- (2) The component supplier provides an appropriate component within the price bid but revised specifications are necessary for the completion of the project. In this case the supplier may not benefit from the innovation as extra costs have negated such benefits, or
- (3) The component supplier provides an appropriate component within the price bid and original specifications. In this case both parties share the benefits of the development and the process can be said to work.

This competitive bidding process provided a way to achieve low cost components at a time when quality was seen to be something that would be assured by end of production line inspections. Richardson recounts how during the 1980's, US car assemblers began to convert their supplier relations towards "a form of quasi-vertical integration, the relationships ... [of which were] ... characterised by longevity, closeness and exclusivity" (1993:340) in the knowledge that quality

components from upstream activities contributed more to quality than a mass of operatives correcting defects in 'hospital bays'.

Womack *et al.*, (1990) describe the mass production supply system as one in which suppliers would be involved in a purely economic exchange characterised by much dis-information and dis-loyalty. Being involved late in the vehicle design process, suppliers would be given proprietary designs for a given component and asked to bid for a supply contract on the basis of a specified production volume. Whilst these contracts may have been of less than a year in length, in this so-called 'market-based bidding' system (akin to Frey and Sclosser's 'competitive bidding') it seemed to appear wise to bid below unit cost in order to win the contract. This was deemed a suitable approach as experience/learning curve saving would inevitably follow, assemblers would accept inflation-based price increases, and there would be a point at which switching costs would be prohibitive for the vehicle manufacturer thus allowing them to make opportunist price rises in any case. Thus emerged a system in which:

Quoting a lower price per part is absolutely essential to a winning bid. However, the suppliers are also aware that follow-on business for a new model can often extend over ten years. Then there's the market for replacement parts, which may be considerably longer. So, in reality, they are not bidding on a one-year contract but potentially, on a stream of business running for twenty years. (Womack *et al.*, 1990:141).

Central to this bidding process is the ability of the supplier to remain as mysterious as possible with regard to operations and cost structure. As Womack *et al.*, (1990) observed, the price bid per part would often be the only information concession made to assemblers. This would consequently hinder any 'in-production' changes caused by manufacturability, reliability or functionality. This attitude forms almost the organisational equivalent to demarcation lines, which at the individual level have the source of many of western industries industrial relations woes in the past (Bain, 1990).

By adapting a policy of outsourcing single components rather than sub-assemblies or modules, not only were the transaction costs of coordinating between 2000 and 2500 suppliers substantial (Womack *et al.*, 1990:157), the assemblers would still

face a quality problem inherent to the large number of parties involved in the manufacture of one component:

[U]ntil recently, General Motors built practically all its own seats by ordering about twenty-five parts per seat from many suppliers. When the parts were finally put together in the finished seat, it was not surprising that a piece wouldn't fit or that two abutting materials would prove incompatible. For example, they might rattle or squeak in cold weather because of different expansion coefficients (Womack *et al.*, 1990: 142).

The make or buy approach taken by vehicle manufacturers has, in fact, turned full circle. Abernathy and Wayne (1974), Womack *et al.* (1990), and Lamming (1993) note that when the automotive industry began over a century ago, many components were purchased from small engineering companies. Since then we have witnessed massive integration and deintegration, with the second round of outsourcing taking on a far different complexion.

The following section examines new approaches to the sourcing of automotive components in recent years and then explores the 'lean supply' model.

3.4.2 ALTERNATIVES TO SOLE AND MULTIPLE SOURCING

The detailed nature of buyer-supplier relationships has been sketchy, vague and disparate. It has been widely held that Japanese manufacturers relied on sole sourcing but Richardson's (1993) work on the Japanese automobile industry suggests a new framework for buyer-supplier relationships which dispels this interorganisational preconception and seeks to obtain some of the benefits of the competitive bidding process while retaining the simplification brought to production processes by sole sourcing.

The 'universal' use of sole sourcing by Japanese assemblers could be misleading for another reason. Most new plants commence with the production of a single model. There is, therefore, no rationale (based on a transaction costs approach) for the assembler to have two suppliers of alternators or two suppliers of fuel pumps. Consequently, sole sourcing is believed to be the model pursued by Japanese assemblers. However, the introduction of new models in addition to existing ones

in the same facility will often lead to the use of more than one supplier of the same type of component (*e.g.* alternators and fuel pumps).

Richardson proposes that a hybrid form of sourcing known as parallel sourcing is that which is actually used by Japanese assemblers because previous studies have looked at a particular point in time to identify the sourcing system in use. He adds:

A closer look would reveal that there are several firms in the supplier group who are qualified to produce a component. Some are currently producing similar components for different models while others have done so in the past. Thus the term parallel sourcing. The distinctive feature of parallel sourcing is that two or more suppliers with similar capabilities are concurrently sole sourcing suppliers for very similar components. While using a sole source for a component, the assembler establishes parallel sources to provide performance comparisons and competitive bidders for the next product cycle (1993:342).

Richardson finds two types of suppliers in existence - Design Supplied (DS) and Design Approved (DA). DS suppliers are provided with component designs from the assembler who seeks to ensure quality from the suppliers who tend to be in the lower tier of the supplier hierarchy.²⁵ DS suppliers have weaker relationships with assemblers but they still receive technological and managerial assistance in order that they may become more competitive and eventually receive DA status. DA suppliers occupy the first tier of the supplier hierarchy (Section 3.4.3 below) and number only a few hundred. DA suppliers design and manufacture components according to assemblers requirements and, accordingly, have a closer relationship with the assembler. The assembler tends to take a slightly lower interest in DA suppliers' cost structures than in the case of DS suppliers, thus conferring to them a greater degree of bargaining power. The risk for DA suppliers is that they may not be compensated for the costs involved in component development but they are more likely to secure numerous supply contracts.

²⁵ Clark and Fujimoto (1991) note that the Japanese equivalent of design supplied is known as *Taiyo-zu*. In the UK it is known as 'build to print'.

3.4.3 LEAN SUPPLY

The 'lean supply' system originates, and is to be found in its 'ideal type' form in Japan, differing from the market-based bidding adversarial approach in the six key areas of; supplier selection and price setting, the nature and approach to falling unit costs, mode of delivery, constancy of production, quality philosophy, and, problem solving and relationship maintenance.

In lean supply, the vehicle manufacturer coordinates a supply structure of around 300 suppliers which are designated the assembly and supply of an entire sub-assembly. This requires the tiering of the supply chain. In order to reduce the number of interfaces between buyer and supply (*i.e.*, one per supplier), a small number of key suppliers (less than 300) are nominated to take responsibility for the supply of a sub-assembly (also known as a 'module') directly to the assembly. This contributes to a major reduction in transaction, bureaucratic and parts costs.²⁶ These first tier suppliers buy components from a second tier of suppliers who in turn purchase their components, raw materials and commodity items from a third tier of suppliers. In some instance, a company may act as both a third tier supply and a direct supplier to the assembler, but for different products, such as a chemicals company which supplies polymer products to tier 2 companies and supplies paints directly to the vehicle assembler. Tiering has its problems, however. A component manufacturer occupying a tier 2 position within the supply chain must provide quotes for tier 1 companies that may have not won the supply contract from the tier one supplier. In addition they must work well within the lead time that the tier 1 supplier has to provide a quote for the assembler. The problem is compounded with tier 3 suppliers quoting to tier 2 suppliers.

The notion of tiering has been extended to recognise the global nature of the automotive industry and the importance of raw material suppliers. The new tiers are presented in Table 3.5.

²⁶ An informal discussion between the author and a manager for a former Rover supplier revealed that the yearly administration costs of one part number (*i.e.*, a specific component) can be as high as £10,000 for the assembler.

Tier	Role
Global Tier 1	Supply value-added systems
Local Tier 1	Supply value-added subassemblies
Local Tier 2	Supply component parts
Global Tier 3	Supply major raw materials
Local Tier 3	Machine shops and components

Table 3.5: Global Nomenclature of Supply Chain Tiering

Source: Based on Auto Industry (1999)

Whilst important to the reduction of transaction and bureaucratic costs, the outsourcing of subassemblies can add greater complexity and logistical costs to the process since a third party has to be integrated into the manufacturing process, in which stocks are minimised through just-in-time manufacture and delivery. Nissan, for instance, assembles fascia subassemblies (a cycle time of two minutes) adjacent to the production line and has the same employee fit them to the vehicle within the normal track time (FT Automotive, 1999).

Lean supply requires the involvement of these so called 'first-tier' suppliers early in the design process, and for them to liaise directly with others suppliers which produce parts for the assembly. Early involvement removes the need for costly changes or improvements to components once production has commenced. Prices are determined on the basis of 'market price minus' in which:

the lean assembler establishes a target price for the car ... and then, with the suppliers, works backwards, figuring how the vehicle can be made for this price while allowing for a reasonable profit for both the assembler and the suppliers (Womack *et al.*, 1990:148).

The nature of falling costs differs substantially in the lean system. It is not an expectation of lean assemblers that their suppliers should increase their prices under any circumstances, even in the advent of inflation. This is because of the belief in, and success with, the *kaizen* continuous improvement process.²⁷ Whilst this may appear to be a harsh dictat from vehicle producers, the use of value analysis and engineering with the assistance of the assembler where required, does

²⁷ Kaizen combines two kanji symbols – Kai (modify) and Zen (goodness).

yield falling costs. These costs savings are shared if they were derived jointly, or retained entirely by the supplier if it was solely responsible for the cost saving.

The mode of delivery is that of just-in-time delivery rather than the materials requirement planning or economic order quantity approach using large warehousing facilities. JIT uses *kanban* visible records in supply windows of hours rather than days. Constancy of production (or *heijunka*) is far more evident in the lean supply chain because JIT relies upon it. If suppliers face uncertainty, they have no option but to maintain high stocks of product in order to conform to delivery requirements (a vital performance criteria when assessing suppliers for future contracts). These stocks of course, incur storage costs for the assembler. As Womack *et al.*, note, “these kind of [unexpected] shifts are very difficult to accommodate in a system in which employees, because of job guarantees, are a fixed cost (1990:151). This is not unique to Japan. In the UK assemblers tend to over-produce than reduce output, and place workers on short time because of the threat of industrial action.

With little or no stock to buffer the assembler against interruptions in supply, poor quality can exacerbate the problem as they do not have the luxury of a one for one replacement of faulty parts. Consequently demands such as zero defects (which Womack *et al.*, (1990:152) note is “a goal rather than a reality”) are crucial to the constancy of operations.²⁸ Quality is seen to a function of lean supply and manufacturing, having been built into the system instead of being added onto the system, as is the case with many European and US organisations.

The approach to problem solving and relationship maintenance is starkly illustrated in the following example from Womack *et al.*, (1990) in which a supplier development team visits a supplier (a rare occurrence in the adversarial system) with a component defect problem. The team uses the “five why’s” approach (originating from Toyota):

²⁸ The Japanese quality issue has been dealt with exhaustively elsewhere and is not a major focus for this study (see Ohno 1978, 1988; Ashley, 1992; Goldman, 1992; Sako, 1992).

First, they discover that the defective part has been caused by a machine that cannot hold a proper tolerance. But the machine isn't the ultimate cause. So the team asks: "Why can't this machine hold tolerance?" The supplier's personnel report that it's because the machine operators cannot be adequately trained. The team members ask, "Why?" The supplier answers that it's because these employees keep quitting to look for other work, which means the operators are novices. "Why do workers keep quitting?" team members then ask. The answer: "Because the work is monotonous, noisy, and unchallenging." The ultimate resolution: to rethink the work process in order to reduce turnover. This, at last, is the ultimate cause - almost always an organisational problem (1990:152).

It is this ability to create a mutually collaborative relationship that enables the two parties to understand the soft organisational components that are the underlying cause of a given problem or impediment to improvement.

Supplier development is critical to the success of a collaborative relationship. Nissan's supplier development approach, known as the 'Nissan Way', is based on practices long established in Japan and emphasises:

- Mutual dependence
- Long term relationships
- Supplier development of parts and subassemblies
- Suppliers and Nissan using similar quality methodologies

In order to achieve this, Nissan UK began its supplier selection and development in mid-1985 with the intention of establishing a supplier family of between 150 and 200 companies with common aims and aspirations, long term relationships, clearly established responsibilities, and shared technical/quality knowledge underpinned by *kaizen*. By 1992, Nissan had 195 suppliers; 130 based in the UK, 28 in Germany and the balance spread amongst other European countries. Having said this, however, after seven years of production, the company found that only 39 UK suppliers could compete with their Japanese equivalents in the performance measures of quality, cost, timely delivery, development ability and management (Lawther, 1999). The 'Nissan Way' is conveyed in its supplier quality statement:

The Nissan Quality Philosophy is one of commitment to customer satisfaction through continuous improvement in quality, safety and reliability. The supplier has total responsibility for the delivery of zero defect products and will, establish quality systems accordingly. These systems will include the continual review and development of management, product design, material specification and manufacturing processes. The development of mutual trust and cooperation will bring about quality and productivity improvements to the shared benefit of both supplier and Nissan (Lawther, 1999).

Carr and Truesdale (1992) document the establishment of relations between Nissan and its prospective suppliers. Nissan's Supplier Development Teams (SDTs) spent time with the suppliers to advise them on quality and the continuous improvement philosophy, Just-In-Time delivery requirements, training programmes and even on problems with components destined for rival assemblers. This process of consultation lasted for four years until the first delivery of components was received.

More recently supplier development has enabled Nissan's new models to be developed 25 per cent more quickly than existing models. The company achieved this short lead time through 'Project Cogent' which, in January 1996, brought together 80 suppliers in a series of workshops designed to evaluate performance in the expected areas of quality and cost. In addition, areas such as design (drawings), prototype/test parts and testing have been included given that have an impact not only on the cost of research and development (around five per cent) but also have an impact on the production costs of the vehicle (seventy to eighty per cent). As Nissan's deputy R&D director explained:

If products are badly designed they will be intrinsically expensive, no matter how many are made or how hard your purchasing department puts the squeeze on you. If a designer makes a product that is hard to assemble, quality will inevitably suffer. Yes, you can add retrospective Japanese 'poka yoke' countermeasures but this increases cost and reduces plant capacity. (Beecham, 1998: 15).²⁹

²⁹ *Poka yoke* refers to a fool-proofing device used in defect prevention. *Poka yoke* was first used at the end of the late 1800s at the Toyoda Loom Works, where looms were designed to halt if a thread broke. Otherwise, were the loom to continue, it would produce an entire roll of fabric with a 'pull' which would render it unsuitable for sale. The technique was formally developed in the 1950s by Shingeo Shingo (an industrial engineer at Toyota).

Cogent has reduced the number of post launch design changes by 80 per cent, thereby reducing rectification problems in production. Furthermore, Nissan has split its procurements activities into three areas, according to the component's scope within the assembler's plants across the world:

- Global, single supplier parts which account for 13 per cent of total component purchases by value and include anti-lock braking systems and airbags
- Regional suppliers for components which may differ according to regional tastes such as plastic (resin) interior/exterior trim (bumpers, etc.)
- Per-factory suppliers for specific national markets (optional extras such as sunroofs).

This echoes the changing nature of tiering to reflect the global sourcing of components (Table 3.5). Furthermore, the use of supplier development teams and lean supply methods illustrate a 'voice' type of buyer-seller relationship (Helper, 1987; 1990) where communications, the sharing of knowledge and long-term commitment reduce the likelihood of the threat of switching compared with a traditional 'exit' approach, wherein low levels of commitment and shared goals lead to a higher likelihood of buyer switching.

3.4.4 SUPPLIER PERFORMANCE, BEHAVIOUR AND PERCEPTIONS

Richardson (1993) provides a useful schematic framework for clarifying the nature, quality and quantity of buyer-supplier relations. Of particular use is his definition of supplier performance as "quality, timeliness, responsiveness to changes in quantity, innovativeness and other non-price aspects of the exchange" (1993:342) From a number of cost viewpoints; transaction, switching, trading, competitiveness and set-up, he suggests that higher supplier performance results from the use of parallel sourcing.

One of the greater implications in Richardson's study is that increasingly, when assemblers want to create firmer links with suppliers, they place greater importance in having in-depth knowledge of suppliers operations reflecting, in many ways, the lean supply model.

Leverick and Cooper (1998) have recently found that UK buyer-supplier relationships have changed toward a partnership sourcing approach but still bear many of the facets of the pure market exchange approach. The mean length of relationship with the component supplier's main customer was nearly 21 years and accounted for an average of 28.1 per cent of revenues. This indicates that long-term relationships have existed within the components industry far before the entry of the Japanese manufacturers in the mid-1980s. Whether, however, these relationships were long term due to collaboration or necessity, is unclear, but one could suggest that an organisation such as GKN, the dominant supplier of constant velocity joints in the UK would have long standing relationships with indigenous suppliers.

The research by Leverick and Cooper (1998) also captures information which could be used as a proxy measure for loyalty. Based on the highest mean likelihood, suppliers thought that failure to satisfy a customer (assembler) would lead to assistance rather than the loss of current, future or large contracts. Component producers are clearly becoming far more involved in product development, not only in terms of design and prototyping, but also in the management of the project in a proactive manner. The degree of collaboration (in contrast to adversarial interaction) was also reflected in price setting. Suppliers ranked negotiation as the most influential factor, followed by target vehicle price³⁰, competitor's bids, its previous price and production costs. In the light of such changes towards the Japanese model of supplier relations, respondents found the wider level of inter-company activity to have diluted the clarity of responsibility and communications between partner. In addition, 43 per cent of respondents were unable to identify Japanese-based competitors compared to their European (22 per cent) and US (39 per cent) rivals. This could indicate several perceptions of rivals. The distance between rivals is an indicator of the level of threat that they pose, and that it is not necessary to identify and benchmark against

³⁰ This reflects 'market price-minus' pricing as opposed to 'cost plus'. In the first, the assembly establishes the price at which the vehicle will be sold. The assembler, working with suppliers, undertakes the task of designing, manufacturing and marketing the vehicle without exceeding the market price yet generating profit. In the cost plus approach, the assembler sets prices based on the costs of production plus a margin. Factors such as the elasticity of demand, rivals prices, efficiency and factor market instability are often too dynamic to ensure price stability based on cost-plus principles.

rivals due to the assistance offered by the assembler, which ultimately assists and determines the existence of a supply relationship. Yet, despite the increasing duration of supply relationships, the UK sector still lags somewhat behind those of Japanese vehicle assemblers, where 68 per cent of suppliers has never changed (or been forced to change) assembler (McMillan, 1990).

3.4.5 CURRENT AND FORTHCOMING FACTORS IN THE COMPONENTS SECTOR

Beyond the competitive, ecological and social challenges facing the automotive industry in general, several emerging factors seem likely to have an impact upon UK automotive components suppliers in the next few years:

- New materials and technologies
- New entrants
- Location of suppliers
- Greater consolidation
- Changes in the UK vehicle registration system
- Product 'gaps'

The Mercedes A-Class is the first production vehicle to use glass reinforced pedal brackets rather than aluminium or steel (FT Automotive 1999:9). The implications of such a development is twofold. First, it enables further penetration of chemical producers into the sector (in this case it involves the use of DuPont's Zytel material) and, second, it signifies the drive toward, weight saving, recyclability and enhanced performance characteristics in terms of noise, vibration and durability. In addition, all assemblers are currently embarking on research to enable the changeover from 12-24 volts to a new 36-43 volt standard which will enable a larger number of more powerful electronic and electrical components such as lighting, whilst enabling a reduction in the size and weight of batteries.

New entrants are likely to enter high added-value areas of the market which are resistant to imitation by incumbent through patent and copyright protection. For instance, Bayer has entered the automotive sector with the production of plastics used as an alternative to conventional steel and aluminium bodies. Its automotive division, Auto Creative Group, sees itself not only as a raw materials supplier but

as a 'development partner' involved in finding applications for the new material with partners such as Audi (FT Automotive, 1999:8). Furthermore, Hewlett-Packard announced its entry into the automotive components sector in mid-1998 with the development of computer modules (*ibid*).

One of Ignacio Lopez's supplier innovations at both GM and VW was to begin to change the nature of the location of suppliers adjacent to plants or within them. The suppliers would manufacture a subassembly and have its own employees fit the sub-assembly into the vehicle within the assembler's plant. This has been adopted at GM plants in Brazil, and at Skoda, with limited trials at Mercedes Smart-city car plants, and may slowly develop in geographical areas with existing automotive component and assembly infrastructure, rather than greenfield sites.

GM's main UK plant, based in Ellesmere Port, has adopted Supply In-Line Sequence (SILS), a process designed to reduce the distances and costs of transportation and enable improvements in productivity. Important components from external suppliers are manufactured within the complex and transported on small trains to the point of assembly. Components are designed to ensure greater ease of assembly, thereby reducing the complexity and duration of the assembly process. Companies such as Plastic Omnium Automotive (bumpers, tanks and fillers) and Mackie Automotive Systems (interior trim and cooling systems), along with Vauxhall's in-house components division, Delphi Automotive, are located within the supply and assembly park (FT Automotive, 1997). Mercedes Benz has also 'outsourced' the paint shop within its Rastatt (Germany) plant to the paint producer Dürr in the production of the A class vehicle (Kochan, 1999a).

Mergers and acquisitions between medium and high volume producers invariably affect the locus of revenues within the supply chains as newly merged or acquired concerns seek to consolidate purchasing operations and reduce the number of similar components delivered by different suppliers. For instance, Daimler-Chrysler estimates that \$1.4bn savings will be realised through shared components, logistic and purchasing power (FT Automotive Components Analyst, 1998a). Following the acquisition of a 36.8% stake in Nissan by Renault in early

1999, the two companies intend to consolidate their 30 current product platforms into 10 by 2010 (Edmondson and Thornton, 1999; Sliwa, 1999).³¹

At a European level, in the early 1970s, around 10,000 companies supplied directly to assembler, falling to 3,000 in 1994. This is expected to continue, with further consolidation and merger/acquisition activity leading to less than 1,000 in the year 2000. The Lucas-Variety and Federal Mogul-Lucas acquisitions are recent cases in point. Bursa *et al.*, (1997) have predicted that consolidation will lead to 'super-suppliers' with turnovers of \$3 billion per annum that will characterise the global industry in the coming decade (Bursa *et al.*, 1997). A foreshadowing of the critical mass required for super-supplier scale could be seen in the major industry mergers and acquisitions of 1996 and 1997, in which nine companies accounted for the consolidation of some \$16.4 billion of company assets from merged or acquired assets (Wells and Nieuwenhuis, 1998:31). Furthermore, Virag and Mount (1998) have recently reported high levels of strategic alliance activity between suppliers, partially in a defence against acquisition threats and to develop procurement, R&D and production economies.

Changes in the UK vehicle registration system will have an impact upon production scheduling and cyclicity. The annual registration system began in January 1963 and moved to August 1st in 1967. The impact of the yearly registration systems was to create a major peak in the sales of vehicles in August, accounting for 22.5 per cent of total annual sales in 1998 (SMMT, 1999). Whilst a useful ploy to stimulate the replacement market and create the consumer cult of the 'latest registration', the impact of the system upon the industry was negative in comparison with consumers.

The artificial seasonality of the registration system disrupts capacity utilisation among assemblers and suppliers alike and forces a great degree of variability between master production schedules. Consequently the ability to achieve just-in-time production (the ability to product and deliver the required good at the time at which they are needed and in the precise quantity) is reduced, since fundamental

³¹ Product platforms and their application in the automotive industry are discussed in Chapter 4.

to the implementation of just-in-time is *heijunka* (production smoothing). The annual registration plate system will be replaced in September 2001.

Pickernell (1998a) has identified several areas in which the UK automotive components industry is in a weak position to supply, either through a lack of local suppliers or due to the R&D intensity needed for successful entry. The lack of intellectual property in these areas may prove a further (and related) limiting factor. The product 'gaps' are presented in Table 3.6.

Fuel injection systems
High value electronic systems
Large plastic components and materials
Automatic transmissions and gearboxes
Small meters and sensors
Dampers/ suspension assemblies and oil seals
Gas struts (boots and tailgates)
Mirror assemblies and glass
Remote control systems
Anti-lock brakes (ABS)
Aluminium pressure castings and small castings
Large exterior pressing (body panels)
Air conditioning units
Pressed petrol tanks

Table 3.6: Product Gaps in the UK Components Manufacturing Base

3.5. CHAPTER SUMMARY

Buyer-supplier relationships have undergone a major change in form and action since the 1970s. These are summarised in Table 3.7.

<i>Factor</i>	<i>Market relationship (adversarial)</i>	<i>Partnership relationship (collaborative)</i>
Number of suppliers	>1200	~350
Supplier relationship	Transaction cost driven	Co-producer
Contract duration	Short term	Long term
Supplier interface	Purchasing department	Purchasing, R&D, manufacturing
Supplier involvement	Late in the R&D process	Throughout the R&D process
Supply chain	Decoupled	Integrated and synchronous
Approach to quality	Incoming inspection	TQM and kaizen
Nature of service	Product only	Product and value added
Supplier's objective	Minimise price	Minimise supply chain cost

Table 3.7: Market vs Partnership Relationships

Source: Adapted from Bertodo (1991a:261)

Based on Table 3.7 above and based on the observations made in previous sections, a caricature of partnership supply chain relationships has the following salient features.

- Tiering
- Emphasis on cost, quality and timeliness of delivery
- Long-term relationships
- Preferred suppliers and global sourcing
- Reduction in part numbers and platforms
- Greater delegation to suppliers in terms of R&D (innovativeness, speed, cost)
- Interdependence and functional integration

It is all too easy to admire the ideal type which is the Japanese automotive components industry. However, as such it represents an alternative and, arguably, superior model of supply-chain relations to its predecessor. Ironically, with the exception of Nissan's Sunderland plant, Japanese assemblers have still found significant differentials in quality and cost in overseas plants compared to their indigenous facilities (Taylor, 1997).³² The inimitable differential may lie in a multifarious mix of economic, geographical, geophysical, cultural and historical factors (Nishiguchi, 1985; Sako, 1992; Nishiguchi and Brookfield, 1997).

Commercial and strategic selfishness appear (for the most part) to have surrendered to commercial and strategic interdependence. Trust is simply a positive externality of such a relationship in the realisation that suppliers and buyers do (and indeed always have) relied upon each other. Globalisation and consolidation have added to the imperative of survival, growth and success. Power and dependence still exist, but seemingly exist in a bilateral form rather than in the unilateral and coercive form of the past.

This point in the thesis provides an opportunity to begin with the development of research questions in the context of the research stimulus identified in Chapter 2 (which the reader will recall was based on the suggestion that perceptions influence the decision and actions of managers).

³² Chapter 4 discusses causal ambiguity, which provides elaboration upon why this may be the case.

It would appear, given the preceding discussion within this chapter, that unique resources in terms of products, processes and people appear to make a contribution to suppliers' success *vis a vis* assemblers but that de-integration, alliance, merger and acquisition activities have changed the structure of the industry along with the tiering of the supply chain. Accordingly, the automotive industry not only presents evidence of competitive advantage through unique resources – it also offers indications of the role that industry structure has in the development of competitive advantage. Bearing the research stimulus in mind, the principal research question (research question 1) arising from the overview of the chosen industry in this chapter is structured as follows:

Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?

In the next chapter, the study considers theories of competitive advantage which relate to resources and residence. From this review, further research questions are developed and operationalised prior to the development of an appropriate research strategy in Chapter 5.

Chapter 4: Residence or Resources? – Views of Competitive Advantage

4.1. INTRODUCTION

Previous chapters have identified the research stimulus and the main research question for this study. The principal research question asks whether, given that perceptions influence actions and decisions, managers perceive competitive advantage in terms of *residence* (position within an industry) or in terms of the unique use of *resources*. The automotive components industry has been chosen as the industry domain for the study since it offers the potential for both sources of competitive advantage to be examined (Chapter 3).

This chapter reviews the development and impact of the resource-based view (RBV) of the firm in the literature of strategic management. Central to this chapter is the differentiation between advantage through *residence* and advantage through *resources*. In so doing, the study can highlight the salient features of these two competing (and often antagonistic) views of competitive advantage and develop further research questions that are articulated at the point in the chapter where the review of literature has given rise to these questions. However, in advance of the these developments, the reader should note that research questions 2 to 5 are structured as follows:

Research question 2: Do managers perceive resource accumulation to be part of the RBV construct?

Research question 3: Do managers associate portfolios of resources with product platforms, families and technology convergence?

Research question 4: Do managers recognise the importance of resource management?

Research question 5: Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?

The choice of the two competing views of competitive advantage reflects the development of strategic management since its inception. This chapter examines both viewpoints. Firstly, advantage through position refers to the disregard of heterogeneity, with section 4.2 addressing why organisational heterogeneity has been met with little attention or interest prior to the 1980s and 1990s, when its roots can be traced to several decades earlier. The author proposes a ‘trilogy of homogeneity’ as an explanation of why this has arisen. Secondly, section 4.3 introduces the notion of heterogeneity and how this is intimately linked to advantage through resources, embodied in the resource-based view, consisting of four main facets. Figure 4.1 portrays the differences between advantage through residence and advantage through resources and provides a framework for the review of the literature in this chapter.

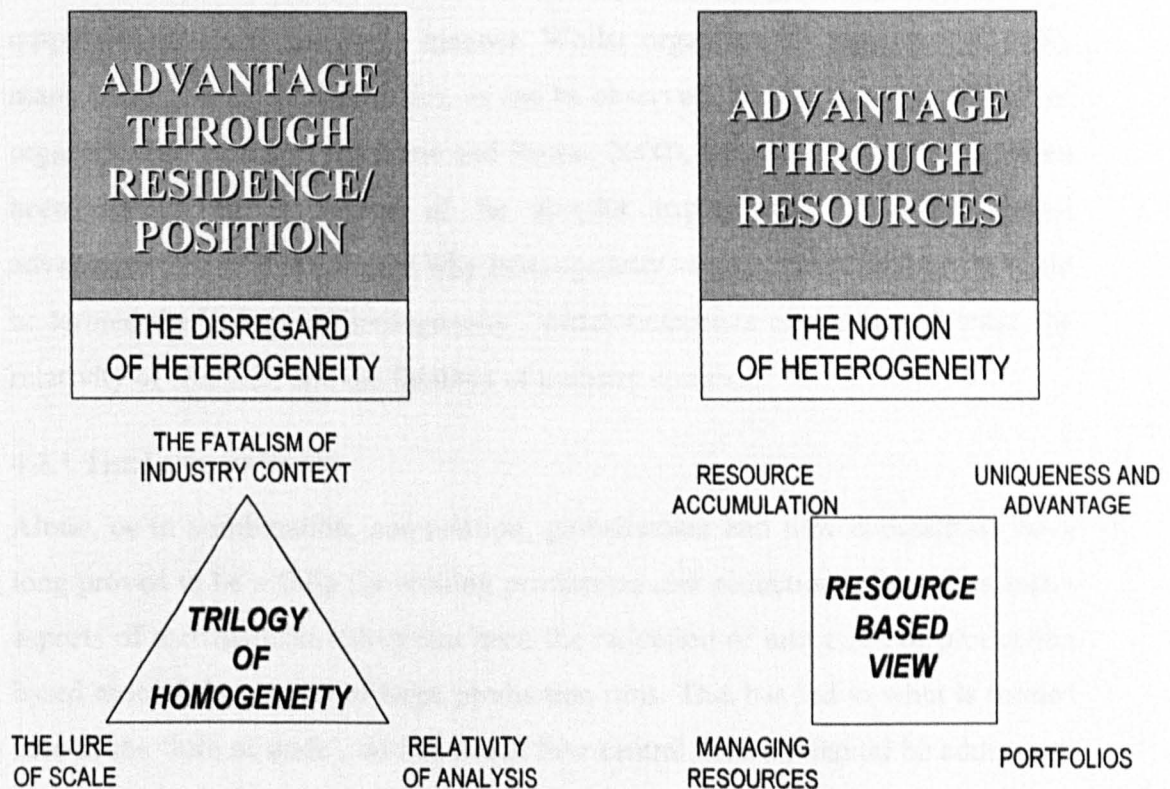


Figure 4.1: Advantage through Position and Advantage through Resources

A further purpose of the chapter is to clearly operationalise these concepts of competitive advantage through a review of the extant literature. This will assist in determining the most appropriate development of data collection instruments and measures, set out in Chapter 5, and provide a basis for discussing the contribution of a single industry study to the development of theory in Chapters 7 and 8. This chapter concludes by precisely framing the research questions for this study.

4.2. THE DISREGARD OF ORGANISATIONAL HETEROGENEITY: A TRILOGY

Organisations are not simply economic and financial entities; their historical and social dimensions account for many of the differences between organisations (Nelson and Winter, 1982; Huber, 1991; Walsh and Ungson, 1991). Indeed, the motor car can be said to have historical, social, economic and financial dimensions. Put simply, all organisations are unique. No two organisations have the same access to resources nor do they carry out their processes and sell their outputs in precisely the same manner. Whilst organisations have, *prima facie*, many homogenous characteristics, as can be observed through the ‘caricatures’ of organisational structure (Herbane and Rouse, 2000), their heterogeneity has often been disregarded in favour of far simpler explanations of organisational advantage. One explanation for why heterogeneity was relegated in the past could be termed the ‘trilogy of homogeneity’, which comprises of the lure of scale, the relativity of analysis, and the fatalism of industry context.

4.2.1 THE LURE OF SCALE

Alone, or in combination, competition, globalisation and new competitors have long proved to be a fillip for seeking production cost reductions. Central to many aspects of management theory has been the reduction of unit costs of production based around the pursuit of large production runs. This has led to what is termed here as the ‘lure of scale’, within which four central theories should be addressed; economies of scale, economies of scope, the experience curve and the learning curve.

Ford (1988 [1926]:147) records how, in the early 1920s, 500 men produced over half a million headlamp units per month in a single Ford Motor Co. factory under the supervision of two managers who represented the entire 'management' level of the plant. This is one (albeit extreme) example of the span of control, commonly used as a descriptor of organisational structure denoting the number of persons who are overseen by a manager or supervisor. This concept was influenced by the principles of labour/task division which predominated at the turn of the twentieth century under scientific management, which originally took its lead from the propositions advanced by Smith (1776).

In addition to scientific management and work study (Taylor, 1947), one could reasonably interpret human relations approaches (Maslow, 1943; 1954) and corporate culture (Schwartz and Davis, 1981; Schein, 1985; Barney, 1986; Denison, 1990) as attempts to increase the productivity of the individual employee in the context of overall organisational performance. Each of these approaches recognises that organisations are socio-technical systems, whereby physical processes and human input interact to carry out the conversion and transformation process of inputs into output. Where they differ, however, is in their view of how the human facet of the organisation should be managed in order to improve performance.

Within whichever philosophy of management has prevailed in organisations, consistent has been the belief that as output rises, long-run average costs fall. Overheads are spread over a larger number of units produced, set-up times for plant and equipment fall, and bulk purchasing discounts from suppliers increase, thereby reducing the unit cost of item produced. Essentially, the causal relationship has come to be known as economies of scale (Teece, 1982; George, Joll and Lynk, 1991).

With the additional benefits which accrue to those organisations which share resources among different business units, known as economies of scope (Teece, 1980), both of these phenomenon affecting unit costs point toward a reward for becoming a high volume producer. High volume production, therefore, became central to many popular strategic options based on low cost (Porter, 1980).

In Wright's (1936) study of aircraft production costs, the observation of labour input declining as production doubled was termed 'the learning curve'. Subsequently the concept of the learning curve was introduced into the management literature, proposing that as employees repeated a process or technique, they would become more efficient, thus reducing unit labour costs. In essence, the concept examined economies of scale from a labour perspective without exploring too deeply the cognitive processes in action.

Two decades later, Abernathy and Wayne (1974) published the results of a longitudinal study of the motor vehicle manufacturer Ford, in which they expounded the thesis that rising fixed costs, diminished innovation and limited specialisation in work groups (low flexibility) resulted from the pious application of cost reduction strategies using the learning curve as its basis. From the lessons of Ford, Douglas Aircraft, IBM, and colour television production they contend that managers should trade-off "the hoped-for advantages from varying degrees of cost reduction against a consequent loss in flexibility and ability to innovate" (1974:112). Yelle (1979) suggests that the importance of the learning curve is not the fall in labour costs in itself, but the ability to forecast such reductions and incorporate this understanding into bids for new business and the evaluation of supplier price quotations.

Originating in the empirical work of the Boston Consulting Group (1968), the experience curve proposes that unit costs decrease by a given percentage with the doubling of accumulated output.³³ The amount of decrease tends to be production process specific varying between 10 and 30 per cent. These economies of *persistence*, whereupon the longer a product is manufactured the lower the unit cost proved as superficially attractive as they were unproductive for strategy development. In addition to discouraging product replacement, the pursuit of experience curve effects requires sufficient additional production capacity to double cumulative output.

³³ In experience curve calculations, total unit costs are measured compared with labour costs along in learning curve measurements.

Three elements contribute to the experience curve; economies of scale, the learning curve, and the falling cost of capital relative to competitors, enabling a manufacturer to introduce new products at an unprofitable level (in order to gain market share quickly) in the knowledge that at a given level of accumulated production (experience) profits will be generated while having a large proportion of the market.

Furthermore, order of entry in a market is a critical determinant of which organisation among a group of rivals has the lowest unit cost of production, since early entrants will have the best opportunity to double their cumulative volumes of production more quickly than those which enter later (unless later entrants have a cost advantage through newer, more efficient processes or are able to capture large amounts of market share quickly).

Product life-cycles are a further consideration, since these will influence the duration over which cumulative production volume will double. If a market is in the embryonic stage of the product life-cycle, it may take only six months for cumulative volume to double. In maturity it could take ten years for volume to double. Indeed the whole concept of the product life cycle has been called into question (Dhalla and Yuspeh, 1976), where cigarettes, toilet tissue, cosmetics and cereals exhibited life cycle patterns which did not conform to the archetypal curve presented in basic marketing texts.

By the mid 1980s, a more critical eye was cast on the applicability and usefulness of the experience curve concept. An important omission in the many of the preceding explanations and exhortations of the experience curve was the explicit recognition that many of the costs of production are incurred through the cost of bought in materials and components. The notion of the experience curve as a purely internally driven cost reduction phenomenon did not hold true (Sallenave, 1988).

A problem in attempting to use experience curves as a method of evaluating relative cost advantages between rivals is that many utilise the same production technology and are exposed to the same increases in costs. However, companies attempt to disrupt the homogeneity of these factors through product

differentiation, technical and manufacturing improvements, and better sourced capital and labour.

Whilst the limitations of the experience curve have been clearly identified, outright rejection of the concept within the sphere of competitive advantage has not occurred. Abernathy and Wayne's (1974) study of how Ford's pursuit of cost reduction through long production runs led to a one year plant closure in 1927 and the loss of market leadership has also been used to show how the application of the concept has been problematic as much as its stature and interpretation.

Failure in this and similar cases may arise from a focus on numerical analysis which clouds a deeper understanding of why and how the concept functions (Ghemawat, 1985). The inter-firm variations in experience curve slopes can be attributed to two factors. First, falling costs are the result of a company-wide effort and are often complemented with reward and recognition schemes, owing as much to the ability and volition of senior managers to offer such incentives as to the social climate (culture) of the organisation. Second, and similar to Sallenave's observations, there are varying degrees to which costs can be reduced according to the products and manufacturing processes involved.

Alberts' (1989) renunciation of the experience curve highlights the questionable foundation of cost management upon which it is based. It is suggested that the experience curve serves only to combine three elements into a convenient form; the experience hypothesis (improvement by repetition), historical cost-volume curves (cumulative volume related cost reductions), and the strategic imperative (increasing market share). His analysis of the many interpretations of the experience curve identify causation whereby "CV [cumulative volume] not only correlates with decreases in C^* [inflation adjusted average total costs], but also cause them" (1989:38). This, he continues, is a relationship in the business world that both academics and managers have been aware of for many years but has been subsumed into management theory.

Hence, the lure of scale is predicated upon the strategic imperative of increasing market share to achieve scale thereby facilitating economies of scope, learning and experience curve effects, preferably to the point of leadership within a market or segment. However, Woo and Cooper (1982) found that low market share did not lead to low profitability (pre-tax return on investment). Instead, profitable low share businesses enjoyed high levels of financial performance in conditions of low growth, low product change, high standardisation, and with a high frequency of purchase.

The implications of the lure of scale for this study are:

1. The proposition that scale advantages are central to competitive advantage has become widely accepted, yet may not hold true in all cases.
2. It promotes a view that organisations are homogenous, or at least have the ability to be, given sufficient investment in plant, equipment and labour.
3. Market share position predominates as a symbol of success in place of other measures of performance such as Return on Net Assets, Return on Investment, Value Added, and Dividend per Share.

4.2.2 THE RELATIVITY OF ANALYSIS

Relativity of analysis articulates the proposition that strategic analysis is a process of comparison between organisations. From this, an understanding of the differences should lead to the choice of strategy. This factor is considered to embody the concept of advantage through position since it suggests that an organisation's size and market position will be one of the most important attributes that it can use in pursuance or sustenance of competitive advantage. Learned *et al.*, (1965:178) commented that "the strengths of a company which constitute a resource for growth and diversification accrue primarily through experience in making and marketing a product line", reflecting the lure of scale which had preceded the development of business policy as a formal functional and academic discipline.³⁴ Moreover, the relativity of analysis presumes rationality and

³⁴ The widespread introduction of 'business policy' into the US university curriculum arose in the early 1960s following the Gordon Howell report in the USA (Gordon and Howell, 1959).

full information in the process of strategic competitor analysis. No more so are these assumptions carried that in the concepts of ‘best fit’ and ‘SWOT’ analysis, which suggest perfect entropy.

Typical of early approaches to internal analysis were functional orientation, (involving an evaluation of each of the department within an organisation such as marketing, operations, *etc.*), financial analysis, life cycle analysis, and R&D analysis (Buchele, 1962). However, the recognisable term ‘strength’, soon found itself as one quarter of the now classical SWOT analysis (*cf.*, Ansoff, 1965; Andrews, 1971; Hofer and Schendel, 1978). As a technique found in many company meeting rooms and virtually every strategic management textbook produced over the last decade, the technique embodied the strategic axiom of ‘best fit’ (Learned *et al.*, 1965), where organisations, having identified their internal strengths and weaknesses, seize or create opportunities by capitalising on their strengths, minimising threats, and avoiding their weaknesses or finding a way to convert weakness into strength or neutrality. An almost exact exposition of SWOT analysis can be observed in Aharoni (1993:32).

Hence, organisations do not operate in isolation – their choice of strategy is not (or should not be) made in isolation – so accordingly the importance of resources cannot be evaluated in isolation (Collis and Montgomery, 1995). Such comparisons require organisations to have similar resources and for full information to be available about the equivalent resources possessed by rivals.

Confusion quickly reigned in the terminology designed to describe areas of aptitude that should form the basis of competitive advantage. Indeed Learned *et al.*, (1985) used terminology identical to Selznick (1957) to denote ‘strengths’ or “unique internal capability” (1965:181):

The “distinctive competence” [*cf.* Selznick 1957] of an organisation is more than what it can do; it is what it can do particularly well. ... To identify the less obvious or by-product strengths of an organisation, which may well be transferable to some more profitable opportunity, one may well begin by examining the organisation’s current product line and by defining the functions it serves in its markets (1965:179).

Stevenson (1976) suggests that strengths enable organisations to carry out activities in better manner than others whilst weaknesses are impediments to the achievement of organisational goals. However, attempts to arrive at a generic lists of factors which should come to form a competitive analysis have been problematic. For instance, Stevenson's (1976) research suggested twenty-two 'attributes' which fell into five general categories of organisation, personnel, technical, finance and marketing. Surprisingly, finance attributes were the least considered by the respondents in the assessment of firm's strengths. Further aspects of the research suggested that managers at different levels of the organisation held differing views on organisational strengths. Influences attributed to this variance include the individual respondent's background, length of service, level of responsibility and hierarchical position, the organisation's history, operating environment, and operations. Ireland *et al.*, (1987) also found significant differences in perceptions according to managerial level.

Stevenson also suggests that managers involved in the strategic audit of the firm would also employ different considerations in the assessment of a strength and a weakness. Consideration of the company's history was the most important in the assessment of strengths, followed by 'competitive' considerations. 'Normative' considerations were used least. This included "Consultant's Opinions ... Management's Understanding of Management Literature ... Rules of Thumb ... [and] Opinion" (1976:62). The emphasis placed on considerations was the antithesis in the assessment of weaknesses. Stevenson offers the following explanation:

The nature of the criteria determines whether they will be used for judging strengths or weaknesses. The utilization of the historical criteria for judging strengths occurs because managers are constantly searching for improvements in problem areas which they have previously identified. The base from which these improvements are made then becomes the standard by which the current attributes are judged. The converse is true with respect to weaknesses. The organisation's current position is only a step on the way to where the managers wish it were. The gap is then measured between the current position and the goal which reflects a normative judgement of what ought to be (1976:63).

Common to both Stevenson (1976) and Learned *et al.*, (1965) (and reflecting a broader constituency besides) is the view, either explicitly or implicitly, that strengths should be unique, distinctive and less than obvious (to rivals). Whilst these are laudable virtues, the relativity of analysis achieved through best fit has been more problematic, in no small part due to its practical application – the SWOT analysis.

With an easily recognisable acronym the intuitive simplicity of SWOT analysis and its acceptance as a formal analytical technique has made it ubiquitous (Glaister and Falshaw, 1999). However, there remain several problems with the technique, with implications for the study of competitive advantage.

SWOT analysis is portrayed as an analytical technique (see for instance; Hunger and Wheelen, 1992; De Wit and Meyer, 1994; Wright *et al.*, 1994; Johnson and Scholes, 1997) but lacks process and methodology. Accordingly, it is presented as an application which takes the form of structured brainstorming, whereby participants in the so-called ‘analysis’ have a framework of four factors in which to categorise issues. Once this has been accomplished, strengths are matched to opportunities and so on, according to the notion of best-fit.

The ordering of factors within the acronym raises questions about the analysis which arises. Taking the first two letters, S and W, the suggestion is that internal factors should be identified first, following which external factors (Opportunities and Threats) are identified. An important omission is relativity. Strength and weakness can only be known if the analysts concerned are aware of, and understand, the degree of proficiency of rival organisations in the area in question. Without such knowledge, the attribution of a factor as a strength may be disingenuous at best and misleading at worse. In reality, bounded rationality (Simon, 1957), cognitive and heuristics bias (Tversky and Kahneman, 1974; Schweiger and Finger, 1984; Barnes, 1984) and commercial secrecy conspire to prevent one organisation knowing as much about a rival as it knows about its own. This should not excuse a misapplication of SWOT as a technique, but perhaps the expectation that surrounds it is not justified for something that is structured brainstorming. Even if an organisation is able to accurately designate a

factor according to the four SWOT criteria, a number of questions still remain. For instance, having arrived at a list of SWOT factors, do planners know what the priority or ranking of threats is and the degree of difference between them? This applies equally to the list of strengths that has been developed. Also lacking is a consideration of how strengths may link together to generate further strengths. Further chain reaction relationships could extend to the external analysis where the realisation of a threat in the environment may generate additional threats, or dilute a strength, or exacerbate a weakness. Finally, the assumption that the findings apply generically leads to the question of whether a strength, for example, is always a strength, and in all circumstances? (Herbane and Rouse, 2000).

The major criticism of SWOT relates to how it is used by organisations and consultants. Hill and Westbrook (1997) reported several problems with the use of SWOT analyses by managers and consultants. For instance, it was assumed that the four factors applied in all situations. Furthermore, where a SWOT analysis had been conducted by different persons within the same organisations, the lists differed and little or no attempt was made to verify the points identified nor any reconciliation of the differences and contradictions presented. The analyses remained lists of points perceived by the participant to have a strategic importance in relation to the firm and its competitive environment, although this reflected limited attempts to prioritise or group related points together to establish the complex relationships between systems and resources, and with external variables. Finally, Hill and Westbrook (1997) found that the SWOT analyses carried out in their respondent organisations did not make a contribution to formal strategic planning activities and did not link into implementation efforts for existing strategies.

The implications of relativity of analysis for this study are the following:

1. The concept of best fit has given rise to SWOT analysis – a form of simple analysis which may not provide a full understanding of where competitive advantage resides in an organisation and where it could be exploited.

2. It suggests that competitive advantage can be identified through a comparison with other organisations which, more often than is not, are immediate rivals.
3. It proposes that competitive advantages arise from superiority among a common set of factors rather than firm-specific and inimitable ones.
4. It ignores the difficulty of ascertaining information for the purposes of comparability (between organisations).³⁵

The relativity of analysis, often manifest through SWOT analysis has tended to disregard heterogeneity in favour of the tangible, comparable features of organisations operating in close competitive proximity to each other. This, in turn, leads to the impact of industry as a factor which assumes homogeneity among competing firms.

4.2.3 THE FATALISM OF INDUSTRY CONTEXT

A third factor which has contributed to the disregard of heterogeneity is the fatalism of industry context, encapsulated by the Industry Organisation (IO) branch of economics. A view is taken that industry structure is the main influence upon an organisation's performance (in financial terms) and the attainment of associated goals. The essence of industrial organisation can be seen in the view taken by Bain (1959):

I am concerned with environmental setting within which enterprises operate and in how they behave in these settings as producers, sellers and buyers. By contrast, I do not take an internal approach ... such as ... how enterprises do and should behave in ordering their internal operations. My primary unit of analysis is the industry of competing groups of firms, rather than the individual firm or the company wide aggregate of enterprises (Bain 1959: vii-viii).

Industrial Organisation places overriding importance upon the effect of industry structure on individual organisations. Accordingly, it is those organisations that are most able to change in relation to external forces that will survive, reflecting the evolutionist perspective forwarded by Whittington (1993). Mason (1939) and

³⁵ Indeed, implicit within such models is the notion of unbounded rationality and complete information for decision makers. In the light of litigation between organisations, corporate espionage and executive 'poaching', one doubts whether complete information could be obtained on a rivals activities and processes.

Bain (1959) suggested that the structure of an industry affects the conduct of firms within the industry and consequently their performance. Known as the Structure-Conduct-Performance (SCP) hypothesis, it is proposed that success is determined by ensuring that organisations not only understand the impact of industry structure on performance, but attempt to change industry structure to one which is more favourable. Conduct (*i.e.* behaviour) in this sense represents the activities of an organisation which are influenced by strategic decisions taken by senior managers (McWilliams and Smart, 1995). The SCP hypothesis suggests that little, if any, contribution is made by firms whose capabilities do not allow them to influence the industry in which they operate. Porter asserts that IO and SCP lie at the “the heart” (1981:617) of the strategy field. However, this view presents a paradox due to the fact that favourable changes to industry structure will favour similar organisations, since SCP influences the behaviour of all organisations within it. Accordingly, the assumption of heterogeneity in the SCP paradigm has been revised with the concept of strategic groups and mobility barriers (Caves and Porter, 1977; McGee and Thomas, 1986). Furthermore, Teece (1984) has suggested that Porter’s (1980) five forces industry model is a re-presentation of the model of industrial organisation analysis (Figure 4.2).

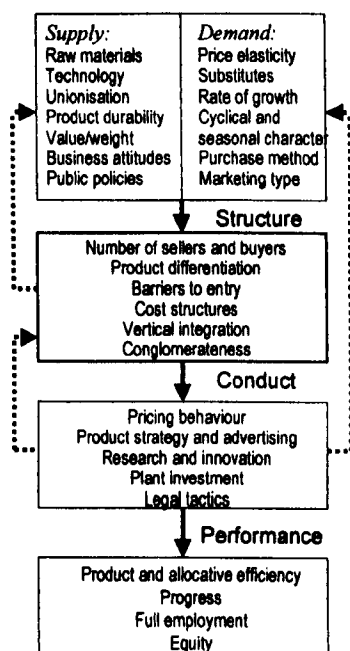


Figure 4.2: A Model of Industrial Organisation Analysis

Source: Teece (1984:95)

The IO view of industry distortion (whereby above normal profits can only be achieved in a long-run equilibrium of favourable industry structure), behaviour and performance must have the notion of perfect competition as its starting point. The neoclassical state of equilibrium in the market occurs when these factors are found in conjunction, whereupon the price at which the quantity supplied equals the quantity demanded. These firms, seeking to maximise profits, earn zero economic profits when operating in such environments and according to this neoclassical perspective, it is only when a firm is an imperfect competitor that it can earn supranormal profits. This is the reward for firms that manipulate market imperfections that restrict completion. In essence, the only way to earn supranormal profits is by altering the forces influencing the efficiency of the market at a particular point in time. This runs contrary to contemporary strategy research as Jacobson (1992) suggests, in that strategic management places emphasis on imperfectly competitive markets to reduce competition whilst IO focuses on the enhancement of competitive behaviour within markets.

IO does not take into account the effects of innovation which provides a firm with lead-time over its competitors (Lieberman and Montgomery, 1988; Stalk, 1988; Das, 1991; Tunc and Gupta, 1993). The resultant effect is one of disequilibrium, change and uncertainty. In their discussion of the sources of sustainable competitive advantage, Lado *et al.*, (1992) move away from the Industrial Organisation (IO) view that external elements (determining the firm's position relative to rivals in an industry) are decisive factors in the competitive advantage construct. They argue that the inability of IO to acknowledge limits on rationality, technological uncertainty, constraints on factor mobility and dishonest or foolish behaviour of the firm's key actors furthers the need to consider more than just the industry within strategic analysis.

Mahoney and Pandian (1992) highlight a further distinction between IO and internal analysis. Industrial organisation considers a 'representative' firm whilst a resource-based approach adopts a view of the organisation in which firm-specific resources lead to a portfolio of skills and competitive advantage. They continue by noting some of the major omissions made by the neo-classical view of the firm (the theory which underpins much of the IO approach) which include "transaction

costs; limits on rationality; technological uncertainty; consumer or producer learning and prices as signals of quality” (Mahoney and Pandian, 1992:369).

Taken at face value, IO suggests that competition and profitability in markets can be explained on the basis of external, market structure-based factors.³⁶ Since the locus of competition lies for organisations within industries, industry analysis techniques emerged in the 1980s, notably that of Porter (1980). McWilliams and Smart (1993:65) observe that “evidence of the influence of the SCP paradigm is apparent in research and prescriptions pertaining to generic strategies and business typologies, strategic groups, diversification mergers and acquisitions and strategic planning”. However, they argue that SCP is limited in its applicability to strategy research due to the level of analysis which presumes homogeneity, a reliance on static analysis and the assumption that barriers to entry are a priority for managers.

Perhaps deeper seated reasons lie behind the popularity of the industry context. The first is the attribution of blame, whereby senior managers can apportion the failure of a strategy to external and largely uncontrollable factors. The second is that the stability of a market leader is most often challenged by a new (often unexpected) entrant which, in an attempt to gain market share quickly to overcome scale-based disadvantages, revolutionises the product, service or delivery (*e.g.*, Dyson, Canon, Microsoft, Sony, Toyota). Third, the long standing theoretical and empirical elegance of economics is highly persuasive.

However, a more balanced view that explains the influence of industrial organisation economics in explaining competitive advantage is that external analysis provides only half of the overall view that is needed for strategic analysis. The external environment generates opportunities and threats which an organisation must be aware of before selecting a new strategy. The other half of the analysis consists of the internal analysis of the organisation’s strengths and weaknesses relative to other firms in the environment. The ‘best fit’ between

³⁶ Indeed, Porter (1980) makes no explicit reference to internal analysis in his seminal work ‘Competitive Strategy’. Of 16 chapters, some fifteen discuss how organisations should develop strategy according to the structure, age or size of an industry. The remaining chapter (2) introduces the now (in)famous generic strategies.

strengths, weaknesses, opportunities and threats arising from both internal and external strategic analysis provides the most balanced perspective from which to generate strategic options.

Strategies designed to conserve or alter industry structure are prolific. Horizontal merger and acquisition, vertical integration and strategic alliances each foreclose or reduce the level of competition within an industry and alter its structure.³⁷

The implications of such fatalism for this study are:

1. Competitive advantage arises from the industry environment. It exists in its context and determines the degree of sustainability for a particular source of competitive advantage. The characteristics of the industry in question – automotive components – are particularly pertinent in this regard (Chapter 3).
2. The assumption of homogeneity is at its apotheosis with IO. It would follow that the unique skills are less important (if important at all) than the ability of a company to influence the structure of the industry (the five competitive forces).
3. Techniques and theories such as critical success factors (Leidecker and Bruno, 1984; Jenster 1987) and business-level strategies (Porter, 1980) have emphasised the impact of conditions at the industry level.
4. Managers may share or ‘borrow’ experiences of strategic concepts and sources of competitive advantage from the same industry (Huff, 1982) leading to commonality in strategic decisions through the presumed homogeneity of organisations suggested by SCP.

Accordingly, whilst SCP has offered a degree of explanatory power at the theoretical level, do such paradigms prevail in the minds of managers within a single industry? The principal research question (Chapter 3) sets out to address this matter directly.

³⁷ Lobbying, whereby organisations attempt to influence economic/competition policies, may also be predicated upon the preservation or recourse to favourable industry structure conditions.

4.3. THE NOTION OF HETEROGENEITY: A RESOURCE-BASED VIEW

4.3.1 BASIC CONCEPTS

The resource-based view has developed into one of the most influential developments in strategic management in the 1990s. An ever-inquisitive readership of academics and practitioners have turned to this supposedly new school of thought in order to understand how competitive advantage is generated, sustained and enhanced. Its origins can be traced back to economists working decades earlier.

Non-price methods of competition had effectively been airbrushed out of the economists' theories of competition prior to the turn of the twentieth century. Interest turned to how organisations could vary prices according to their uniqueness or advantage over rivals. Sraffa (1926) suggested the ownership of unique natural resources and legal privileges (including patents) led to increasing returns to those organisations in imperfect markets. Robinson (1933) proposed advertising and product differentiation³⁸ as further vehicles for generating imperfect competition, which for our purposes simply denotes the notion of superiority and inferiority among a group of rival organisations within an industry or strategic group (McGee and Thomas, 1986; 1992). To these factors, Chamberlin (1950) added all forms of intellectual property, buyer loyalty and geographical advantages. The salient relationship in the economist's views of imperfect competition seen above is that between product and price, denoting a product-based view of imperfect competition. A step forward was the suggested relationship between productive resources, the finished product and price.

Widely regarded as one of the pioneers of the resource based view, Penrose addressed this relationship. Central to her 'Theory of the Growth of the Firm' (1959;1960) was the view that organisations were not merely administrative entities but also "a collection of productive resources" (1959:24). The view of an organisation as an amalgam of resources had implications for the manner in which competitive advantage could be explained. By describing organisations as holding

³⁸ The earliest use of the term in a business context found by the author.

bundles of resources which varied from others, the way in which these bundles were developed and managed determined their ability to create value and diversify:

It is the heterogeneity and not the homogeneity of the productive services available or potentially available from its resources that gives each firm its unique character. Not only can the personnel of a firm render a heterogenous variety of unique services, but also the material resources of the firm can be used in different ways which means they can provide different kinds of services (1959:75).

Resource *heterogeneity* is one of the two pillars of the resource-based view (Barney, 1997). *Prima facie*, it suggests that all organisations are different and whilst this is hardly a revelation in itself, it begs the question – why organisations are unique (heterogenous)? It follows that the way in which resources are acquired by organisations and the way in which they are managed and used will determine their productive output. Irvin and Michaels (1989) point out the need for new approaches to organisational advantage due to three sets of factors. First are changes in structural, scale, technology and regulatory barriers around industries. Secondly, the dawn of what they call “the era of ‘human capital’“ (10). Thirdly, they note the homogeneity of strategic offerings and approaches in many industries in which almost every company within it pursues largely the same strategy (airlines expanding business class travel, for instance).

Resource *immobility*, the second pillar of the RBV, proposes that resources may be inelastic in supply or are costly to imitate or acquire.³⁹ The heterogeneity and immobility of valuable resources provides the basis for a sustainable competitive advantage.

Teece’s (1982) ‘Theory of the Multi-product Firm’ is another early modern RBV work which has been influenced by the Penrose paradigm. The firm is viewed as possessing a capability in the early stages of the value creation/transformation of inputs process which occasions a “generalisable capability which might well find a variety of final product applications” (1982:45). This in turn influences the

³⁹ This is akin to the notion of Ricardian rent (Eklund and Hébert, 1990).

perception of the firm, with the writer giving such examples as information processing rather than computers, dairy products rather than milk and cheese, farm machinery rather than tractors and harvesters, and time measurement rather than clocks and watches. It may be argued that this is simply another attempt to define the business in a similar way to that espoused by Levitt (1960). However, the former differs in the sense that the capabilities and configurations that characterise the firm are already in place and are manifest in a variety of outputs. The latter is merely a redefinition of an organisation's purpose, which may prove to be beneficial in the setting of an organisation's direction with regard to products and markets.

Teece (1982) suggests that the view of the firm presented in much of the orthodox literature de-emphasises (or ignores altogether) the importance of tacit knowledge in determining the growth options and product offerings available to an organisation. 'Knowledge' as a resource is difficult to transfer or sell since it often resides among groups within an organisation.⁴⁰ Therefore, the full value of such knowledge (and therefore the rationale for the decision to pursue its acquisition) is only known upon possessing that knowledge. The knowledge may be the manifestation of cumulative group-member know-how, which can only be appropriated from the firm as a whole (assuming the group is reconvened in an environment that powers the existing group dynamics).

Whilst this issue is of less concern from a positive approach (*i.e.* describing what is), for subsequent research with a normative flavour (*i.e.* prescribing what should), debate has centred on the ability of firms to acquire and develop resources and capabilities (Barney 1986, Dierickx and Cool 1989). Teece's contribution is to highlight, once more, the importance of upstream capabilities within an organisation's transformation processes and the value and immobility of intangible resources such as knowledge.

Responsible for coining the term *Resource-based View of the Firm*, Wernerfelt (1984) offers a further reason for the disregard of heterogeneity. Due to the

⁴⁰ In the case of intellectual property, sale of the 'knowledge' resource is facilitated through the licensing process.

problem of identification and measurement, economists had been glacially slow in formally studying the impact of intangible resources and economies of scope, which were only formally modelled in the early 1980s. Resources are defined as “those (tangible and intangible) assets which are tied semipermanently to the firm... . Examples of resources are: brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc” (1984:172).

The need to consider both product and resource perspectives together was introduced by Wernerfelt (1984:171) when he suggested that “most products require the services of several resources and several resources can be used in several products”. The latter part of the comment forms a crucial element of RBV thinking, that a given resource may be evident in a wide variety of product in the organisation’s portfolio (Section 4.3.3). Acquisition and merger activity is viewed as a manner in which the firm can purchase and incorporate ‘resource bundles’ which are either supplementary or complementary to the bundle already present in the firm. Hamel (1991) echoes the view of the firm in terms of a portfolio of core competencies (or ‘resource endowments’) and the shift of competition from being inter-product to inter-firm, that is to say that firms compete with their resource bundles rather than their products. To this Hamel adds that competitive strategy approaches (e.g. Porter, 1980) represent only a short-term approach to the development of competitive advantage and offers few insights into how (historically) skills and knowledge have been developed, diffused and deployed in an organisation’s activities.

Wernerfelt (1984) also introduced the resource-product matrix, where the contribution of a organisational resource to a product (or range of products) is identified. Derivations of this have been found in Prahalad and Hamel (1990), Snyder and Ebeling (1992) and Herbane and Rouse (2000).

By using a resource-product matrix approach, Wernerfelt suggest that diversification can be achieved through one of three resource development strategies. The first, *sequential entry*, entails the use of single resources in a number of markets, whereas *exploit and develop*, involves the use of resources

and skills to develop others in the 'resource portfolio' in order to generate greater value.

The third resource strategy is that of *stepping stones*, where the major consideration is the ability of the resource to generate further growth potential. In the case of Honda, with its skills in engine design and manufacture, the company sought to exploit the skills in applications far wider than motorcycle manufacture, leading to presences in markets such as lawnmowers, boat engines, motor-cars and portable generators (Mintzberg, Quinn and Ghoshal, 1998).

Wernerfelt's paper is as much a positioning paper as it is a call to action. Calling it "a first cut at a huge can of worms" (1984:180), he anticipated the difficulties of identifying and measuring resources. Such problems are perhaps more attributable to the researcher than the manager given that the increase in technology-based advantages and cross functional activities may mask the sources of advantage to the outside observer.

According to Conner (1991), a central tenet of the resource-based view is the maintenance of product/service distinctiveness or low cost capability without the need for investments which would dissipate any such returns. It is in this sense that RBV marks a departure from the "neoclassical view of the firm as input-combiner" in that "it does not include the accompanying neoclassical assumptions of a freely available and perfectly specifiable production algorithm, as well as costly resource mobility across uses and infinite input divisibility." (1991:132). Therefore, the firm is a "seeker of unique, or otherwise costly-to-copy, inputs." (1991:133) In an accompanying end-note, Conner adds that assets are said to be unique when they are "infinitely costly to copy" (1991:149).

Synthesis of the basic concepts

The resource-based view proposes that organisations are unique due to the possession of bundles of productive resources which may be heterogenous and immobile, and lead to differentiation, diversification and competitive advantage. Clearly, however, the possession of resources must be preceded by their acquisition which, for the purposes of this study, is termed resource accumulation.

4.3.2 RESOURCE ACCUMULATION

The ability, or otherwise, and manner in which an organisation acquires resources will determine the constituency of its resource bundles and consequently the ability to combine these into portfolios of resources which find their ways into finished products and services (section 4.3.3). Resources which do not reside in one organisation normally reside in another commercial organisation, in nature itself, or elsewhere in the public domain (society and public institutions). Each of these are resource domains.

Barney (1986b) uses the term 'strategic factor market' to describe a 'virtual' market in which an organisation acquires many of its resources. The resource domains noted above can all be considered strategic factor markets in this context. Design skills, low cost manufacturing competence, marketing capabilities and market share can all be acquired through strategic factor markets. Those organisations who successfully exploit such markets do so either because they have a unique understanding of a given resource's future revenue generating potential, or due to serendipity. This echoes Lieberman and Montgomery's (1988) pre-emption of scarce assets, whereby an organisation realises the strategic value of resources prior to its rivals, thereby foreclosing access to the resource for its rivals some time later. Examples of resources which can be pre-empted include production capacity, domain names, raw material supply and real estate. So, it is proposed that all productive resources are, in some way, available to organisations through factor markets. However, organisations may differ in their behaviour and success in strategic factor markets due to expectations, lack of separation, uniqueness and lack of entry.

Expectations refer to the anticipated return to be generated through the acquisition and subsequent deployment of the resource. Assuming that more than one firm requires a given resource, bids in the strategic factor market may raise the factor price to the point at which higher returns fall to normal returns, therefore creating the following situation in which:

[I]n the long run, firms with more accurate expectations will usually be able to avoid economic losses associated with buying overpriced strategic resources. Firms that do not require these overpriced resources suffer from the “winner’s curse,” i.e., the fact that they successfully acquire the resources in question suggests that they overbid (Barney 1986b:1233).

The automotive components industry provides a stark example of how bidding in factor markets has tended to fail. The uncertainty of the traditional arms-length contractual relationship has been replaced by a more collaborative framework in which many of the factors such as quality, design and manufacturing skills have been acquired simply through the mechanism of the collaborative interface, ostensibly at no direct cost to the organisation (Chapter 3). It could be argued that limited concessions granted now will be repaid through future business and firm survival.

Whilst it may seem prudent to suggest pessimism when bidding in factor markets, one must consider that having shown intention to acquire, failure to do so could lead to the possible demise of a chosen strategy where there is a dependence on the resource for implementation. It is therefore incumbent upon the firm’s decision makers to be *accurate* about anticipated returns in order to optimise returns in the long run due to the uncertainty/inaccuracy of rival firms’ expectations. Barney (1996b) uses the term *lack of separation* to describe circumstances in which one firm may already have in its possession the resources required for the implementation of a strategy. An example could be a high street bank which has a highly developed information systems infrastructure and enters the telephone banking market without having to enter the strategic factor market for banking software and hardware. Once again, this anticipation of resources may have come from good managerial foresight, but equally from pure luck.

Uniqueness occurs when only one firm can pursue a given strategy. This will have occurred due to historical factors. For instance GKN’s dominance in the Constant Velocity Joint (CV) market can be attributed to the company having acquired patents for CV joints (fitted to front-wheel drive (FWD) cars) when rear-wheel drive cars were the dominant design (Lamming, 1993). Once more, good foresight or luck are cited as reasons for such outcomes. The GKN example combines the

two, the careful approach towards protecting technological developments, and the fortuitous development of FWD cars to serve the European and South-east Asian markets.

Imperfect competition in strategic factor markets may also occur when not all firms who require a resource enter the market for it. This may be due to a failure to understand the return-generating potential of a strategy, where firms lack the financial strength to acquire the resource, and thus never enter into bidding for it, and where there is a lack of understanding of what opportunities (and therefore returns) may be created by a strategy.

The acquisition of resources is clearly contingent upon the resources which an organisation currently possesses in order to generate an exchange. Predominant among these means of exchange is financial resources for the simple purchase of the resource. However, it could also involve the exchange of resources with a partner in a strategic alliance (Gerlach, 1987; Lorange and Roos 1993; Gulati, *et al*, 1994; Faulkner, 1995) or the choice of merger or acquisition (Meeks, 1977; Guyon, 1998).

Organisations with “informational advantages” (Barney, 1986b:1238) about the importance and value (actual and potential) of resources available in factor markets will allow decision makers to make appropriate bids for resources based on well informed expectations. It is from where such informational advantages can be derived that is more problematic. Expectations, lack of separation, uniqueness and lack of entry may account for differences between organisations in the way in which they successfully acquire resources (or to the contrary). Barney’s view of strategic factor markets is only a starting point in the understanding of the resource accumulation process; it does not fully address why organisations may not understand precisely which resources are important, why they are important and from where they can be obtained.

Dierickx and Cool (1989) propose an alternative to strategic factor markets and offer a different explanation for the differences between the accumulation of resources among organisations. Through the protection of resources from imitation and substitution, organisations accumulate resources to reach a “privileged asset position” (1989:1507). So, here, competitive advantage is

generated from “a bundle of assets, rather than the particular product market combination chosen for its deployment” (1989:1504) mirroring the resource and process perspective found to be a basic proposition of the resource-based view.

Unlike Barney (1986b), which purports to the existence of strategic factor markets for all resources, Dierickx and Cool reject the tradeability of assets such as reputation, trust, reliability or knowledge in factor markets (and therefore between organisations). Such markets could not always provide the precise type of resources that are required for strategy implementation as “firms do not employ ‘generic labour’, but people endowed with firm specific skills and values” (1989:1505). Consequently, firms are endowed with resources which may not be acquired by rival firms and should thus be used in the firm’s strategies. The resource may have been developed in such a way that it is “the cumulative result of adhering to a set of consistent policies over a period of time” (1989:1506), connoting the historic dimension of an organisation’s resource bundles.

A development from the previous literature is the extension of asset advantage from merely referring to superiority of an organisation’s resource bundles arising from informational advantages and success in strategic factor markets, to developing resource stocks which cannot be traded, imitated or substituted.⁴¹ These three criteria of tradeability, inimitability and substitutability determine the degree to which they may be considered (and subsequently exploited) as strategic resources.

Substitution can quickly remove the ability of assets to confer competitive advantage. Dierickx and Cool suggest that the substitution of Xerox’s extensive service network by Canon’s lower servicing functionality in the market for photocopiers made the former resource obsolete and less able to generate value for its owners.

Inimitability is a function of the asset’s method of collection. Five main factors influence the resource accumulation process:

⁴¹ Dierickx and Cool (1989) use the term ‘asset stock’. Reference to ‘resource stock’ is used for the purposes of clarity and consistency rather than to connote a difference between the original source and its representation here.

- time compression diseconomies
- asset mass efficiencies
- interconnectedness of asset stocks
- asset erosion
- causal ambiguity.

Time compression diseconomies could simply be considered the cumulative effect of time on the ability of others to imitate an asset. This could be due to the pre-emption of scarce assets (Lieberman and Montgomery 1988), fortuity, prudence, or the law of diminishing returns:

In the case of R&D, the presence of time compression diseconomies implies that maintaining a given rate of R&D spending over a particular time interval produces a larger increment to the stock of R&D know-how than maintaining twice this rate of R&D spending over half the time interval (Dierickx and Cool 1989:1507).

Time compression diseconomies highlight the importance of resource development over time. R&D is a case in point. It may also be the case that some resources simply cannot be reproduced at all because the resource will always be older than any alternative that is produced (such as older employee's experience, as opposed to their knowledge).

Asset mass efficiencies occur when an additional flow of asset creates further value, growth and strategic opportunities. The implications for follower firms are similar to those with low cumulative sales when competing in scale/experience dependent industries (Abernathy and Wayne 1974). Certain types of resources or capabilities attract more resources or enhance capabilities. Organisations with a history in, and an accumulation of, know-how in R&D are generally in a better position to make new breakthroughs (Mansfield and Wagner, 1975; Helfat, 1997). Organisations that have developed extended networks of relationships will have capabilities for information collection or environmental scanning that are not

available to firms with fewer year's involvement in such activities.⁴² Corporate and business reputations, and the efficiencies arising from established distribution channels also constitutive asset mass efficiencies.

The interconnectedness of asset stocks may determine that the accumulation of one stock is dependent upon the existence of another, with particular characteristics. The example given is that of product development based on consumer feedback that has been facilitated by a wide service network. Firms that cannot innovate and therefore cannot build new capabilities except by virtue of imitating others will be disadvantaged. The problem for such firms is not the low level or non-existence of a certain asset, but the lack of its complement.

Asset erosion refers to the diminution in the value and contribution of resources unless they are continually maintained. A research and development resource will only maintain its contribution if the appropriate financial, human and physical resources enable R&D to pursue the development of the latest technologies. Equally, brand reputation can erode as the market demographics to which that reputation is linked changes. Since resources require constant maintenance, being more efficient in asset accumulation in the preceding areas prevents the deterioration of assets at the same rate as less efficient, experienced or insightful firms.

Lastly, causal ambiguity arises when managers and employees are unable to emulate a process or skill from another part of their own organisation because they are unable to understand the process or skill entirely accurately. The ambiguity between cause and effect leads to the inaccurate reproduction of something which has been successful elsewhere in the organisation:

The stochastic nature of the accumulation process may stem from our inability to *identify* some of the relevant variables as well as our inability to *control* them. Indeed, for some asset stocks it may be impossible to fully specify which factors play a role in their accumulation process, even for firms who already own those stocks (Dierickx and Cool 1989:1509 emphasis added).

⁴² One could suggest that such information could be 'bought in' to overcome a lack of asset mass efficiencies. However, whether the information would match the detail, context and relevance of the information and knowledge possessed by the organisation with the advantage is doubtful.

Organisations which face the problems of imperfect best practice transfer between sites do so because of causal ambiguity, such in the case of Toyota, where it has been unable to reach the same levels of efficiency in its overseas plants compared to those located in Japan (Taylor, 1997). The tacitness, specificity and complexity of processes (Reed and DeFillippi, 1990) may further compound the problem.

Causal ambiguity is the intra-organisational equivalent of the inter-organisational problem of uncertain imitability. For other organisations which aim to match the advantage developed by a market leader or pioneer, the challenge is to understand fully a rival's competencies in order to imitate the rival's success. Whilst it may be superficially possible to identify where the source of competitive advantage lies, such as in good customer service, lighter products, better features or lower cost, the means by which such ends are achieved may prove more difficult to identify. Reverse engineering can provide some insights into product design, but this cannot show how the Research and Development process was organised in order to produce a novel design. Neither can it provide a substantive indication of the manufacturing processes which are used in the creation of the product.

The problem of firms being unable to accurately emulate the capabilities and skills of rivals has been termed 'uncertain imitability' (Lippman and Rumelt, 1982). Causal ambiguity and uncertain imitability each affect different individuals and groups. Lippman and Rumelt (1982) describe *uncertain imitability* as follows:

The conventional view is that competition and free entry will eliminate such differences, so their persistence may be taken to indicate the presence of market power or impeded entry. However, if the original uncertainty stems from a basic ambiguity concerning the nature of the causal connections between actions and results, the factors responsible for performance differentials will resist precise identification. Under such conditions the uncertainty attached to entry and imitative attempts persists and complete homogeneity is unattainable. Thus, persistent differentials in profitability may be consistent with free entry and fully competitive behaviour (1982:418).

Organisations seeking to either replicate their own processes elsewhere face causal ambiguity and those seeking to imitate the process of a rival face uncertain

imitability.⁴³ Notwithstanding their differences, both these phenomena are predicated upon the need for full information in order to accurately replicate a given process. Their implications for resource accumulation are clear. Not only may the accumulation of resources be imperfect, so may the identification of necessary resources which precedes it.

The contribution made by the resource stock framework is complementary to strategic factor markets. The former focuses on sustainability, which is an inverse function of imitability, tradeability and substitutability. This differs from the traditional view of sustainable in the context of competitive advantage meaning long-term in nature. Here the temporal nature of competitive advantage is determined by the ability of a rival to identify and subsequently imitate or acquire the necessary resources.

In a development of Lippman and Rumelt's (1982) work, Reed and DeFillippi (1990) contextualise their work within "an emerging trend in strategy to formulate models based on assumptions of disequilibria, rather than static efficiency" (1990:101). They centre their discussion of sustainable competitive advantage (SCA) upon the interaction of causal ambiguity and barriers to imitation, noting that the RBV literature has two congruent and widespread themes; that competency is always generated within the firm, and that competency has an essential internal skills component. Reed and DeFillippi also observe a common theme within the RBV literature regarding the application and returns from resources in which resource integration leads to product proliferation and higher value-added.

Nonetheless, SCA does not simply equate to competence, since luck and exogenous factors may provide opportunities not conferred by the firm's resources. Reed and DeFillippi (1990) note that the position of competitive advantage has not always been clear in the strategy literature, having been considered previously as a factor in an organisation's strategy, and latterly as the outcome of a strategy or series of strategies. Advantage and ambiguity of

⁴³ With causal ambiguity and uncertain imitability, the organisation (and its managers) may only realise that their strategic decision to buy a resource was inappropriate only once the resource is in their possession. This enduring problem of information asymmetry has come to be known as the 'lemon' problem (Akerlof, 1970).

resources is presented as the interaction of three factors; tacitness, complexity and specificity.

Tacitness, seen as “the inability of even a skilled performer to codify the decision rules and protocols that underlie performance” (1990:91) assists causal ambiguity in raising a barrier to imitation. *Complexity* protects competencies in making the knowledge set surrounding the organisational skill too difficult for an individual to understand and therefore protecting it from expropriation. For rivals looking at the organisation, complexity ensures that they cannot fully discern the linkages between organisational assets. *Specificity* is concerned with the manner in which the organisation’s assets are associated and deployed predominantly or exclusively in the pursuance of a given transaction/relationship.⁴⁴ These ‘relationships’ may add further to the ambiguity of the resource’s contribution to SCA. In a link to the first factor, they add that “human asset specificity is highly correlated with tacitness” (1990:93). Possession of knowledge and an understanding of its significance can often be widely separated.

Causal ambiguity is itself a component in a relationship which determines competitive advantage. The balancing factors are the level of competition and barriers to imitation. The latter is viewed as an obstacle or restraint to imitation. Barriers can be sustained by internal managerial action such as the leverage of tacit knowledge, tighter security around operations and increasing asset specificity. Tacitness, complexity and specificity contribute to causal ambiguity, which in turn raises barriers to imitation and influences the decay or sustainability of a competitive advantage. These proposed relationships are summarised in Table 4.1.

⁴⁴ Asset specificity originates in the work of Williamson (1975;1979;1983).

<i>Theme</i>	<i>Proposition</i>
Causal Ambiguity	<i>Ambiguity may be derived from tacitness in skill-based competencies.</i>
	<i>Ambiguity may be derived from the complexity of skills and/or resource interaction within competencies and from interaction between competencies</i>
	<i>Ambiguity may be derived from skill and resource specificity</i>
Barriers to imitation	<i>Interaction effects of tacitness, complexity, and specificity serve to heighten ambiguity effects and barriers to imitation</i>
	<i>Barrier height is a function of the level of competition. A given amount of ambiguity in a highly competitive environment results in a lower barrier than the equivalent ambiguity in a less competitive environment</i>
	<i>Barriers to imitation are dependent on the ambiguity in a firm's competency-based advantage, and the potential barrier height is moderated by the firm's value-added</i>
Decay and Sustainability of Advantage	<i>Regardless of the level of competition or the degree of ambiguity, decay in the barriers to imitation remains a temporally related phenomenon</i>
	<i>For a given level of competition, the rate of decay will be proportional to the amount of ambiguity. For a given level of ambiguity, the rate of decay will be proportional to the amount of competition</i>
	<i>Sustainability of competency-based competitive advantage is dependent upon reinvestment in causally ambiguous competency characteristics of tacitness, complexity, and specificity</i>

Table 4.1: Proposals for Competitive Advantage
 Compiled from Reed and DeFillippi (1990:93-98).

As with Dierickx and Cool (1989), Grant (1991) also suggests that not all resources can be purchased in open markets and in the case that they are, acquisition can often be hampered. Reasons forwarded are geographical immobility (plant equipment and human resources), imperfect information (regarding market value and rate of return), firm specific resources (where value creation is truly unique to the 'mother' firm, such as the Saab name before the GM equity purchase), and capability immobility, where teams of resources and human capital are interwoven so as to make capabilities difficult to identify and emulate. *Replicability* denotes the extent to which imitators are able to develop a resource or capability endogenously. Multifarious routines are, once again, more defensible against imitation. For instance, Grant suggests that JIT and Quality Circles are more difficult to emulate than would first appear because their success is predicated as much on attitudinal change and the physical changes to work process and routines.

Resources develop, often incrementally, due to imperfect factor markets, inimitability and rarity. Uncertainty, complexity and conflict may also arise to produce a planning environment in which “strategy partly becomes a shot in the dark and partly an exercise in heuristic creativity aimed at overcoming biases and blind spots” (Amit and Schoemaker 1993:43). Accordingly, they suggest, the examination of firm uniqueness yields an outcome in which “resources ... stem from imperfect and hard to predict decisions by boundedly rational managers facing high uncertainty, complexity, and interfirm conflict” (1993:44). The impact of distortion upon human cognition has long been recognised in the form of bounded rationality (Simon, 1957), Groupthink (Janis, 1982), cognitive bias (Tversky and Kahneman, 1974; Schweiger and Finger, 1984; Barnes, 1984) and conflict (Cameron, 1986). In combination with a lack of informational advantages, these may conspire to reduce the effective identification, choice and acquisition of resources, much before the availability of resources become an impediment.

Peteraf (1993) presents a model of competitive advantage which combines not only resource heterogeneity, but imperfect mobility and *ex post* and *ex ante* constraints on competition. The rationale for the four factor model is a distinction made between heterogeneity *per se* and long run competitive advantage. Whilst heterogeneity is an essential component of this construct, it does not constitute the whole. The framework serves to promote greater insights into the restriction of resource supply, which underpins firms’ ability to resist imitation and resource appropriation. Heterogeneity is said to occur when the supply of “superior productive factors” (1993:180) is limited in terms of the total available for incorporation in all firms’ value creation processes. This supply may also be “quasi-fixed” (1993:180) subsequent to which there are time delays in the creation of new sources of supply for the superior productive factors. Such restrictions alleviate scenarios in which many firms compete away their margins having entered because of the high profitability of the domain at a previous point in time. Peteraf (1993) uses the market power/monopoly framework to identify other sources of heterogeneity. Here, endogenous restrictions prevail, rewarding the firm with returns which stem from scale-based or first mover advantages.

Having generated a firm-specific advantage, managers must seek to sustain the advantage over planning horizons, particularly when capital outlays may have been substantial (in the case of acquiring resources from factor markets, as opposed to ‘lucky’ spending). Consequently, the second component of Peteraf’s model is that of generating ex-post limits to competition. These she describes as “*subsequent* to a firm’s [sic] gaining a superior position and earning rents, there must be forces which limit competition for those rents” (1993:182 original emphasis). Included are imperfect imitability/causal ambiguity, imperfect substitutability and endogenously generated entry barriers.

The mobility of resources constitutes the third component. Resources may be perfectly immobile, *i.e.* impossible to transact in open markets, or imperfectly mobile, in which case they can be traded between organisations but may not create more value for the previous owner than for the new one. This could be due to their use in conjunction with other assets, or because they are the result of relationship-specific investments (Peteraf 1993). Hence, Peteraf maintains, such asymmetries assist in creating the time-lag to imitation that is so imperative in the sustenance of competitive advantage. However, she comments in a footnote that negative externalities (technology or environmental change) may occur from mobility issues, similar to Leonard-Barton’s concept of ‘Core Rigidities’ (1992).

The fourth element recognises the need to prevent all players in a market making a simultaneous move for a particular resource gathering position which will consequently devalue its value adding potential. Peteraf names these ‘ex-ante limits to competition’ and points to Barney’s (1986a) work on imperfect factor markets and the concept of luck. Additionally, uncertain imitability (Lippman and Rumelt, 1982) suggests that not all firms know which resources are important, have the resources to successfully pursue and acquire the resource, and at the same point in time.

Peteraf suggests that her model can be used for analysing resources without the ‘generic-ness’ levelled at some of the ‘design school’ models (discussed in Mintzberg, 1990; Whittington, 1993). The model encompasses a method by which managers can recognise and distinguish the “specific resource endowment”

(1993:186) of the firm and the strategic opportunities that it may bring, adding that “application of the model will not increase competition for available rents. This will only ensure that each firm optimizes the use of its own specialised resources” (1993:187).

The RBV, it could be suggested, assists in the accreditation of those resources which make an obvious and direct contribution to a sustainable competitive advantage. Peteraf illustrates this with the case of a firm which may have a Nobel scientist amidst its personnel. Whilst the scientist may be unique, high mobility means that he or she cannot be considered to a sustainable source of competitive advantage. However, if the scientist’s skills are dependent on specialist teams, skilful managers and organisational culture, the threat and impact of the scientist’s mobility are reduced.

The model may also inform ‘make or buy’ decisions. Peteraf (1993) suggests that if the technology is imperfectly mobile, in-house production should be retained. However, if this is not the case, licensing would still provide limited returns. An understanding of imitability and mobility may also enrich strategies to prevent technology imitation, through the pre-emption of future capabilities coupled with the technology. In considering a development project which involves the exploitation of a firm-specific capability, the in-house choice is superior because skills are developed in the context of current operations and are therefore customised as opposed to generic. In addition, the development of the capability as much as the capability itself offers the organisation an important opportunity to learn and leverage associated skills within different projects in the future whilst generating skills that are less transferable between organisations, thereby increasing resistance to imitation.

Resources are considered by Conner (1991) to have limitations placed upon their rent-generating (value-adding) potency and such limitations may have both exogenous and endogenous sources. External limitations may stem from market demand, public policy limitations and competitive substitution. Here also, luck may play a part in determining the value of a firm’s resources. Internal limitations on rent-generation emanate, in part, from the consequences of linking assets (*c.f.*

asset mass efficiencies). Here, the emphasis is not placed on the uniqueness of the assets themselves, but the ways in which they are combined with other firm resources. Asset specificity occurs when “the value of A ... increases in the presence of B, but the value of C is independent of either A or B ... [therefore] ... grows in value when it is teamed with B, but C does not” (1991:135). Hence, another level of resource-based analysis lies at the point at which firms generate different quantities and rates of value according to asset bundling relative to firms with similar and equivalent assets. This notion of asset specificity combines Dierickx and Cool’s time compression diseconomies with asset mass efficiencies.⁴⁵

Another factor which may determine the longevity of a specific input is the contract governing the possession of the asset/resource within the firm. Connor (1991) illustrates the contractual enforcement of asset preservation using the case of having purchased an iron ore mine in the past at a lower price. In this case, providing that supplies do not become exhausted, there is no cost involved in preserving the ‘possession’ of the asset. Conversely, in the case of an expiring lease for a valuable retail location, the firm may quickly become vulnerable, particularly if the premises were central to the asset specificity of the organisation. Finally, a firm which is highly dependent upon the creations of a gifted scientist is vulnerable to the financial demands of the scientist, and to the possibility that he/she may leave for another firm or start up a rival organisation.

Synthesis of resource accumulation

The manner in which organisations accumulate resources directly influences the composition of their resource bundles. The literature considered above posits a multitude of factors which affect the resource accumulation process among organisation. Several themes are replicated between studies (such as immobility

⁴⁵ The use of the term asset specificity differs from the original (above). The original meaning refers to where assets and resources of an organisation are uniquely associated with servicing a specific supply relationship with another firm and could not be put to alternative use without significant modification and cost. These idiosyncratic assets have the highest level of specificity. Locations can be asset specific, such as in the case of a supplier that situates its factory next to a buyer’s warehouse to reduce transportation costs. Human resources could also be asset specific, where an employee has been trained exclusively to meet the needs of a single client or customer such as in marketing and corporate finance companies. Differing levels of asset specificity affect the choice of effective governance structure which control the series of transactions in buyer-seller relations. Generally, vertical integration may offer a more cost-effective approach in cases of repeated transactions with high levels of asset specificity (Chapter 3).

and ambiguity). Upon closer inspection, many of the themes bear a great deal of similarity. Indeed, seven categories of themes have been found among the studies:

1. Causality – where organisations are unable to clearly understand or replicate resources due to ambiguity in the cause-effect relationship. Consequently they may not accumulate precisely the same resource as another.
2. Information – where organisations are unable to identify or discern the value of a resource due to limited information. Consequently they may fail to accumulate a resource which is of strategic importance.
3. Organisational behaviour – where the decision making process relating to resource acquisition is hampered. The results are similar to the information factor.
4. Serendipity – organisations may accumulate valuable resources through luck rather than a conscious strategic decision to do so.
5. Linkages – where resources are difficult or impossible to acquire because they are linked to other resources in a dependent way, in some cases over a long duration. As such, they cannot be disentangled and acquired separately.
6. Immobility – where resources cannot be accumulated because they cannot be moved from one organisation to another, either physically or in some other way, such as contractually (legal and commercial).
7. Availability – where resources cannot be accumulated by virtue of the fact that no exact alternative exists, markets cannot be entered, or where alternatives are discernibly inferior.

The relationship between the seven factors identified above and the literature surrounding resource accumulation is presented in Table 4.2 overleaf. A resource-based view proposes that the resource accumulation process is hampered by causality, information, organisational behaviour, serendipity, linkages, immobility and availability.

Accordingly, the second research question of this study is structured as follows:

RESEARCH QUESTION 2

Do managers perceive resource accumulation to be part of the RBV construct?

Organisational heterogeneity begins with the heterogeneity of the resource accumulation process but is directly manifest by the way in which resources are used by organisations. It is to this that we now turn by examining the notion of portfolios of resources.

<i>Category</i>	<i>Factor</i>	<i>Source</i>
<i>Causality</i>	Uncertain imitability	Lippman and Rumelt (1982)
	Causal ambiguity	Dierickx and Cool (1989)
	Imperfect imitability	Peteraf (1993)
	Perfect mobility with lower value creation	Peteraf (1993)
<i>Information</i>	Informational advantages	Barney (1986)
	Imperfect information	Grant (1991)
	Uncertainty	Amit and Schoemaker (1993)
<i>Organisational behaviour</i>	Expectations	Barney (1986)
	Conflict	Amit and Schoemaker (1993)
<i>Serendipity</i>	Luck	Barney (1986)
<i>Linkages</i>	Lack of separation	Barney (1986)
	Time compression diseconomies	Dierickx and Cool (1989)
	Interconnectedness of asset stocks	Dierickx and Cool (1989)
	Asset erosion	Dierickx and Cool (1989)
	Asset mass efficiencies	Dierickx and Cool (1989)
	Complexity	Reed and Defillippi (1990)
	Asset bundling	Connor (1991)
<i>Immobility</i>	Complexity	Amit and Schoemaker (1993)
	Specificity	Reed and Defillippi (1990)
	Geographical immobility	Grant (1991)
	Firm specific resources	Grant (1991)
	Capability immobility	Grant (1991)
	Replicability	Grant (1991)
	Asset specificity	Connor (1991)
	Contractual provisions	Connor (1991)
Quasi-fixed resources	Peteraf (1993)	
<i>Availability</i>	Tradability	Dierickx and Cool (1989)
	Substitutability	Dierickx and Cool (1989)
	Lack of entry	Barney (1986)
	Tacitness	Reed and Defillippi (1990)
	Endogenous restrictions	Peteraf (1993)
	Imperfect substitutability	Peteraf (1993)
	Entry barriers	Peteraf (1993)

Table 4.2: Factors Affecting the Process of Resource Accumulation

4.3.3 THE NOTION OF PORTFOLIOS

Earlier we saw that the resource-based view centralises upon the bundling of resources within organisations. Such bundling refers directly to the portfolios of resources found within transformation processes which lead to final product of service. Accordingly, these portfolios of resources may be evident in the organisation's outputs. It is opportune now to consider how the notion of portfolios can be observed.

Prahalad and Hamel (1990) popularised the RBV concept and introduced the term 'core competence' into the managerial vernacular.⁴⁶ In so doing, the notion of resource portfolios was advanced as the most effective way to generate a long-term competitive advantage, unlike the short-term gains that can be made from the price and performance characteristics of a company's products in market domains. It was proposed that firms must be seen as a "portfolio of competencies ... [rather than] a portfolio of businesses" (1990:81) echoing the basic concepts of RBV thinking. Core competencies are "the collective learning of the organisation, especially how to coordinate diverse production skills and integrate multiple streams of technologies" (1990:83). Doz (1993) notes the RBV grounding in the economics literature, and acknowledges the absence of "a solid empirical base and a microtheoretical foundation" (1993:1). Such competencies are defined as "the underlying process routines that allow to combine resources, systems, assets and values, to result in predictable high-level performance of task, which yield advantage over competitors, and provide valued functionalities for customers" (1993:3).

These organisational resources called core competencies, unlike their more tangible counterparts, develop and strengthen over time through use and application (echoing asset erosion). They provide the potential for new products, markets and applications development, and create synergy among different parts of the company. Core competencies, Prahalad and Hamel (1990) suggest, cannot

⁴⁶ Selznick (1957) adjectivised the word competence when referring to management skills to become 'distinctive competence', many years prior to its adjectivisation as 'core competence'.

be developed simply by ploughing vast funds into research and development (echoing time compression diseconomies).

Whilst clearly many of the ideas proposed by Prahalad and Hamel merely reflected the content of the antecedent literature, the departure arose in three ways; the term 'core competence' itself, criteria by which to evaluate whether the combination of resources constitute a core competence, and practical example of organisations with core competencies. Core competencies bear three vital characteristics; potential application in a variety of markets, perceived use value⁴⁷, and inimitability. The latter they suggest "will be difficult if it is a complex harmonisation of individual technologies and production skills" (1990:83-84).

Core competencies may be the result of numerous years of development whose physical manifestations are the end products called 'core products'. The loss of core competencies cannot be predicted because of the subtle way in which they develop via continuous improvement and will therefore have severe consequences for companies competing in the markets of the future. As Prahalad and Hamel suggest, "it is difficult to get off the train, walk to the next station, and then reboard." (1990:85). By their very nature, firms must have only a few competencies which find themselves in core products which are then central to the firm's end offerings. This is counter-intuitive to the approach portrayed in the orthodox strategy approach which suggests that firms should develop as many strengths as possible to counteract weaknesses and threats and to capitalise on opportunities in the operating environment. Aaker (1989) found that firms listed (on average) 4.65 attributes as sustainable competitive advantage factors, leading him to assert that "multiple strengths are needed in order to compete successfully and that assets and skills are defined at a more specific and detailed level". (1989:96)

Prahalad and Hamel (1990) suggest that to view the firm in terms of its competencies allows product development that may not have been conceivable within the traditional SBU structure because of the fusion of inter-functional

⁴⁷ Term used by Bowman (1991; 1992a; 1992b) to denote the satisfaction in use derived by the customer relative to the price paid for the product or service.

technology and expertise. Prahalad and Hamel's analysis of Canon's three core competencies shows that through precision mechanic, fine optics and micro-electronics, the company has developed twenty three products ranges (which in turn have multiple models), each of them utilising at least one competence.

An organisation's core competencies may be manifest in rivals' products, since it may be the original equipment manufacturer of high added value proprietary components which are the industry standard. For example, by the late 1980s, Matsushita had a 45% market share in VCR components in comparison with its 20% share of final product demand. Similarly, Canon held 84% of global share for laser printer engines despite its low market share for finished printers. (Prahalad and Hamel, 1990:85).⁴⁸

The decision to outsource components, thereby eroding the R&D and production resources of an organisation have major implication for core competencies. Whilst outsourcing could yield cost savings due to lower market prices (Williamson, 1985) compared to internal transfer prices (Mahoney, 1992; Cravens, 1997), it does little to expand the capability and application of the organisation's skills base. It also relinquishes any control over products and markets that lie downstream. Sony and Philips' upstream competence in basic laser and disc technology has allowed them to greatly influence the development on multi-media and mini-disc.

In the automotive industry, outsourcing has become widespread, but in the main, strategic (and high value-added) components that give the car its identity and character, namely, engine, chassis and bodywork have remained the only true manufacturing activities for many automotive assemblers who outsource the many of the ten thousand or so 'anonymous' parts in a completed car. For automotive component manufacturers, the tiering of the supply chain has signified the development of a first tier of suppliers who will supply whole assemblies for transmission, suspension, brakes, *etc*, (Chapter 3). In doing so, the supplier is faced with a choice of which activities to outsource to second tier suppliers.

⁴⁸ Philips and Sony's laser diode patent and Sony's production of floppy disk drives, diskettes and VCR tape are further examples.

The harmonization and convergence of resources into portfolios has become popular in many manufacturing industries and are commonly known by the collective term 'product platforms'. Meyer and Utterback (1993) suggest that core competencies should be used within 'product families' and 'product platforms'. Product families represent a different approach to portfolio and product management in the sense that resource and component sharing enable more effective product development, the growth of proprietary knowledge, and more responsive and effective marketing. Because products are clearly related in their technologies, any product or component improvement is incorporated into the entire product range. A product family refers to a group of products which each utilise the same product platform. In turn, product platforms are the skeleton of a product, to which additional components are added in order to differentiate them among other products using the same platform according to variations in market segments. Meyer and Utterback illustrate the concept of product platforms (and the flexibility that they offer) with the case of the Sony Walkman in which between 1980 and 1990, 160 versions of the Walkman were launched, based around four key technologies (in-ear headphones, mini-flat motors, rechargeable batteries, and disk drive mechanics). Similarly, Black and Decker adopted a product family approach in its power tools business after realising that the vast array of motors and switches was incurring unnecessary costs. The new approach involved the development of multi-purpose motors, housing and switches to correspond with each product family. These changes are yielded production saving of fifty per cent and the new approach is attributed to company' substantial presence in the power tools market.

Television set design and manufacture also relies on the use of product platforms. Different television sets produced by the same company may contain the same 'chassis' (which contains the cathode ray tube and signal tuner). The manufacturer subsequently differentiates the chassis using different casings and features such as teletext, stereo sound and greater connectivity. In 1998, Sony UK had a TV product range of 37 models, including 15 new models based on a less than a dozen platforms. A product platform approach can also be observed in less tangible products, such as computer software. Most complex software packages

and operating systems are based on small programme modules which come to form the entire programme (Cusumano, 1997).

Core capability should ultimately manifest itself in the form of profitability, product proliferation and/or employee satisfaction according to Meyer and Utterback (1993). The writers also reflect the theme of asset erosion, adding that organisations need to sustain and enhance the potency of competencies. Their research found four main impediments to competence development. These can be described as impatience, blindness, overconfidence, and prematureness.

Capability may be stifled or destroyed when organisations place impractical and unreasonably short time limits on project development. An additional effect of impatience may be the limits placed in terms of the penetration and positioning of the product in the market. Early withdrawal eliminates any future revenue streams that may have been increasingly easier to realise. Blindness connotes the inability of some organisations to recognise technological discontinuities and the occasional influence of the 'Icarus' effect (Miller, 1990). Such events may render the capabilities (upon which the firm relied for sustainable competitive advantage) useless.

Meyer and Utterback also argue that "planned renewal of product platforms combined with sustained development of core capabilities is a defence against technological surprises and obsolescence" (1993:44), much in the same vein as the supply side approach to strategy espoused by Hay and Williamson (1991). The synthesis of this with the 'creative destruction' event, may assist in the understanding of a particular irony. When a firm innovates and introduces a product onto the market, the replacement process of old for new is effectively a destructive one in the sense that future revenue streams from the old product are removed. However, this is not problematic for a given firm if an existing product is 'destroyed' by a product of the same firm which, *ceteris paribus*, should yield similar, if not superior, future returns. It is when a firm's product is 'destroyed' by the new product introduction of a rival firm that the consequences are severe if the firm is unable to react rapidly to the rivals product launch. Meyer and Utterback

(1993:46) allude to this when they note that “winning companies retire their own products rather than let competitors do it for them”.

Clearly, there are many risks associated with policies of planned obsolescence, particularly where product platforms are involved. However, many organisations ‘carry over’ parts from previous models to ensure a longer return on R&D investments.⁴⁹

For product families to have an opportunity to develop and make an impact on their respective markets, new management approaches may be required. In particular, product planning should become planning with the unit of analysis at the platform level. Additionally, resource allocation should also be made on the basis of product platforms, and must adopt longer time horizons. Consequently, Meyer and Utterback would suggest that the firm will find itself in a situation in which process and technology improvements improve the wider portfolio of products sharing the same platform.

Product platforms are a relatively recent development which involves a greater degree of integration between R&D, production, purchasing and marketing, reflecting the integration of multiple streams of technologies in a number of products. However, organisations may integrate their technologies without the direct need for product platforms. The improvement and convergence of technology over time is often represented in the products developed by organisations such as Sony (Jolly, 1997).

Although the bundling of resources has been suggested (albeit anecdotally) in respect of individual technologies, know how, *etc.*, Robins and Wiersema (1995) found that relationships between business units involving the sharing of product-oriented resources (in addition to the sharing of resources in the search for economies of scope) led to higher levels of performance than those organisations with business units that had little or no levels of relatedness.

⁴⁹ This is a double-edged sword, however. Japanese producers tend to carry over fewer components from previous models (18%) whereas European producers carry over 29% of components and US producers used over 45% of parts from existing models. This suggests that Japanese producers are able to design a greater number of components in a shorter period of time, leading to a more technologically integrated and advanced product (Clark and Fujimoto, 1989:54).

The concept of bundling resources in the form of product platforms is not confined to the consumer electronics industry. Increasingly it is becoming the bedrock of product strategies in the automotive sector (Chapter 3). A vehicle manufacturer which uses the same chassis (automotive underbody/floorpan) and rolling stock or drivetrain (suspension, gearbox, *etc.*) along with associated electronics components and driver controls in a variety of models is said to be using a product platform. Three European examples of this are the case of the Saab 9-5, which shares the same platform as the Vauxhall (GM) Vectra, the VW Sharan, Seat Alhambra and Ford Galaxy which share the same MPV (Multi-purpose vehicle) platform and the Ford Puma and Fiesta, which are mechanically identical but highly distinct in their exterior bodywork and interior trim. Appendix 1 provides further detail about the extent of automotive platform use within and across automotive groups in Europe. For upstream organisations in the supply chain, the consequences of platform strategies are clear. In the past, several components will have been supplied to an assembler within a model range. Now, the same component will form part of a platform used across models and brand portfolios.

In addition to the trend toward platform strategies, a concept known as modularisation may soon become a feature of automotive assembler and, therefore, sourcing strategies. Already, suppliers (particularly at tier 1) are responsible for the development and delivery of a subassembly such as a braking system, seating, driver controls and transmission. In such cases, the constituent components are combined from third party and in-house supplier parts to provide the assembler with a fully finished unit ready for incorporation into the vehicle platform. Modularisation takes a further step in the combination of individual parts which come to form an independent unit. Vehicle interiors, comprising seats, instrumentation, airbags and belts, headliners and parcel shelves, door modules, door trim, carpets, steering and air conditioning, could be offered by a single supplier – *a systems integrator* – to the assembler. Warburton (1999) has argued that the race to become an interior module system integrator has offered a rationale for 14 mergers and acquisitions in the period 1996 and 1999 in Europe alone.

Synthesis of the notion of portfolios

The notion of portfolios extends beyond the collection of resources held by an organisation in order to undertake its productive activities. Portfolios are also manifest in finished product through product platforms and families, and through technology convergence. Accordingly, resources should be bundled, linked and used (Figure 4.3).

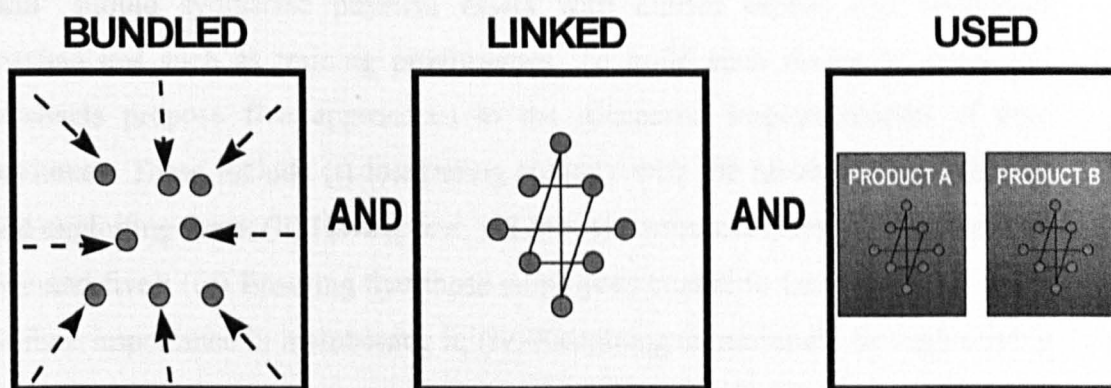


Figure 4.3: Resources – Bundled, Linked and Used.

Source: Herbane and Rouse (2000:255)

Organisations, it is suggested, should bring together (bundle) resources, combine (link) them to form a product platform and exploit (use) them within product families. In so doing there is a greater likelihood that the complexity of the product, combined with problems of resource accumulation and proprietary protection will increase the inimitability of a given product or service.

Accordingly, the third research question of this study is structured as follows:

RESEARCH QUESTION 3

Do managers associate portfolios of resources with product platforms, families and technology convergence?

However, it is obvious that resources do not bundle together by themselves. It is in this respect that the resource-based view offers approaches to how resources should be managed. It is to this that the study now turns to generate a further research question.

4.3.4 MANAGING RESOURCES

Since resources reside as bundles within organisations and are suggested to be manifested in the form of product platforms and technology convergence, resources must be managed. Without resource management, resources will not find their way effectively into the implementation of organisations' strategies.

Irvin and Michaels (1989) propose that core resources manifest themselves at the organisational level rather than merely at the functional level. A successful 'core skill' should synthesise physical assets with human capital and associated mechanisms such as training programmes. To build such resources, Irvin and Michaels propose five approaches to the successful implementation of core resources. These include (i) Integrating strategy with the resources, *i.e.* building and exploiting them; (ii) Having few, yet specific resources (they suggest between two and five); (iii) Ensuring that those employees central to the 'core skill' know of their importance in maintaining it; (iv) Sustaining commitment through driving and enduring leadership attention; and (v) Developing better methods of organisational learning. These should assist firms in developing resources which may enhance competitive advantage even in the absence of barriers to imitation and unique assets. This approach assumes a degree of tangibility, mobility and casual clarity of core resources, and makes little association between resources, products and processes.

However, of interest here is the notion that senior management (leadership) should be familiar with those focussed, yet strategically significant resources that the organisation has at its disposal (although resource accumulation should recognise this awareness if senior managers proceed to successfully acquire those resources). It follows that in the light of more tangible elements of an organisation – products and processes – within which resources are contained, we might expect resource management to be a lesser priority than the more observable aspects of the firm. This question, however is not explicitly addressed in the literature and this provides the foundation for the research question relevant to the management of resources (developed in this section).

Doz (1993) proposes a disaggregation of organisational competencies in order to develop managerial understanding and development. The managerial theory of competencies proposed by Doz addresses a number of key 'dilemmas' facing the development and dispersion of such organisational capabilities. Five key managerial processes are proposed, each of which may take an organic/natural path, or which may be managed formally within the organisation.

First, managers have to determine the extent to which they will formally pursue competence formulation activities as opposed allowing them to form beyond the ambit of their control. As Doz points out, certain aspects of the competence may simply be too cryptic, subtle, or tacit to identify and then control. In describing competencies as often representing "know-how in action" (Doz, 1993:7), development occurs through repetition and the speed of repetition will determine, or at least have a major influence upon, the rate of development of the proficiency in question. Total Quality Management, for instance, provides one approach to the enhancing the speed of learning since it provides "a framework, a language, a systematic approach, and a set of procedures for the explication and the improvement of know-how" (Doz, 1993:7).

Furthermore, these structured approaches to learning and improvement may engender a greater understanding of the immediate and ultimate sources of improvements. There are however, problems in occasioning change in competencies since they may be locked into traditional routines. Antecedent routines have a number of effects on competence development in the sense that they represent a "dominant process logic being applied to dominant product design" (1993:8). They will also portray what is seen as best practice and may consequently influence future resource deployments. Competencies may also represent the configuration of the firm in relation to stakeholders.

A second dilemma arises in the choice between trapping the competence in its current form and exploiting it, or allowing it to develop and capture learning within the firm which may lead to new applications and innovations. Learning should of course be encouraged but the point at which something is routinised is a difficult point to ascertain:

The current vogue for ‘best practice’ transfers reflect this difficulty ... uniformity of format allows easier connection between various parts of an organisation, while freedom of content, and differentiation of culture, allow innovation and selective evolution (1993:10).⁵⁰

However, Doz adds that the above may only be applicable where the knowledge can be made explicit and therefore amenable to transfer and storage. Another influence on the transfer of competencies lies in the location of knowledge storage. This may occur at the individual, group or organisational level. Diffusion amongst these groups may vary, as might the transfer of competence-embedded knowledge between different levels in the organisation. Doz also highlights the need for commitment as “competence diffusion and institutionalisation work only insofar as individuals who have resources are willing to share them, and those who benefit from the learning stay with the company” (1993:13). An internal labour market approach acknowledges the need to retain and spread competencies and associated learning.

Thirdly, management must determine the scope of the competence and its potential in both specialist and general applications. The question of “specificity vs. aggregation” (1993:13) deals with the inimitable mix/combination of capabilities and assets to generate product attributes that are intrinsically valued by customers. Managers, planners and employees alike should therefore pursue the new “combination and blending of discrete elements of competencies that provide for opportunity creation and competitive advantage” (1993:13). Although a major factor against imitation, competence building should not be based simply on technology mixing. As Doz explains, product development using the classical functional demarcations, may provide resource outcomes compared with multi-functional approaches. Honda’s ‘T-shaped’ engineers (with their great depth of knowledge but with sufficient breadth of knowledge to integrate with other areas) and project management approaches enhance competence integration.

⁵⁰ One could question how much an organisation can benefit from a best practice study of another given the problems of uncertain imitability and resource accumulation. The implications of this observation are considered in Chapter 8.

A fourth managerial task is the leverage of competencies and the chosen emphasis between existing and forthcoming uses. Calling it “an exercise in both external imagination and in internal flexibility” (1991:16), Doz proposes a number of approaches that managers can adopt in order to leverage current and future competencies. Firms must not set its product-market domain too rigidly and should share competencies among SBUs to generate new applications/developments. Additionally, firms should not take a technology pull/demand side stance on product improvement or replacement. Doz asserts that this requires a movement away from a pre-eminence of a portfolio management perspective towards an understanding of buyer values and new opportunities.

Product development necessarily embraces an element of risk and the “fear of failure” may obstruct the activity and its outcome. Here, Doz suggests cheaper prototype testing or simulation to reduce the capital outlay required for product testing. These may include “core platforms and variations, modularity, faster and less costly product development, more flexible manufacturing, decreasing economies of scale, and faster production ramp-ups” (1993:16). Failure, he adds, should be “seen as a collective tuition cost for finding new applications, not the fault of a specific individual” (1993:16). Equally precarious to the limited definition of business scope is the over-expansive definition which may lead to wasted resources in an attempt to exploit inappropriate competencies.

Finally, the renewal of core competencies present both discontinuous and incremental alternatives. Because the dominant design may change and assets may deteriorate managers have to acknowledge and engage in competence renewal activity, although such renewal competencies “are even more difficult to pin down, for analytical and managerial purposes” (1993:18), because of their difficulty in quantification. However, Doz does forward some thoughts as to why firms cannot or will not develop and create new ideas and organisational directions. First, the reasons for past successes may not be fully understood. Second, renewal may challenge the status quo and may stimulate a reaction (third) in which all associated activities are sidelined “into new ventures or ‘skunk-works’ the legitimacy of which remains vulnerable to corporate politics and financial fortunes.” (1993:19) A further difficulty lies in the decision as to which

renewal competencies should be developed, if indeed it is possible. It may be the case that the bundle of competencies possessed by the organisation is simply inappropriate for current competitive and innovative conditions. Whilst the RBV perspective is relatively new, Doz's approach to competence development considers a competence life-cycle approach and adopts a normative stance on competence diffusion and enhancement.

Mahoney and Pandian (1992) concur with the view that strategy is an activity in which organisations seek to generate rents, taking as its basis the holistic view of the firm and a long-term orientation. Such rents can occur because a resource is restricted (monopoly rents), rare (Ricardian rents) or deployed in an unforeseen manner (entrepreneurial rents). In considering the rent generating potential of resources in the possession of a firm, managers can discern which of these can be labelled 'strengths' and thus be managed in future strategies, for it is those "differences among firms in terms of *information, luck, and/or capabilities* [that] enable the firm to generate rents" (1992:365).

When senior managers consider diversification options, Mahoney and Pandian (1992) suggest that the RBV perspective can illuminate the validity of such product/market considerations in four areas, namely limitations, motivations, directions and contributions. Limitations to internal growth may occur when demands exceed existing resource endowments. Managers may be motivated toward the diversification option where there are un/under-used resources which may be matched with external opportunities, or simply because a core skill or capability finds its way into more products. Furthermore, idiosyncratic resources may have a strong influence upon the direction taken, given that they may offer possibilities for diversification which may emerge and evolve as do technologies, processes and applications.

From this arises the suggestion that the management of resources is a precursor and/or complement to the processes and products that will lead to a diversification away from current product/market domains. As a precursor to this relationship, the management of resources appears to assume high importance. Whether managers do accord the management of resources with as high an importance as

products and processes still remains, and will be addressed directly with research question 4.

Insights are also gained as to the contributions of related diversification to overall corporate performance. Unrelated diversification is seen to confer lower returns than the divergence of existing resources which do contribute to economies of scope and synergies. Teece describes economies of scope as a situation in which “for all outputs y_1 and y_2 , the cost of joint production is less than the cost of producing each output separately (1980:224). Where the sum of the whole is greater than the sum of the parts, the term *synergy* has become synonymous. The sharing of resources, as much as their combination requires the management of those resources, in the absence of an ability to combine products and processes. Whilst Ansoff (1987) suggested that analysis of the phenomenon should be made at a functional level, Mahoney and Pandian (1992) suggest that synergies can be differentiated due to the way in which some synergies may be intertwined with an organisation’s competencies, making them difficult to expropriate unless the organisation is acquired. This they call “idiosyncratic bilateral synergy”, unlike “contestable synergy” which can be easily emulated through the acquisition of resources in open markets (1992:389).

As we have seen, uncertain imitability occurs when, in the attempt to imitate the sources of competitive advantage, a rival fails to isolate the resources which contribute to it. It is therefore incumbent upon firms to gain knowledge of this cause-effect relationship through such vehicles as executive ‘poaching’ or detailed competitor analysis. Paradoxically, in order for the advantage to be preserved, those competitively advantaged firms may benefit from not overtly knowing of the causal link between resources and advantage, because once consciously and formally identified, it is far easier to appropriate. This suggests that were managers to perceive resource management to be less important than product or process management, this might generate positive benefits in the sustenance of a causally ambiguous resource advantage. Once again however, it prompts this study to consider how the management of products, processes, and resources are perceived in terms of their importance. Imperfect imitability is also enhanced due to the ‘social complexity’ of resources. Here, corporate culture, managerial

coherence and good buyer-supplier relations are examples where there is strong causal ambiguity and where the difficulty of identification may render the management of such resources more difficult.

A component of Amit and Schoemaker's (1993) discussion of strategic resources is the consideration of what they term 'Behavioural Decision Theory'. Here, they note that in any consideration of the use of strategic assets in the future, managers must first visualise the future deployment of such assets, identify competitive linkages with the aforementioned option, and eliminate the behavioural impediments that create organisational inertia (similar to Lieberman and Montgomery's (1986) 'incumbent inertia'). Cognitive biases (Chapter 2) may also illuminate our understanding of how future strategic asset deployments are sub-optimal. They identify uncertainty, complexity and conflict as three main influences on the managerial process in question. Once again, the assertion is that the intangibility of resources may provide a deterrent against or increase the difficulty of managing resources, rather than the products and processes to which they contribute.

Uncertainty manifests itself in the form of different expectations of macroeconomic and market factors, and risk aversion, which may be the product of managers being uncertain of the probabilities of an expected outcome. Levels of risk aversion may be determined by the character, background and experience of the individual manager. Amit and Schoemaker also suggest that bounded rationality⁵¹ may lead managers to place too much importance on past products and processes. It is suggested that those firms that are not trapped by this retrospective bias will have greater scope to generate future options "more flexibly and imaginatively" (1993:41). This echoes the notion of leveraging ideas (and aspirations) that is so central to Prahalad and Hamel's (1989) precursory work to core competencies.

Because of the interaction of so many variables in the process of understanding the organisation, the environment and their interaction, managers will often

⁵¹ The limited ability of an individual to gather, store, prioritise, analyse and interpret information (Simon, 1957).

simplify relationships in order to make speedier decisions. However, as Amit and Schoemaker point out, this can also lead to dysfunctional and inconsistent decisions:

Specifically, [simplification] frames may (1) bound out important futures, competitors, or new technologies; (2) dictate the reference point relative to which SA [strategic assets] are measured (e.g., Chrysler comparing its quality control capability to GM's rather than to Japan's Honda; and, (3) specify the yardstick or metric used (e.g., measuring quality in terms of defective parts per thousand vs. number and type of customer complaints) (1993:41).

Managers may use their 'instinct' which, in the absence of formalised investigation, may lead to the misinterpretation of important resources. The complexity of the organisation, its encumbrance and history, may be such that managers are not aware of the real sources of the company's success, virtually akin to the emergent strategy process (Mintzberg and Waters, 1985). Conflict may hinder decisions regarding the future deployment and management of resources in the sense that redeployment may involve their removal from one function or business unit to another. Instinctively, this will lead to an adverse reaction that may jeopardise collaboration between functions and the complementarity that led to the development of a capability in the first place.

In their exploration of competing theories of the firm, Seth and Thomas (1994) ascribe the most important task of theory to the determination of business and competition. Here, the RBV is understood involve the deployment of resources in such a way as to create tangible and non-tangible assets which lead to competitive advantage. One important benefit is to encourage an improved use of current resources, arguably in different combinations, to prevent under-utilisation and enhance competitive advantage. Embracing Lipmann and Rumelt's (1982) and Barney's (1986a) work, they add that whilst firms may enhance the size, shape and deployment of their resource-base, this activity may be the manifestation of both "purposeful strategic behaviour and stochastic processes" (1994:177). This offers the possibility, at least theoretically, that in spite of underestimating the need to manage resources strategically, organisations' resources find productive

uses, in an emergent manner similar to that suggested by Amit and Schoemaker (1989) above.

Synthesis of Managing Resources

The leverage of core competencies has been articulated as an effective basis for a strategy to attain a sustainable competitive advantage, and provides an important underpinning of the resource-based view.

However, for this to be the case, resources need to be managed since, otherwise, they will not be exploited in the most effective way. Imperative in the management of resources are systematic approaches to organisational learning, the incorporation of resources into routines, the storage and diffusion of competencies, and the renewal and sustenance of competencies.

More fundamentally, and absent from the RBV literature, is evidence which supports the notion that the management of resources should obtain equal precedence to that of managing products and processes. If strategic managers do not perceive a high importance with respect to the management of resources which contribute to products and processes, there is the possibility that resources may go under-utilised. This absence in the literature leads to the fourth research question:

RESEARCH QUESTION 4

Do managers recognise the importance of resource management?

All of these issues are, however, aided or encumbered by the way in which managers identify and classify resources. Since everything within an organisation could be considered a resource, a resource-based view could be considered a free-for-all analysis of anything which is suspected to yield a sustainable competitive advantage. Several techniques exist for the classification of resources, these being the next subject of attention.

4.3.5 CLASSIFYING RESOURCES

Without a clear framework for classification, the resource-based view of the firm is rendered merely tautologous. After all, everything in an organisation is a resource, be it tangible or otherwise. Should an organisation consider its superior ratio of stapling machines per employee relative to its rivals as a strength or a core competence? It is the former in the strictest sense that one organisation has a greater amount of a resource than the other. It cannot, as will be suggested in this section, be considered to be the latter (a core competence). Whichever way this resource superiority is perceived, it is highly unlikely that it is or would ever be or become a *strategically significant* resource. This subsection examines ways in which the differences between resources can be identified (although this chapter has already briefly introduced two approaches; the product-process matrix approach, and Prahalad and Hamel's (1990) three criteria for core competencies).

Barney (1986a, 1986b, 1991) argues that a linear sequence of criteria can be applied to resources in order to ascertain their strategic significance. Firm resources should therefore be valuable, rare, imperfectly imitable and non-substitutable in order to resist/deflect imitation.

Resources are *valuable* when they can be seen to contribute to the organisation's strategy. In other words, they are strategic in nature, adding value in their deployment. This necessarily implies that the value of a resource is determined by the value placed on the resource according to market conditions (*i.e.* the requirement for the resource and the supply of the resource). Later in this section, the concept of value is addressed further. Next, *rarity* can be accorded to a resource when few, if any, other firms are in possession of it. *Non-substitutability* exists when there is no other strategically equivalent resource available. *Imperfect imitability* describes the way in which resources are difficult to imitate (in contrast to substitution, in which the market forces or introduces an alternative that reduces the value earning potential of a resource). Unique historical conditions such as managerial succession and critical incidents influence the requirement, selection and acquisition of resources.

The framework forwarded by Barney (1991) presented in Figure 4.4 below is an attempt to qualitatively determine the contribution of firm resources to competitive advantage. However, Barney comments that “firms cannot expect to “purchase” sustained competitive advantages on open markets. ... Rather, such advantages must be found in the rare, imperfectly imitable, and non-substitutable resources already controlled by a firm” (1991:117). In stating this, he is conceding that the strategic factor market framework (Barney 1986a) is limited in its explanatory capability with regard to unique firm resources required for successful implementation. This reflects the critical exchanges in Barney (1989a) and Dierickx & Cool (1989b). Secondly, the framework for identifying firm resources above could eliminate the causal ambiguity that allows these very same resources to be a source of sustainable competitive advantage in the first place.

Grant (1991) argues that the RBV as a basis for strategy formulation is inherently more prudent as it is founded on generally stable internal capabilities rather than turbulent and unpredictable environmental forces. The differentiation between resources and capabilities is one which allows a parsimonious approach to undertaking the early stages of the resource analysis:

Resources are inputs into the production process - they are the basic units of analysis. ... But, on their own, few resources are productive. Productive activity requires the cooperation and coordination of teams of resources. A capability is the capacity for a team of resources to perform some task or activity. While resources are the source of a firm’s capabilities, capabilities are the main sources of its competitive advantage (1991:119).

Capabilities are held in group or teams and are then deployed in “regular and predictable patterns of activity” (1991:122) which necessarily require the management of these resources. As a development of Barney’s work (1991), Grant suggests that for resources to generate capabilities durability, transparency, transferability and replicability are requisite traits.

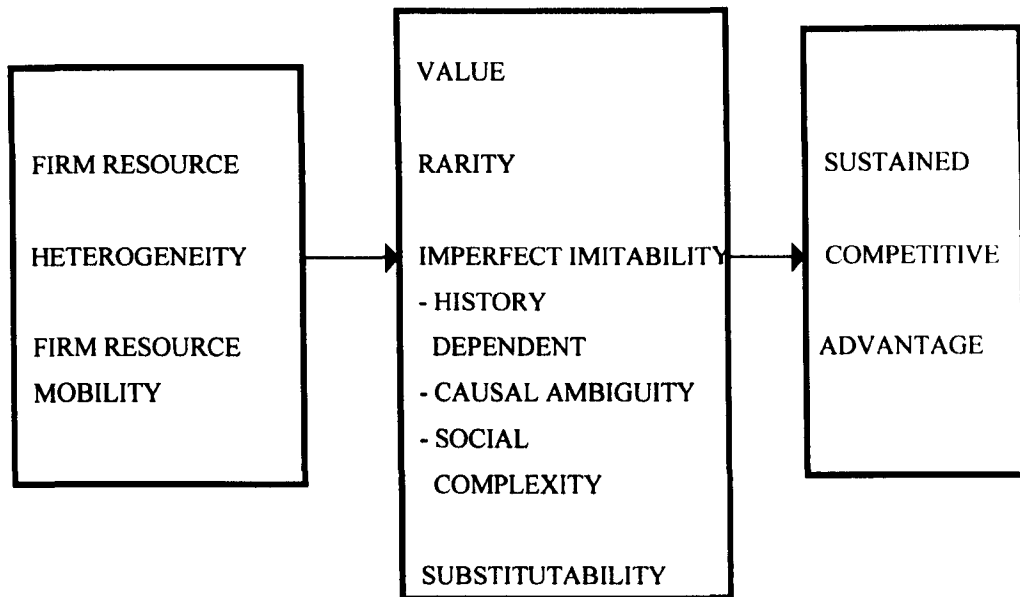


Figure 4.4: Framework of Competitive Advantage

Source: Barney (1991:112)

Durability is a function of the speed at which the resources that are routinised become outdated. Technology may be destroyed in a Schumpeterian fashion (Schumpeter, 1934) while brand loyalty and corporate image may have their value slowly eroded. Equally possible, however, is the opposite scenario. *Transparency* corresponds to the time that elapses before rivals successfully copy a strategy (which subsequently places demands upon resources and routines). Grant (1991) notes two challenges facing the imitator. First, the task of identifying that a rival has a competitive advantage and the way in which it is being attained. Secondly, determining the capabilities that support the strategy. This echoes Lippman and Rumelt’s uncertain imitability (1982), which he succinctly depicts as “the greater the uncertainty within a market over how successful companies ‘do it’, the more inhibited are potential entrants, and the higher the level of profit that established firms can maintain within that market” (Grant 1991:125). *Transferability* refers to the efforts made by rivals to acquire the resources necessary to imitate a strategy. Similarly, Collis and Montgomery (1995) argue that the most strategically significant resources are those which are inimitable and durable and cannot be substituted or appropriated.

Amit and Schoemaker (1993) portray capabilities as:

[A] firm's capacity to deploy *Resources*, usually in combination, using organisational processes, to effect the desired end. They are information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm's *Resources* they can abstractly be thought of as 'intermediate goods' generated by the firm to provide enhanced productivity of its *Resources*, as well as strategic flexibility and protection for its final product or service. Unlike *Resources*, *Capabilities* are based on developing, carrying and exchanging information through the firm's human capital (1993:35 original emphasis).

When a firm's resources and capabilities contribute to competitive advantage and are "difficult to trade and imitate, scarce, appropriable and specialised", Amit and Schoemaker (1993:37) call them 'strategic assets'. Examples of such strategic assets cited by the authors include faster R&D processes, brands, channel and supply management, service structure and reputation.

Both implicit and explicit in the RBV is the connotation that all resources are positive and beneficial in their nature, irrespective of their strategic significance. The belief, thus far, is of the absence of externalities arising from the development and deployment of such resource based capabilities in the search for sustainable competitive advantage. One writer that does however offer a useful exploration of these 'side effects' is Leonard-Barton (1992). Core rigidities are the antithesis of core capability, defining the latter as "the knowledge set that distinguishes and provides a competitive advantage." (1992:113) As "an interrelated, interdependent knowledge system", core capabilities consist (in part or entirely of) four elements, the skills and knowledge base, technical systems, managerial systems, and values and norms (Schein, 1988; 1991). This latter element is seen to permeate the former three. Knowledge and skills are seen to include idiosyncratic throughput and design knowledge, tacit knowledge that is synergistic at firm level, and formal knowledge development and control systems which add to knowledge stocks. Values and norms influence the selection, installation and dissemination of knowledge such that the four elements are representation of the organisation's past history and accomplishments. Capabilities therefore become heterogeneous

and highly inimitable. Miyazaki (1991) defines core technology and competence as the underlying technologies which span several businesses and products. Competencies are said to differ from capabilities since the former enable the latter to be merged and exploited in a ‘radical’ manner.

Prahalad (1993) elaborates further on the concept of core competence. In what he calls the process of ‘creative bundling’ organisations fuse together “multiple technologies and customer knowledge and intuition” (1993:45). It is not simply technological distinctiveness that constitutes a core competence but rather the ability of firms to contextualise such technologies within the uses that they may be put to. Technology may exist in stand-alone form, in which the contribution of functional departments is limited and all input knowledge is explicitly codifiable. Similar to Miyazaki (1991), Prahalad (1993) distinguishes between competence and capability but demotes the importance of capabilities further. Capabilities, he suggests, are the equivalent of order-qualifying criteria (*i.e.* no advantage is gained) whereas competencies are order-winning criteria that generate an advantage.

The process of harmonisation that is pivotal to the cultivation of competencies is further developed with the representation of competence as being the sum of *Technology x Governance Process x Collective Learning*. If an organisation adopts a parochial SBU approach, it will fail to generate any substantial proficiency in the Governance Process which represents the “quality of relationships across functions, across business units” (1993:45). Consequently, despite a high competence in technology and learning, the organisation will always score low according to the formula due to the deficit in the ability to coordinate, develop, promote and encourage inter-function collaboration.

Tampoe (1994) defines a competence as “a technical or management subsystem which integrates diverse technologies, processes, resources and know-how to deliver products and services which confer sustainable and unique competitive advantage and added value to an organization” (1994:69). In being central to organisations, Tampoe outlines several criteria which all competencies should bear:

- Essential to corporate survival in the long and short term
- Invisible to competitors
- Difficult to imitate
- Unique to the corporation
- A mix of skills, resources and processes
- A capability which the organisation can sustain over time
- Greater than the competence of an individual
- Essential to the development of core products and eventually to end products
- Essential to the implementation of the strategic vision of the corporation
- Essential to the strategic decisions of the corporation, *i.e.* on diversification, downsizing, rationalizing, making alliances, and joint ventures
- Marketable and commercially valuable
- Few in number (1994:68-69)

Competence analysis is hampered by the failure of managers to understand or acknowledge (by accident or design) the competencies which exist. Thus, Tampeo (1994) suggest that to work backwards from the product or service and henceforth to the 'sub-assemblies' from which the product and service is derived provides a suitable approach. In this way, non-core products do not dilute or mislead the analysis. This reflects both an activity-based analysis approach (Herbane and Rouse 2000).

In development of his earlier work (Barney 1991), Barney offers the VRIO framework to operationalise the notions of resource heterogeneity and immobility and to evaluate the strategic importance of resources according to a series of questions (Barney, 1997; Herbane and Rouse, 2000):

- The Question of Value – Do an organisation's resources enable it to create value?
- The Question of Rarity – How many other organisations within the industry already possess the valuable resources?
- The Question of Inimitability – Can firms without a resource or capability obtain it, and do so without facing a cost disadvantage?

- The Question of Organisation – Is a firm organised to exploit the full competitive potential of its resources and capabilities?

The VRIO framework is designed to facilitate an evaluation of the *strategically significant* resources that should be used to underpin a strategy to develop a *sustainable* competitive advantage. In essence it is a series of questions (which should be asked in sequence) about resources which we have identified as potential capabilities. The *degree* to which a resource meets each of these criteria in turn will determine the strategic significance of the resource as the foundation of a strategy. Herbane and Rouse (2000) suggest that three categories of resources exist:

- Skill sets based upon valuable resources – which confer competitive parity since they are not rare and can be imitated
- Capabilities based upon valuable and rare resources – which confer a competitive advantage but can still be imitated
- Core competencies based upon valuable, rare, inimitable and organised resources – which confer a sustainable competitive advantage

These are portrayed in Figure 4.5.

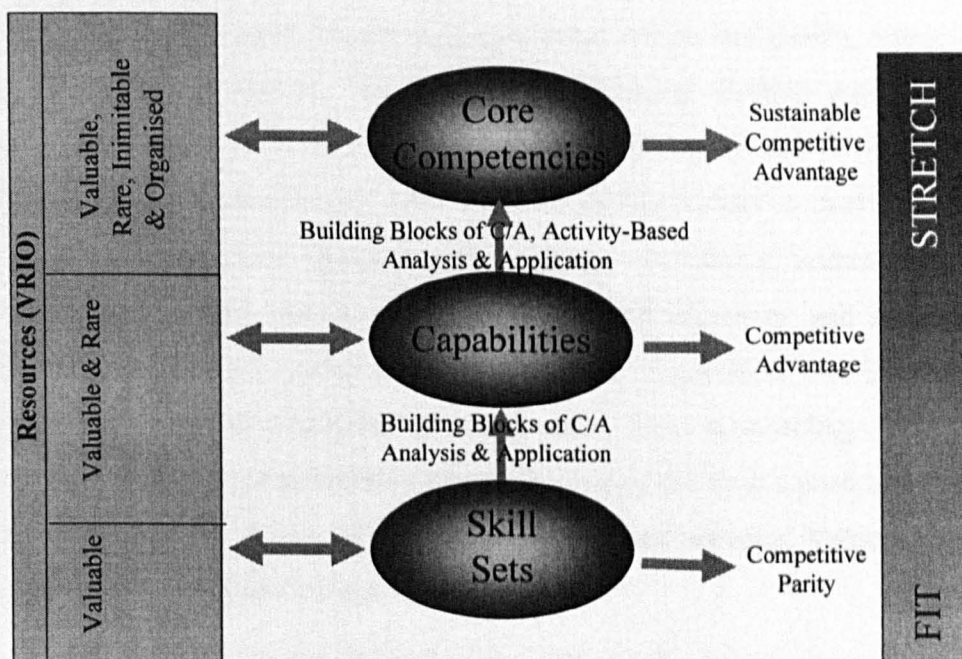


Figure 4.5: VRIO Applied to Resources

Source: (Herbane and Rouse, 2000:261)

Ettlie and Ward (1997) have suggested that an application of VRIO criteria explains the sustainable competitive advantage achieved by NBIC's mass customisation capability in Japan. However, this along with other studies that have applied the VRIO criteria (see for example Herbane and Rouse, 2000) are largely anecdotal. Furthermore, such expositions, whilst intuitively attractive, may have candidature for the criticism of Williamson who suggests "show me a success story and I will show you (uncover) a core competence or show me a failure and I will show you (uncover) a missing competence" (1999: 1093-1094). Elements of the VRIO criteria have also found their way into strategy consulting (Coyne, Hall and Clifford, 1997) with value and rarity argued to be hallmarks of a core competence within McKinsey's strategy division.

Snyder and Ebeling (1992) present a managerial perspective on the identification and exploitation of core competencies. When, by virtue of their totality, activities outperform rival's equivalents, the term 'core competency' may be used to denote the possession of a unique value-adding talent possessed by the firm, not simply carried out by it. In what they suggest is a disturbing tendency they point to the attribution of competence to such outcomes as reputation and quality, when in fact they should be viewed as "the result of performing discrete activities well" (1992:27). Firms should at each stage in the production and provision cycle, determine the sources of added value and build relative share in them, rather than taking a portfolio based approach which focuses on relative market share. This latter approach could lead to erroneous divestment decisions, and is illustrated with the case of a firm which produces a number of goods, of one is an electric carving knife, which is labelled as a dog under BCG terminology. Divestment would in fact hamper the development of the rest of the firm's product because it would impede scale economies and experience based learning. Value-added may be measured in a number of ways:

Value added is often defined as the selling price less the cost of all purchased inputs. Under this definition, when selling price cannot be determined because a market for intermediate goods does not exist, the total cost of the activity is used as a proxy for value added, with profit shown as a separate value element. But cost is not always the most accurate measure of value added. Consider a quality control function that saves millions of dollars without

incurring much cost. In this case, value added represents the cost of *not* performing the activity (Snyder and Ebeling, 1992:32 original emphasis).

The very way in which the firm is viewed as an activity system instead of a product portfolio determines and assists in the development of competitive advantage in multiple product-market domains. As they note, “had Honda determined that its core competency was in supplying motorcycles ... lawn mower manufacturers ... might be a lot better off today” (1992:29). The management of competencies involves strict definition and agreement on the sources of competence, and the ability to extend competencies within and beyond the boundaries of the organisation. Strict definition of core competence in terms of quantity and source provides a focus for managerial action. Consensus building between senior managers limits functional parochialism and may be achieved through activity based benchmarking, asset and employee distribution analysis, and ‘what if’ scenario building. Snyder and Ebeling (1992) conclude that the role of senior management should centre upon the identification of suitable competencies and to prompt employees to coalesce around them.

Synthesis of Classifying Resources

For a strategy to be effective, it must be underpinned by resources which lead to a sustainable competitive advantage. If resources are used which are easy to imitate or are such that all rivals have those resources in similar (or equal) proportion and quality little, if any, advantage will be gained. Thus, the time, cost and effort involved in planning for and putting into place a new strategy will yield little return.

Prior to any consideration of which factors affect the strategic significance of resources, a problem arises with the differing terms used by RBV writers.⁵² Snow and Hrebiniak (1980), Prahalad and Hamel (1990), Miyazaki (1991), Tampoe (1994) and Snyder and Ebeling (1993) use the term core competency to denote the most strategic significant resource, whereas Grant (1991), Leonard-Barton (1992) and Amit and Shoemaker (1993) make reference solely to ‘capabilities’. Only

⁵² It could be suggested that writers are vying for their own term to become prototypical within the literature, rather than any discernible differentiation between the terms.

Hamel (1992) and Herbane and Rouse (2000) make reference to both capabilities and competencies, yet the perception differs, with the former viewing a capability as merely an order qualifying criteria and the latter classifying valuable *and* rare resources as ‘capabilities’.

However, the ambiguities, differences and disagreements surrounding classifications of resources within the literature should generate some concern. Is the eclecticism of the terminology a necessary attribute of an emerging body of theory and do managers make distinctions in the terminology of resources and the hierarchy of resources in the same manner as in the literature?

Despite the variations in the terminology closer inspection reveals that many of the preceding works considered in this section echo the VRIO criteria forwarded by Barney (1997). These similarities are shown in Table 4.3 (overleaf), where the similarities between the VRIO (value, rarity, inimitability and organisation) criteria and other works are highlighted. Furthermore it suggests that VRIO sufficiently embraces the characteristics for the strategic significance of resources held more widely in the RBV literature.

Accordingly, it is suggested that VRIO offers the simplest yet effective way to distinguish between resources. However, a problem remains, that of whether managers perceive the strategic significance of resources in the same way as theorists (albeit arising from practical observation). This combined with the differing terminologies for resources (core competency, competence, capability and strength) stimulate the fifth research question:

RESEARCH QUESTION 5

Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?

Source	Factors	V	R	I	O
Barney (1991)	Valuable	●			
	Rare		●		
	Non-substitutable			●	
	Imperfect imitability			●	
Grant (1991)	Routinisation				●
	Imperfect imitability			●	
	Non-substitutability			●	
Miyazaki (1991)	Affect multiple businesses				●
	Based on know-how		●		
	Change generating capacity				●
Leonard-Barton (1992)	Skills and knowledge	●			
	Technical systems	●			
	Management systems	●			
	Values and norms				●
Amit and Schoemaker (1993)	Low tradeability		●		
	Limited substitutability		●		
	Specialised assets			●	
	Inimitability			●	
Prahalad and Hamel (1993)	Ability to add value	●			
	Potential for diversification				●
	Inimitability			●	
Snyder and Ebeling (1993)	Unique			●	
	Value adding	●			
Tampoe (1994)	Essential to long and short term survival				●
	Invisible to competitors			●	
	Difficult to imitate			●	
	Unique to the corporation			●	
	A mix of skills, resources and processes		●		
	A sustainable capability		●		
	Greater than competence of individuals				●
	Essential to core and end products	●			
	Essential to the strategic vision				●
	Essential to strategic decisions				●
	Marketable and commercially valuable	●			
	Few in number		●		
Collis and Montgomery (1995)	Inimitability			●	
	Durability				●
	Substitutability		●		
	Appropriability		●		
Coyne, Clifford & Hall (1997)	Value	●			
	Rarity		●		

Table 4.3: 'VRIO' Reflected in the Wider Body of Literature.

4.4. BALANCING PERSPECTIVES

4.4.1 RBV AND INDUSTRIAL ORGANISATION

Having disaggregated the resource-based view of the firm into its constituent elements, it is now appropriate to return to a comparison between the RBV and Industrial Organisation, (IO) the preceding dominant paradigm in strategic management. Following this, the chapter concludes with an exposition of the research questions that have been developed.

Lado, Boyd and Wright (1992) move away from the IO view that external elements (determining the firm's position relative to rivals in an industry) are the deciding factor in the competitive advantage construct. The failure of IO to acknowledge "limits on rationality, technological uncertainty, constraints on factor mobility...and dishonest or foolish behaviour of the firm's key actors" (1992:79) furthers the need to adopt a new perspective, in this case what they call "strategic selection". Unlike strategic *choice* which is limited in terms of alternative, strategic *selection*, involves the creation and adoption of opportunities that are internally or externally generated leading to a combination of resources that are firm specific and tacit *i.e.* "non-codifiable and non-explicitly replicable" (1992:82). The linkages between information and asset flows between managerial, resource, transformation and output based competencies should mitigate against the effects of imitation and protect competitive advantage where it exists.

Managerial competencies are the provision of an ordered strategic direction and the ability to assimilate information that identifies problems and experiences to reveal strategic opportunities. Though it would appear that this element is the basis of any cognitive model, Lado *et al.*, (1992) dedicate little of their discussion to this. Resource-based competencies are considered to be "the core human and non-human assets both tangible and intangible, that allow the firm to outperform rival firms over a sustained period of time" (1992:84). For these competencies to remain effective and resistant to imitation, they must appear ambiguous to outsiders. However, their discussion of Schumpeter's notion of 'creative destruction' removes the emphasis on achieving adequate time-lags in relation to competitors 'snapping at their heels'. Notwithstanding, they usefully emphasise

the potency of a ‘sidestep’ strategy by the use of resources in ways that have not previously been considered by the industry and its major players. The well documented strategies of Canon versus Xerox and Japanese car producers vs Detroit are cases in point (Prahalad and Hamel, 1990; Womack *et al.*, 1990). Innovation and culture provide the basis of transformation-based competencies by adapting existing technologies, products and processes within a culture that is “valuable, rare and difficult to imitate” (Lado *et al.*, 1992:86).

The RBV is in contradistinction to the IO view that learning, labour/capital substitution, and economies of scale and scope secure competitive advantage, arguing that the ability of competitors to harness the same benefits effectively nullifies any potential competitive advantage. Consequently, emphasis must be placed on the discovery and use of the unique managerial and cultural facets of the organisation to catalyse the evolution of these competencies. The creation of buyer value, not in just in the physical attributes of the product but its intangible components such as quality, service, brand name and reputation. These may allow the firm to command price premiums in the positive phase of the Schumpeterian cycle (*i.e* prior to imitation) and allow the firm to construct the basis for future buyer loyalty.

Lado *et al.*'s (1992) competency-based model provides a basis upon which the attainment of competitive advantage utilises the individual traits of an organisation in contrast to the misleading path along which IO has led much of modern strategic thinking. They conclude that “firms should continually invest in skills and capabilities that are causally ambiguous and are not easily tradeable in the market for strategic factors” (1992:88).

The differing analytical perspectives taken by external analysts and managers may point to the persistence and emergence respectively of the industry analysis approach and the resource based approach. Amit and Schoemaker (1993) call the former “models [which] may, *ex post*, point to a limited set of resources and capabilities that explain some of the firm’s past performance” (1993: 33) although it is of limited use in providing managers with approaches to identifying future sources of competitive advantage and revenue streams. Industry analysis fails to

consider idiosyncratic factors which increase sustainable asymmetry which may be influenced by “mobility barriers, organisational inertia, heterogenous expectations, [and] failures in resource markets” (1993:34).

The RBV is said by Amit and Schoemaker to “focus on factor, imperfections and highlights the heterogeneity of firms, their varying degrees of specialisation, and the limited transferability of corporate resources” (1993:35), whereas:

Industry analysis excels in assessing the profit potential of various industry participants by focusing on the external competitive forces and barriers that prevail in different product/market segments. Further, it is essential in deriving a set of Strategic Industry Factors. It is incomplete, however, in that it treats the firm largely as a black box (i.e., a faceless, unitary actor), while de-emphasizing the role of managerial discretion. Assuming high rationality and substitutability of executive talent, industry analysis logically deduces the end-game consequences in participants’ initial condition [sic] (1993:42).

However, although IO and RBV are presented as antagonistic theories in relation to the source and sustenance of a competitive advantage, the RBV may be presented as a complementary perspective which may illuminate organisational analysis and strategy, particularly in the area of diversification. Since strategy concerns itself with the organisation, the environment and their interface, Mahoney and Pandian (1992) espouse the merits of the RBV in conjunction with IO and organisational economics approaches:

While a morality lay [sic] of the virtuous resource-based theorists doing battle against the misguided strategic group theorists may provide a crusading faith for the young and naive, a more balanced view, in our estimation, is needed. Intellectual isolating mechanisms which artificially reduce the trading of ideas are not best for the strategy field as a whole (1992:374).

This is a clearly compelling exigency for further research and raises the possibility that managers may not perceive competitive advantage as dependent on residence (IO) or resources (RBV) alone. This, as the reader will recall, is the principal research question posed for this study (Chapter 3).

Strategy research provides an interface between theory and practitioner application. The RBV perspective acknowledges firm heterogeneity as a

cornerstone component of competitive advantage and this is an aspect of the strategic audit that organisational managers can pursue with rigour and relevance. The ‘black box’, homogenous firm approach (previously noted as a ‘paradox’ by Mahoney and Pandian 1993) detaches firm-specific advantages from strategy formulation. Whilst providing undoubtedly useful insights into other aspects of competition, it is the RBV which concentrates on the internal, inimitable and core facets of the organisations. This view has received substantially less emphasis in the economics/strategy literature and the recent surge in RBV writing reflects this much needed expansion.

Although many distinctions between IO and RBV has been advanced, Connor (1991) suggests that the portrayal of Industrial Organisation as the antithetical forefather of the resource-based view obscures several shared assumptions, including:

- the firm as a combiner of inputs
- external forces determining the value of activities
- external forces determining the success of strategies
- the possibility of persistent above-normal returns
- the importance of efficiency and size
- the role of asset specificity in governing economic exchanges.

Thus, in a manner similar to Mahoney and Pandian (1992), the RBV may perhaps not offer a replacement to IO in explaining competitive advantage, but offer a new (albeit not mature) theory of the firm.

Teece, Pisano and Shuen (1994) argue that there are three approaches to developing competitive advantage for organisation. The first two approaches are the labelled ‘competitive forces’ and ‘strategic conflict’, which view competitive advantages the result of “privileged product market position” (1994:1). The third, labelled the ‘efficiency approach’ generates competitive advantage as a result of firm-based advantages. Within this, the RBV perspective is most prominent. From this, they propose an extension called the ‘capabilities approach’.

Teece *at al.*, (1994) point out that the view of competitive advantage which stems from firm level capabilities was given consideration in early seminal strategy texts

(Learned *et al.*, 1965) but suggest that “unfortunately, the academic literature stalled for a couple of decades” (1994:9) due to the rise to prominence of analytical techniques based on IO economics (competitive forces) which appealed in terms of their apparent rigour and scientific content. Teece *et al.*, (1994) highlight how a view of residence or resources could affect an entry strategy decision. A residence-based approach would entail the selection of an industry based on its profitability, an entry strategy based on “conjectures about competitors’ rational strategies” (1994:9) and a subsequent attempt to acquire the necessary resources for entry. In contrast, a resource-based approach to market entry would commence with an analysis of a firm’s unique resources, a choice of an industry based on where the resource would generate the best performance and entry based on linking the resources in current markets to resources in the future (new) market.

It is the multiple application, preservation, linking and development of firm specific assets in the RBV that both distinguishes it from the IO approach wherein all incumbent firms could use assets in a not dissimilar way. Barney (1991) has also noted some of the apparent differences between the I/O and RBV perspectives:

These [IO] researchers seldom argue that firms do not vary in terms of their unique histories, but rather that these unique histories are not relevant to the understanding of a firm’s performance (Porter, 1980). The resource-based view of competitive advantage developed here relaxes this assumption. Indeed, this approach asserts that not only are firms intrinsically historical and social entities, but that their ability to acquire and exploit some resources depends on their place in space and time (1991:107).

However, such differences may not be as stark as first suggested. Here, it is acknowledged that the RBV approach is not antithetical to the IO perspective but centred upon a different *focal* point. The former may generate insights into sustainable competitive traits which may then be tracked in an industrial and competitive context. Indeed, structural and relational issues may determine the way and rate in which firms acquire resources in factor markets.

4.4.2 IMPLICATIONS: RESIDENCE OR RESOURCES?

The impact of industry and the macro-environment upon an organisation's strategies cannot be doubted. However, these sources of strategic influence do not capture the entire dynamics of competitive advantage. They are simply one set of factors which organisations should take into account when attempting to devise strategies at a corporate, business-unit or functional level. *Residence* within an industry with beneficial structural and competitive dynamics characteristics has long been held to explain differences in performance through the persistence of macro-economic theory, industry theory and strategic group theory. Many problems still remain with such a view as the sole determinant of competitive advantage. Industry structure manipulation, market share priorities, and entry barrier augmentation are implicit strategies when such a perspective is relied upon within a decision making framework. Despite the attempts of many organisations to protect and enhance their performance and presence in their markets, there are enumerate examples of organisations which have entered, challenged existing incumbent, and succeeded in markets in spite of the strategies of incumbents to protect their residence.

A *resource*-based view of competitive advantage is offered as both a rival and a complement to the externally derived view of competitive advantage. Resources are the basic building blocks of any organisations activity. It is the manner in which, and the differences between, how organisations deploy their resources which may also explain the sources of sustainable competitive advantage.

Fundamentally, although the debate outlined in this section has tended to focus upon an 'either-or' choice between two competing schools of thought, there are indications from theorists that the two approaches are not and should not be considered to be mutually exclusive. Indeed, this section has identified concessions in the literature where similarity and complementarity between the two bodies of literature have been suggested. This has raised the possibility that in addressing the principal research question, neither residence or resources will prevail alone in managers' perceptions of competitive advantage.

A long tradition of research in the macro-economics field has consolidated the pertinence and prowess of IO within strategic management. A resource-based view of the firm has yet to move beyond anecdotal, yet intensely appealing explanations. It should not be dismissed out of hand. Rather, its largely theoretical status makes it suitable for a practical enquiry of this kind.

4.5. SUMMARY

In addition to the principal research question⁵³, four addition research questions have been developed from the literature are based on the propositions of the resource-based view:

Research question 2: Do managers perceive resource accumulation to be part of the RBV construct?

Research question 3: Do managers associate portfolios of resources with product platforms, families and technology convergence?

Research question 4: Do managers recognise the importance of resource management?

Research question 5: Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately

Having developed the five research questions, the next chapter addresses the methodological issues pertaining to the study.

⁵³ “Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?”

Chapter 5 – Methodology

5.1 INTRODUCTION

Theories of competitive advantage have often been presented as antagonists – alternatives, counterpoints and contradictions. Are theories such as IO and RBV merely protagonists posted in the foothills of strategic management theory? Moreover, does the protagonism or antagonism of these theories reflect the views of those charged with taking strategic decisions? This latter question is central to this study. This chapter explains the research strategy chosen and deployed by the researcher in response to the research questions developed in the preceding chapters. It begins by examining the fundamentals of social-science research and how the research process is portrayed. In continuation, it examines some of the controversies which have accompanied the research activity within the field of study – strategic management, and how these debates have influenced the research design in this study. Having reiterated the research problem and questions, Section three deals with the practical matters of the research design, sample, sampling, the research instrument and response rate targets. For this study, the sample frame has taken the form of a database devised and developed specifically by the researcher.

Section four details the process of research instrument development – from prototyping stages, through to pre-testing and final deployment. Focus groups and a modified ‘Delphi’ approach to pre-testing are introduced to the study in order to address issues of validity and reliability. Finally, the chapter details the systematic deployment of the research instrument, summarises the research design and sets down criteria for its evaluation following the analysis and discussion in the following chapters.

5.2 THE RESEARCH PROCESS

Research has been defined as “the process of systematically obtaining accurate answers to significant and pertinent questions by use of the scientific method of gathering and interpreting information” (Clover and Balsley 1979:1). The inquiry that is central to any research took its modern form with the emergence of the physical sciences which sought to establish the *truth* of the physical world. Replaced was the authority of religion and philosophy in explaining ‘truth’ with the application of science, whose authority was derived from interpretation based on systematic methods, accuracy and significance.

Truth, in itself, is highly polemic in terms of its realism and constancy. If the truth is believed to reside in the real world, can we be sure that the real world is that which we observe in the research inquiry? Instead, the inquiry may only capture a representative realism, whereby “all perception is a result of inner representations of the external world” (Warburton, 1999:101). The result is that indirect observation may present the only course for the researcher, bounded by the limits of their cognition and resources. Secondly, the constancy of truth has been challenged by falsificationism (Popper, 1959), in which it is suggested that only through a process of conjecture and its subsequent refutation can theory develop (albeit in an imperfectly true and potentially falsifiable manner). Implicit in this view is that the pace of theoretical development is constrained by the desire, ability and speed of the researcher in seeking to refute extant theory.⁵⁴ In contrast, the well known treatise of Kuhn (1975) suggests that paradigm shifts punctuate the history of scientific progression and challenge preceding assumptions, methods and interpretations.

The social sciences take as their emphasis the study of individuals and their collective forms within environments.⁵⁵ In so doing, the research inquiry must not

⁵⁴ Warburton (1999) notes the long delay in the proven falsification of Newton’s theories of gravity and their final acceptance as a rejection of the theory which it sought to reject. Similarly, Lakatos (1968) found that the scientist Prout had (in 1815) proposed a hypothesis which he knew, *a priori*, could be refuted for reasons *and* with methods with which he was already familiar.

⁵⁵ This should not suggest that physical sciences do not have a social dimension. Their outcomes are interpreted and implemented (or otherwise) in a social context. For instance, research in the 1950s and 1960s suggesting the negative health effects of tobacco could be claimed as systematic, pertinent and significant, and could have led to changed human behaviour and organisational policy. This case suggests that society, and not only science, is often unwilling to change in the light of scientific discovery.

Each of these stages are examined explicitly or implicitly in the following sections. First, however, we turn to a discussion of methodological traditions within the field of strategic management and its implications for this study.

5.2.1 RESEARCH TRADITIONS IN STRATEGIC MANAGEMENT

As a piece of doctoral research in the field of strategic management it is important not only to consider broad social science based methodological issues, but also the considerable methodological debate taking place among active scholars in the discipline.

Research traditions in strategic management have echoed the schism in strategic management as a discipline. Chapter 2 addressed the deliberate-emergent debate and Chapter 4 identified the two competing views of competitive advantage, based on heterogeneity or homogeneity. These have, in part, determined how and why strategy research is undertaken. For instance, those concerned with strategy content and process (Chandler, 1962, Mintzberg, 1973, Harrigan, 1983) have used case-based research. Case study-based research, whilst forming the basis of normative theories, has been (wrongly) labelled as anecdotal and as lacking in generalisability.⁵⁶

Equally, statistical research has been perceived to lack a grounded organisational context and to be positivistic in its orientation. The case study embraces the selection of subjects of study which would be considered 'outliers', on the basis of their uniqueness, rarity, interest or manifestation of best practice. A lack of similarity is often sought. Harrigan (1983) includes these within 'fine grained methodologies' in which the researcher focuses upon issues which influence and describe the complexity of strategy formulation.

Whilst lacking in the traits such as the ability to test hypotheses, generalisability and statistical summarisation, case studies facilitate "meticulous attentions [sic] to detail, relevance to business practice, and access to multiple viewpoints" (Harrigan, 1983:399).

⁵⁶ Despite this, the pedagogical narrative that is the case study is widely used in the teaching of the field at both undergraduate and postgraduate level.

Those concerned with the observation of general patterns, or more specifically, the generalisability of results have used statistical studies. The statistical study views outliers as discrepancies which limit the ability of the research to generalise about the population in which the sample resides. Thomas and Pruett (1993:5) suggest that “many analysts wrestle endlessly with such discrepancies under the assumption that failing to find perfect convergence indicates a flaw in its design or an error in the analyses”. Hayek noted that “one of the reasons why economists are increasingly apt to forget about the constant changes which make up the whole economic picture is probably their growing preoccupation with statistical aggregates, which show a very much greater stability than the movements of the detail” (1945:523-524). Harrigan (1983) regards statistical studies as ‘coarse grained methodologies’ within her continuum of research methods. *In extremis*, many studies have relied upon financial databases such as PIMS and COMPUSTAT from which relationships between contingency variables could be studied (e.g. Galbraith and Schendel, 1983; Hambrick, 1983; Miller and Friesen, 1986).

Despite the use of a coarse grain methodology in this study, the research strategy is best achieved through the selection of a single industry rather than a multi industry ambit. Chapter 4 showed that both theories of competitive advantage in this study (resources and residence) either explicitly or implicitly recognise that industries offer specific conditions and circumstances that are not (or less) available to firms outside industry boundaries. Furthermore, the notion of industry recipes and critical success factors (Chapters 3 and 4), imperfectly heterogenous decision making across industry participants (Huff, 1982), shared factor markets (Chapter 4) and organisational cultures (Rouse and Daellenbach, 1999) evidence the importance of taking into account and isolating industry as a independent variable in the study. Furthermore, in relation to the research stimulus and questions particular to this study, Chapter 2 has suggested that industry conditions may affect the perceptions of managers and therefore the decisions and actions that are subsequently taken.

Clearly, a weakness of a single industry study is the inability to capture and reflect the variety of linkages and diversification across and between industries. For

instance, diversification from or into aerospace can be observed in relation to the automotive industry, as can linkages with financial services and military hardware (Chapter 2). However, since the study is concerned with managers' perceptions which may be influenced by industry events and conditions, an 'interpretative context' is sought to facilitate the subsequent analysis of data and clarity of meaning (if this is found to transpire). Nevertheless, reservations about large-sample statistical studies remain.

This study adopts a coarse methodology in its application of factor analysis to questionnaire derived primary data. This is dealt with in later sections, but it is worthy of note that the data analysis method chosen can be used without prejudice to outliers and may lead to classifications which require narrative for interpretation.

Bettis (1991) calls for the release of strategic management research from "the straightjacket". The methodologically restrictive garment to which this editorial refers comprises of two parts; first, the fact that paradigms (perceptive constructs), frameworks (procedural guides) and models (microcosms of behaviour, movement, time and relation) are largely ethnocentric and antiquated. Secondly, he notes a strong bias (or as to paraphrase Mintzberg, a bias toward objectivity) in favour of "large sample multivariate statistical studies" (1991:316). He adds that he is "sometimes left with the impression that a kind of Gresham's law is at work. Is the bad money of statistical methodology driving out the good money of strategic substance?" (1991:26).

Summer *et al.*, (1990) assign the role of strategic management to the amelioration of "survival and growth of those organisations that through their outputs have distinctive competencies, compared to other competing organisations, to produce outputs that serve society" (1990:364). However, as in many cases the unit of analysis is the organisation in its operating environment they argue that "those in the field cannot easily assume that "x causes y" *ceteris paribus*, for the simple reason that in the world of action, all other variables are not equal" (1990:363). This sentiment was articulated earlier by Mintzberg (1979):

Organisations intermingle a great many elements in their functioning. Researchers who focus on two variables at a time - who catch what someone has called the “economists' plague”; holding all other things constant - seem to cloud issues as often as they clarify them. ... We live in a world of dynamic systems. (A colleague of mine claims that everything in the world correlates with everything else at 0.3) (1979:588).

The push toward quantitative research is clearly evidenced in prevalent strategic management journals whilst it should be recognised that many of the discipline's classical writing have been derived from longitudinal methodologies, particularly the work of Chandler (1963), Mintzberg (1973), Porter (1980) and more recently, Prahalad and Hamel (1990). In the consideration of sample size, for the sake of validity and generalisability, many previous studies in the field have relied on Fortune 500 or Times 1000 rankings as sample frames, yet arguably, strategies ought to be firm specific and non-imitable. Mintzberg asks “What, for example, is wrong with samples of one? Why should researchers have to apologize for them?” (1979:583). His reply is as follows:

Given that we have one hundred people each prepared to do a year of research, we should ask ourselves whether we are better off to have to study 100 organisations, giving us superficial data on ten thousand, or each study one, giving us in-depth data on one hundred. The choice obviously depends on what is to be studied. But it should not preclude the small sample, which has often proved superior. (1979:584)

Why this push towards methodologies that may not yield the insights required for practitioner use? Bettis (1991) connotes the relative security of quantification in asserting that “there is a tendency to do second-class economics research instead of using economics to do first-class strategic management research” (1991:316). Mintzberg adds that “the more deeply we probe into this field of organisations, the more complex we find it to be, and the more we need to fall back on so-called exploratory, as opposed to, “rigorous”, research methodologies” (1979:584). In this respect, the inverse function of exploration and rigour can be turned positive with a suitably planned and executed methodology. As with strategic management, the research process requires the logical, feasible and appropriate coupling of planning and implementation.

It is in the light of the methodological criticisms at a disciplinary level that we turn to the consideration of the research strategy relevant to this study. First, however, it is important to reiterate the research questions of this study (since the research strategy will be necessarily informed by their purpose and nature) and make a minor point about the word 'perception'.

5.2.2 RESEARCH QUESTIONS/PROBLEM DEFINITION

Following the research stimulus indicated in Chapter 2, the following chapters developed the principal research question, supplemented by four further research questions devised in Chapter 4:

Research question 1 (Principal research question): *Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?*

Research question 2: *Do managers perceive resource accumulation to be part of the RBV construct?*

Research question 3: *Do managers associate portfolios of resources with product platforms, families and technology convergence?*

Research question 4: *Do managers recognise the importance of resource management?*

Research question 5: *Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately*

In their broadest sense these questions seek to establish whether managers perceive competitive advantage to be based on advantage through residence, advantage through resources or a combination thereof.⁵⁷ The precise examination of these research questions is considered prior to the empirical analysis of data in Chapter 7.

⁵⁷ This represent stages four and five of the Sekaran (1992) process.

5.2.3 ATTITUDES AND PERCEPTIONS

Throughout this and the preceding chapters, the term perception has been used in its ‘lay’ meaning of the individual’s interpretation of an external stimulus or sensory information. These interpretations, it is posited, may influence behaviour such as strategic decision making (Chapter 2). However, it is now appropriate to consider the concept of perception alongside that of attitudes since the latter has also been suggested to influence behaviour.⁵⁸ The attitude-behaviour dyad can be seen in Allport’s definition of an attitude being a “mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related” (1989:8). Rice adds that “[attitudes] represent our basic orientation toward a given stimulus and as such form an important part of the way in which people *perceive* and *react* to their environment” (1993:176 emphasis added). Thus, attitudes represent a foundation upon which the primary senses combine to provide a general perception.

Given that it is highly unlikely, though not inconceivable that the physical senses may alter an individual’s perception(s) of competitive advantage, it is argued that for the purposes of this study that the terms perception and attitude are interchangeable. In further and partial support of this assertion of semantic similarity, the technique derived from perception testing, the Repertory Grid (Kelly, 1955) is also associated with attitude measurement strategies (for example Oppenheim, 1976).

5.3 RESEARCH DESIGN

5.3.1 DATA COLLECTION AND ANALYSIS PROCESS

Given that this study is not concerned with strategy content but rather the antecedent perceptions which may influence the priorities and choices made by senior managers (Chapter 2), the choice of data collection tool, data type and data analysis technique are informed by the research questions generated in the

⁵⁸ Attitude and behaviour have a bilateral relationship, since an attitude may be derived from an individual’s behaviour. The decision to take action *y* rather than the (preferred) action *x* may lead to a change in attitude if action *y* is found to have produced a more desirable outcome.

previous chapter. Indeed relatively few studies have examined managers perceptions (within the field of strategic management) using quantitative methods. More relevant to this study, none have examined managers' perceptions of the RBV, which begs the question, is this 'view' held by managers (leading to resource-based strategies)? Instead, there has been a tendency to focus upon the choice and outcome of strategy. In Sekaran's terms (1992) this constitutes the identification of the broad areas of research interest. In addition, the study should be considered *exploratory* since little is known about the research domain.

Figure 5.2 shows the data collection and analysis process for this study. It should be highlighted that whilst it portrays a chronology and linearity toward the arrival at results and data analysis, the process has been designed on the basis that the end (data analysis and testing) should inform the means by which this objective is attained.

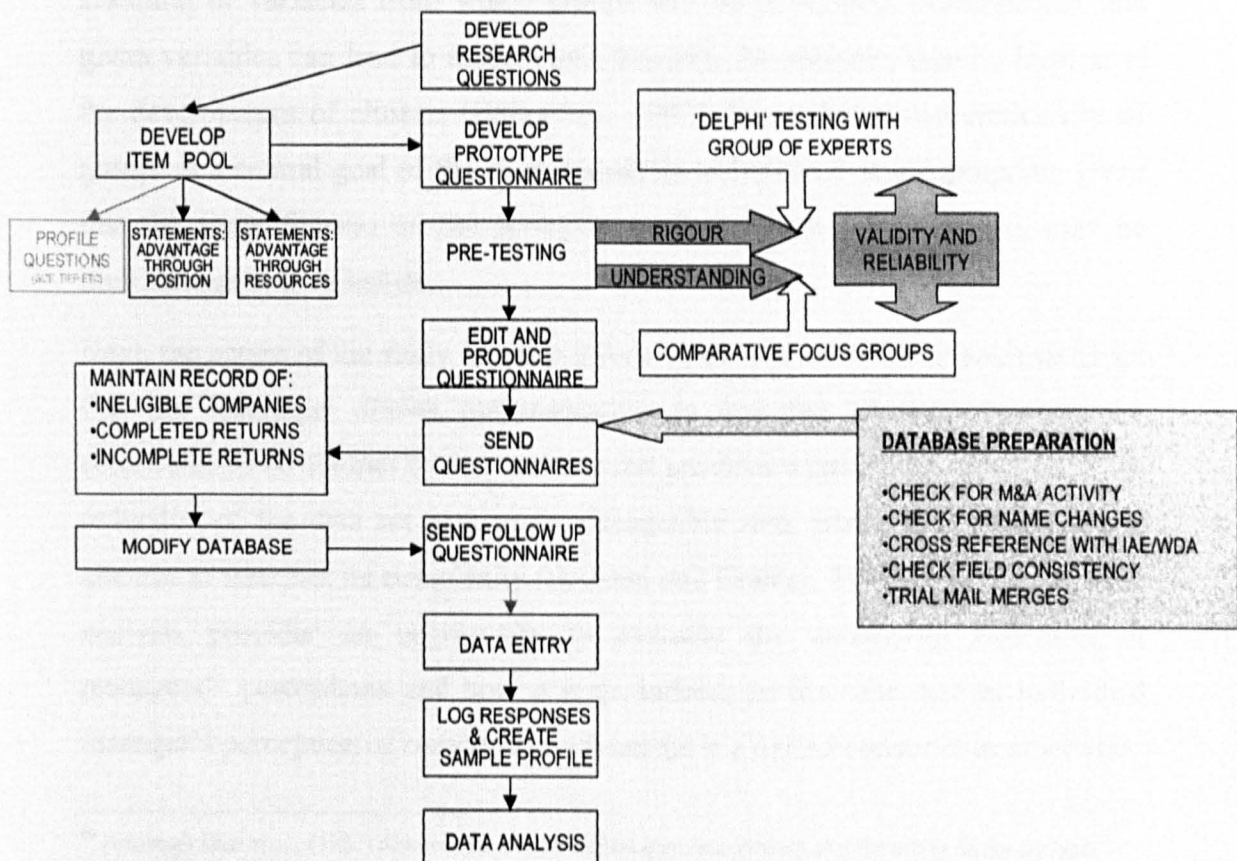


Figure 5.2: Data Collection and Analysis Process

Factor analysis was chosen as the primary method of analysis following consideration of the techniques available for multivariate analysis, the aims of the study, and the type of data to be collected. Multivariate analysis is a term which is generally applied to statistical procedures which simultaneously analyse more than two variables. From the outset of this study, it was clear that more than two variables would be necessary to measure differences and similarities between respondents' perceptions within the automotive components industry.

Whilst a number of multivariate techniques are available to the analyst (for instance, conjoint analysis, multiple discriminant analysis, cluster analysis and multi-dimensional scaling) factor analysis offers the researcher an interdependence technique (*i.e.*, where variables are not designated as dependent or independent) which enables the analysis of metric data.⁵⁹ Although cluster analysis can be used under these circumstances the procedure requires the selection of variables from which groups will be developed, presupposing that given variables can lead to associations between the subjects, thereby leading to the development of clusters (Hair *et al.*, 1987). Since the mutual exclusivity of groups is a central goal of the cluster analysis technique it is inappropriate given that the study focuses on the perceptions of managers, which in turn may be multifarious in their nature.

Next, the nature of the study has also informed the choice of factor analysis given that the technique allows the researcher to examine whether concepts are considered to be distinct by respondents and provides a structured approach to the reduction of the data set to a more manageable size, where the researcher can attempt to interpret its complexity (Bryman and Cramer, 1997). The use of factor analysis provides an opportunity to evaluate the underlying structures of managers' perceptions and how it may, indeed, be the case that an individual manager's perception of competitive advantage is a hybrid construct or otherwise.

⁵⁹ Although Hair *et al.*, (1987) discount the use of ordinal (*i.e.*, non-metric) data for use in factor analysis, many studies, including Bowman, 1991; Mueller, 1995; Elliott, 1998; Chattopadhyay *et al.*, 1999; and Kaufman *et al.*, 2000 have used ordinal (Likert scale derived) data. Indeed, it has been argued that Likert, semantic differential, itemised rating and Stapel scales should be treated "as if they were interval" (Diamantopolous and Schlegelmilch, 1997) and one of the readings used to illustrate the use of factor analysis within Hair *et al.*, (1987) used a five point Likert scale (Deshpande, 1982). Since an ordinal scale has the characteristics of equivalence and order, by ensuring that there is equal distance between the points along the scale, the salient features of an interval scale are met.

As a data reduction technique, factor analysis seeks the correlations 'behind' correlations of large matrices of data. Developed in a social context (IQ testing and theories of hereditarianism) the technique has attracted as many critics as advocates. A popular adjective in descriptions of factor analysis is 'underlying'. If something is 'underlying' can it be real? This so-called 'error of reification' (Gould, 1997) can arise through the researcher attempt to generate convincing results. Specifically, this means a factor(s) with strong loadings.⁶⁰ However, the purpose of this study is not to examine organisation's tangible processes or activities nor to create classify tangible resources into a new nomenclature. Instead, its purpose is to examine the attitudinal and cognitive priorities of managers within a given industry. As a data analysis procedure, factor analysis offers the ability to construct a score for something that is not directly observable, the ability to generate a small number of scores to describe a larger number of scores, and the ability to manage a necessarily large amount of data (SPSS, 1997).

A further consideration which informed the choice of factor analysis was the use of the technique in studies which have sought to achieve similar objectives, albeit using different theories and with differing research questions and outcomes. Factor analysis of this type has a long tradition in the measurement of attitudes and perceptions, particularly in the fields of marketing (Hair *et al.*, 1987) and psychology (Kline, 1994; Gould, 1997). Bowman's study of managerial perceptions of Porter's generic strategies (1991) used multivariate analysis using a multi-industry sample. Mueller (1995) used factor analysis in a study of critical success factors in the process plant contracting process. Elliott (1998) also used exploratory factor analysis in the application of a research instrument in the field of crisis management.

For the purposes of presentation, only discussion of specific routines within the factor analysis procedure are included in the main text. However, for the purposes of completeness, Appendix 2 provides a further amplification of the factor analysis technique including considerations surrounding the choice of extraction,

⁶⁰ A factor is not a variable. In multivariate analysis, the term refers to a grouping of interrelationships between variables.

the number of factors, rotation, and factor loadings. Next, the chapter considers individual stages of the research process.

5.3.2 CHOICE OF DATA COLLECTION INSTRUMENT

The study uses a survey-based data collection instrument to ascertain the priority of factors which senior managers (those responsible for strategic decision making) attribute to an organisation's competitive advantage. In this way, the study can evaluate whether a resource-based or position-based view predominates managers' perceptions. This instrument prevents a contrived research setting and minimises researcher interference. Furthermore, it enables a larger sample (discussed below) of respondents to examine the research questions.

Of the field methods available (Snow and Thomas, 1994) the postal questionnaire enables the most appropriate capture of required data than its alternatives. Direct and participant observation would reveal the outcomes of the perceptions rather than isolating the perceptions *per se*. Archival analysis would only reveal how the perceptions informed language used by respondents and decisions taken. Once again, the perceptions could not be isolated in order to explore research questions. Interviews could yield an insight into the perceptions of managers, fewer subjects could be undertaken within a given timescale and resource constraints, and the qualitative analysis of transcripts using domain analysis (either by hand or using NUD*IST) could problematise the testing of research questions.⁶¹ Furthermore, the inconsistency of data across respondents' organisations could be heightened using these methods.

The use of a postal questionnaire creates a number of trade-offs. Advantages include allowing the respondent time to give thoughtful answers, the provision of pre-coded results, enhanced reliability and the reduced costs. Disadvantages include the need to use closed questioned, restriction and frustration, the possibility of intentionally incorrect answers, answers based on consultation and the possibility of creating a new paradigm for the respondent.

⁶¹ Based on previous experience (see for example Herbane, *et al*, 1997; Elliott, Herbane and Swartz, 2000).

However, the postal questionnaire was chosen because the respondents are known to be literate and are easy to identify. In addition, the use of closed questions relating to attitudes and perceptions are suited to this type of data collection instrument and provide a systematic data set. The cross-sectional time horizon of the postal questionnaire instrument favours this study. Given that perceptions and attitudes are often formed and reformed according to events, it would prove to be counterproductive to survey managers at differing points in time and could affect the confidence of inferences derived from the data analysis, since events and context would be difficult to associate with responses.

5.3.3 CHOICE OF RESPONDENTS AND UNIT OF ANALYSIS

The final questionnaire would be sent to senior managers of companies in the sample frame (Section 5.3.3). The unit of analysis within the population to be studied is the individual senior manager.⁶² This is attuned with studies such as Burgeois (1985), Dess (1987) and Sutcliffe and Huber (1998) which include both CEOs and senior managers from functional areas (*i.e.* directors). At the apex of the hierarchy, managing directors combine operational involvement and are considered to be best able to respond to a questionnaire for this study, since it is they who have either a major involvement in the development of a new strategy, or are responsible for approving a strategy devised by a formal strategic planning department. Questionnaires were not sent to strategic planning departments because the degree of control over the choice of strategy and their existence within organisations could vary greatly (often according to size). The choice of potential respondent is an important consideration since it would influence minor aspects of the sample frame's development and questionnaire design.

5.3.4 SAMPLING ISSUES

Representativeness has been described as “the degree of similarity between the characteristics of the sample and the characteristics of the universe [population] from which the sample was drawn” (Clover and Balsley 1979:234). However, it is

⁶² This study is not concerned with group decision making, since this would require 100% participation from the decision making group and would assume that perceptions remain constant under such conditions. Senior managers are Managing Directors, Chairmen, Presidents and Chief Executive Officers.

rarely the case that the population will share precisely the same characteristics as the sample. Under such as reality, Sekaran suggests that it is incumbent on the researcher “to choose the sample in such a way that it is representative of the population it is expected to characterise” (1992:228). This has been achieved by evaluating (in the next section) the definition of ‘car component producers’ in its most modern context, using a multi-source approach to sample frame construction (which acknowledges the limitations of their compilation) and an understanding of those types of organisations (elements) that are not included (small firms and new entrants) to which the research results cannot be generalised. Fowler Jr (1993:12) adds that “a sample can only be representative of the sample frame – that is, the population that actually had a chance to be selected”.

A further consideration for the sample frame is the minimum number of responses required for validity in factor analysis. The implications of sample size and validity are discussed in Section 5.4, but are clearly influenced by the initial sample frame.

5.3.5 DATABASE DEVELOPMENT

The first problem in the development of the sample frame was the identification of an accurate population size (UK automotive component manufacturers), highlighted in Chapter 3. Clarification of this was essential in establishing both the population and generalisability of findings. It should be noted that generalisability is used in the strict methodological sense. It should **not** be construed as an attempt to generalise about uniqueness (*i.e.* a large scale study of organisational competencies) which, in so doing, would undermine the entire study.

The Society of Motor Manufacturers and Traders (SMMT, 1999) estimates that there are 7,000 component suppliers based in the UK (without providing the parameters for such an estimate) in contrast with The Commission of the European Communities’ (1992) identification of 3250 companies across the European Community, a figure used by Boston Consulting Group and Touche Ross (Hawkins, ND:11). Pickernell’s study of the automotive components industry used a sample of 191 components suppliers, which he noted was “broadly representative of the

population” (1998b:169), as had other studies such as Sleight (1988), whilst Leverick and Cooper (1998) mailed questionnaires to 450 component suppliers, identified from industry directories, annual reports and SMMT membership lists.⁶³

Whilst the major objective of the study was not to identify an accurate number of component suppliers operating in the UK, a bespoke database became increasingly necessary and proved to be the most effective way to manage the sampling elements of this study. Moreover, a definitive list of UK component suppliers could not be compiled due to continuous changes in the sector (new entrants, mergers/acquisitions, divestments), ambiguity surrounding classification, and a lack of publicly available and comprehensive lists of suppliers.

The Parliamentary Select Committee (1985) encountered similar problems and provided its own definition to include companies who produce “components forming part of or fitted as standard equipment to on-road vehicles powered by internal combustion engines, but excluding in-vehicle entertainment, accessories and liquids” (1985:1). The Standard Industrial Classification Codes (SIC) were criticised by the select committee for their exclusion of any component that was not “manufactured wholly or mainly of metal” (1985:1), which excluded components which were forged, cast or electronic in nature.

However, the SIC grouping have more far reaching consequences than those proposed by the select committee in that they are somewhat imprecise in assisting the identification of component suppliers. As Table 5.1 shows, whilst group 34.3 could be considered the most appropriate for the selection of automotive component suppliers, several others could include suppliers with significant involvement in the provision of components to the automotive industry. Equally, however, these additional categories will also include many organisations that do not have any involvement in automotive component manufacture. A similar situation can be found in Robins and Wiersema (1995:281) who noted that the SIC system has “created categorizations that may place close substitutes ... into different groupings while combining very different goods and services in common

⁶³ With a response rate of 20 per cent (88 returns). The thesis returns to how this study’s response rate compare with other studies in Chapter 6.

categories” and gave rise to sample frame impediments in their study of inter-relationships within multi-business firms.

<i>SIC code</i>	<i>Description</i>	<i>Automotive application</i>
17.1	Preparation of spinning of textile fibres	Seating and interior trim
20.2	Manufacture of veneer sheets ... other panels and boards	Dashboard fascias
25.1	Manufacture of rubber products	Seals, hoses and gaskets
26.1	Manufacturer of glass and glass products	Glazing
27.1 to 27.5	Manufacture of basic metals	Tubing, aluminium products, castings
28.1, 28.4, 28.5, 28.7	Manufacture of fabricated metal products	Forgings, pressing and stampings
31.1	Manufacture of insulated wire and cable	Wiring looms and connectors
31.5	Manufacture of lighting equipment and electric lamps	Vehicle lighting
31.6	Manufacture of electrical equipment not elsewhere classified	Instrumentation
34.3	Manufacture of parts and accessories for motor vehicles and their engines	All remaining automotive components, but possibly including supplies of the components listed above

Table 5.1: SIC Codes Relevant to Automotive Component Manufacturers
Compiled from: Office for National Statistics

There is ongoing evidence of the need for a definition of elements within a sample frame within the automotive components sector:

Companies which are principally involved in accessories and replacement component manufacturers [sic], bodywork and trim manufacturers, braking system component manufacturers, engine component manufacturers, electrical ..., general component and other ..., steering, suspension and axle ..., and transmission and transmission component manufacturers (ICC, 1995:4).

This offers a wider definition than that used by the Select Committee through its inclusion of non-factory fit accessories (such as roof-racks) and replacement/aftermarket components. Accordingly, the definition of a car component manufacturer used in this study is a derivative of the former, thereby including *UK-based (though not necessarily owned) companies which manufacture components which form part of or fitted as standard equipment to*

passenger cars powered by internal combustion engines, but excluding in-vehicle entertainment, after-market accessories and liquids. This is the database entry criteria subsequently used.

A further problem arose with the degree to which an organisation is involved in the automotive components sector and ascertaining such information from consolidated accounts. In the absence of a clear definition of the automotive components sector, arbitrary approaches have been adopted in other studies. For instance, ICC (1998) derived its sample of components manufacturers based on the following criteria:

1. The company generated more than 50 per cent of its revenue from automotive activities, or
2. The company generated less than 50 per cent of its revenue from automotive activities but was included “by virtue of its size, significant within the industry” (1998:5)

The virtues by which organisations were included despite their lower involvement in the sector were not made explicit, however. Whilst only containing a sample of 140 companies, it highlights the problem of establishing suitable boundaries for what constitutes a component supplier. Furthermore, such a classification depends greatly upon the degree to which organisations are forthcoming with information about the proportion of output directed to specific markets.⁶⁴

Consequently, a new database was constructed, using:

- Trade directories⁶⁵
- SIC codes cross referencing
- Industry specific documents (specialist reports, etc.)
- Government publications, and
- Visits to industrial parks in the locality of assembler’s plants (to identify smaller firms that may not have been included in directories or identified from other sources).

⁶⁴ Indeed, generic components (e.g. electronic) may be supplied to a variety of industries, thereby obfuscating industry boundaries.

⁶⁵ These include Dun and Bradstreet (1998), Reed (1998a) and Reed (1998b).

Company details were entered into a computer database to enable a mail merge letter to be produced. Companies were asked for general information about their operations in order to ascertain their fit within the automotive industry. The majority kindly returned company accounts and brochures which enabled the researcher to commence the building of the supplier database. Of the 765 companies identified in the preliminary search of the sources identified above, 658 were found to have operations matching the database criteria. A further 107 companies responded with information upon which their profile could be evaluated. In these case, their operations were beyond the criteria and therefore excluded (Appendix 3). It is a noteworthy illustration of the inaccuracy of classifications used by secondary sources and the segmentation of the components sector (cars, commercial vehicles, distribution, aftermarket, *etc.*).

The supplier database was enhanced by entries from three additional sources that were manually cross-referenced against this new database. The American Institute of Automotive Engineers (IAE, 1999) database identified 625 UK-based suppliers and the Welsh Development Agency (WDA, 1999) database included 71 suppliers located in Wales. Finally, the SMMT industry directory (SMMT, 2000) offered a small number of further entries.⁶⁶ Together, these sources identified a further 380 suppliers making a total of 1038 known component suppliers. The database (based in MS Access 97 SR-1) enabled direct merge facilities to produce stationary and correspondence. The triangulation of sources has enabled the researcher to overcome the problems inherent to the use of single sources (Foley, 1983) and the official nomenclature of automotive component suppliers.

Having regard to Womack *et al.*, (1990), this database compares favourably to the estimation of 300 'major' and 1500 'minor' UK component suppliers, constituting 58 per cent of the total number cited (1990:165), although the definition of 'minor' is unclear. Since then, it is likely that further consolidation has taken place in the industry. More recently, however, it has been suggested that 1,265 companies have operations officially classed as automotive component

⁶⁶ The SMMT director does not include all component suppliers and includes a wide variety organisations operating at the periphery of automotive manufacturing, offering services such as media, finance, insurance, training and shipping.

manufacture within SIC 34.3 (ONS, 2000a), although a greater number are expected to be operating in other SIC groups (Table 5.1).⁶⁷ Furthermore, and by way of an international comparison, Mudambi and Helper (1998) identified 1227 tier 1 suppliers operating in the US alone compared with similar figures cited in the UK but across several tiers.

Irrespective of the changes to the database, the study's sample frame has the following strengths:

- It considers a realistic definition of 'component' manufacturers in the light of recent changes in materials and technologies (Chapter 3).
- It excludes firms that produce solely after-market or heavy goods vehicle components. Their inclusion would distort the sampling frame and consequently the results yielded from other respondents.
- Firms are excluded where they may have previously been classified as component producers yet have no UK production facilities. The international dimension is not within the remit of this research. To include such firms would be to further distort the sample frame.
- There are cases where overseas firms may be involved in car component production yet their UK production is not directed to this market.
- Non-response can be provisionally investigated (further strategies are discussed later), using a comparison of respondents data fields in the database and those of non-respondents.

Some of the secondary sources utilised for the compilation of the sample frame may not provide comprehensive coverage of smaller sized organisations. This is partially due to trade directories being based on voluntary entries and others being based on the 'top' 50,000 UK companies.⁶⁸ Whilst the sample frame is current, it

⁶⁷ Parenthetically it should be noted that the Office for National Statistics considers an 'enterprise' to comprise of one or more legal units. Therefore, a large component supplier that has a number of subsidiaries may be considered to be only one company. Consequently, the number of suppliers quoted here should be considered conservative given the SIC code problematic, enterprise definition and evidence provided in Chapter 6, where it is found that discrepancies between official turnover figures for 'the sector' are significantly lower than those reported in this study.

⁶⁸ For instance, one company which responded to the survey had not been identified in publicly available directories but was identified due to a television news report during the Rover crisis of spring 2000, in which the managing director was asked to comment publicly.

can not be claimed to be comprehensive. Fluxes will occur due to the elements' (*i.e.* a single component of the population) insolvencies, acquisitions, or changes of address. Indeed, over the period of its development, a number of organisations changed status, with implications for the sample frame size and, therefore, response rates.

As such, the database serves as the sample frame, that is the collection of organisations which have an opportunity to respond. Given the identification and selection process described earlier, the sample frame cannot be said to be representative of the total population. Whilst not equal to the population it can be considered suitable for use given the problems identified above. The sample frame, however, is the *known* population.

5.3.6 NON-RESPONSE AND RESPONSE RATE TARGET

Non-response is an important consideration in all survey research methods, particularly if the researcher is dependant upon a specific number of complete responses in order to subject data to analytical techniques. Fowler Jr (1993) defines non-response bias as “the extent to which those not responding are biased – that is, systematically different from the whole population” (1993: 40). In the case of postal questionnaires he adds:

Bias attributable to non-response can be studied by comparing those who respond immediately with those who respond after follow-up steps are taken. One generalisation that seems to hold up ... is that people who have a particular interest in the subject matter of the research itself are more likely to return the postal questionnaire than those who are less interested. This means that mail surveys with low response rates may be biased significantly in ways that are related directly to the purposes of the research. (1993:41)

In order to ensure that the study would not include design elements or factors which could prejudice response rates, the meta-analysis of response rate determinants (Diamantopolous and Schlegelmilch, 1996) was implemented where permissible.

The required number of responses for the study would be determined by the form of analysis. Exponents of factor analysis have widely differing views of minimum

response sizes. Generally, such views fall into two categories. In the first, the minimum number of responses is stated. For instance, Guilford (1956) suggests 200 subjects, whilst Kline (1996) and Hair *et al.*, (1987) suggest 100 subjects. In the second, the number of items/variables determines the minimum number of subjects. Sekaran (1992) suggests that for validity in multivariate analysis, the number of responses should be up to ten times greater than the number of variables measured in the questionnaire. To a lesser extent, Coakes and Steed (1999) and Tinsley and Tinsley (1987) suggest a minimum of 5 subjects per variable. Irrespective of which approach is taken data can only be subjected to factor analysis once its 'factorability' has been established (Chapter 6). Ultimately, therefore, it is the factorability of the data matrix and the strength of the factor loadings extracted rather than the sample size that determine confidence in results.

For this study it was decided that subject to factorability a minimum of 200 responses would be appropriate. This number would meet all the recommendations noted above with the exception of Sekaran (1992), which would require 320 responses. In order to achieve this response it was decided that all organisations in the sample frame should be chosen to form the sample. Chapter 6 discusses the actual number of responses received (284), comparative response rates, and the profile of respondents.

5.4 QUESTIONNAIRE DEVELOPMENT AND DEPLOYMENT

As noted earlier, the data collection instrument was chosen in order to systematically gather data from a large number of senior managers which could subsequently be subjected to statistical analysis (using data reduction techniques). In order to arrive at a final questionnaire to be administered to automotive component manufacturers in the database, three tasks were undertaken to deal with validity and reliability;

- Content analysis
- Comparative focus group pre-testing
- Delphi testing of questionnaire design and completion process

The combination of these three activities represent an attempt to refine the data collection instrument in a manner which is directly associated with the nature of the study, rather than the application of generic piloting methods. As such it represents an opportunity not only to improve research quality, but to introduce innovative and experimental, yet effective, dimensions to the methodology.

Clearly, before the pre-testing could begin, a prototype questionnaire was developed. In this form, the questionnaire contained two sections – company profile questions (size, products, customers, tier, etc) and statements referring to competitive advantage accompanied by a five point likert scale. The content of the questionnaire was derived from the review of the literature relating to supply chain management in the automotive components sector, advantage through resources and advantage through position approaches to competitive advantage (Chapters 3 and 4). From this review (and the propositions developed), a total of 47 statements were originally developed (Appendix 4). In order to arrive at a refined list of statements, a pre-test was conducted which sought to achieve three objectives. The first was to ensure that there would be a balance in the number of statements. To have more statements relating to a resource-based view would generate the potential for distortion in the subsequent data analysis. The second objective was to identify overlap errors and redundancies. The final objective was to test for reliability of the statements which remained.

5.4.1 CONTENT ANALYSIS

A simple content analysis was used to highlight potential duplication (where different measures deal with the same thing) and item overlap (where a measure could mean more than the researcher intended) which could affect the confidence of inferences derived from the data.⁶⁹ This was achieved by taking the list of statements and using the replace function in Microsoft Word. Spaces were replaced with paragraph marks and the list of statements was ordered alphabetically to highlight the occurrence of each word. Where duplicate verbs, nouns and adjectives were identified, the list of statements was checked to ensure

⁶⁹ Although item overlap errors are considered by Bagozzi (1994), the implementation of the content analysis was chosen as a simple way to consider duplication and overlap at its most simple level of disaggregation – the single word.

that statements did not appear to be similar. In general, this approach proved to be unsatisfactory in that the repetition of a word would rarely reveal duplication and reflects the lack of confidence with 'face' validity. It did, however, confirm that the statements referring to the terminology of resources (40-43 in Appendix 4) bore too much similarity to one another and would require clearer rubric and a semantic differential scale to be effective. Such changes were deployed to produce question 14 in the final questionnaire.

In addition, the content analysis explicated the repetitive nature of statements 44-47 (hierarchy of resources) and the difficulty in arriving at a suitable rubric which would apply to these and remaining statements. Hence, this led to the removal of these statements and the use of a new format (question 14 in the final questionnaire). The changes to statements 40 to 47 not only reduced the number of statements but also allowed greater flexibility in dealing with 'backfire' effects in the ordering of questions (Section 4.4).

The 39 remaining statements were further examined in order to reduce their number, ensure balance and eliminate duplication/overlap. To provide a framework within which to consider these issues, a limit was placed on the number of statements and the number of categories into which each statement could be linked. A total of eight categories (classes) were developed:

1. Company size
2. Industry structure
3. Strengths and Weaknesses
4. Relationships with customer
5. Uniqueness and competitive advantage
6. Access to resources
7. Managing resources
8. Combining resources

Classes one to four relate to a residence view of competitive advantage (division A), whereas classes five to eight contain statements regarding advantage through resources (division B). Each class would contain four statements, making a total of 32 statements to ensure a balance in the number of statements based on each

competing ‘perspective’ of competitive advantage. Table 5.2 indicates the statements (from Appendix 4) and the rationale underscoring their removal.

<i>Deleted Statement</i>	<i>Reason for Removal</i>
25. <i>The links between new and existing resources are not known at first</i>	Similar to statement 21 – <i>The ability to understand the cause-effect relationship between resources and competitive advantage differs between organisations – potential overlap error</i>
26. <i>Resources are difficult to acquire because they cannot be moved</i>	Could be difficult to interpret the word ‘move’, since it may connote a physical asset, rather than intangibles.
27. <i>Resources cannot be accumulated because they cannot be purchased</i>	Similar rationale to statement 26. On this occasion, the statement implies that all resources must be purchased (rather than developed organically).
28. <i>We look for ways of using our resources in new areas and products</i>	This statement is highly similar to statement 32 <i>We purposefully plan for the use of resources in our future strategies – unnecessary duplication</i>
33. <i>Organisations are collections of products and services</i>	Could be confused with statement 17 which refers to “bundles”
34. <i>Organisations are collections of resources</i>	Replicates question 17 – <i>Organisations are bundles of resources...</i>
36. <i>Product platforms reflect final demand for products</i>	This is an ambiguous statement which could be interpreted in a number of ways, e.g. are influenced by final demand. Also, customers are (generally) not aware of platform usage.

Table 5.2: Deleted Statements and Rationale for Exclusion

The amended item pool, comprising of 32 statements, was evaluated again to ensure that, where possible, the clearest (and shortest) description could be used. The revised statement list was then subjected to third party pre-testing in order to ensure reliability.

5.4.2 COMPARATIVE FOCUS GROUPS PRE-TESTING

The purpose of the pre-test was to evaluate the extent to which third parties would categorise the statements according to the eight classes developed by the researcher. In this way, the reliability and validity of the items could be determined. This exercise would also indicate the degree to which the statements could be interpreted correctly, thereby highlighting the need for changes to ambiguous (*i.e.*, non-categorisable statements).

Reliability is an essential consideration in questionnaire design. Fowler Jr (1993:80) describes reliability as “the extent to which [respondents] in comparable situations will answer questions in similar ways”. Alternatively it is “the amount of agreement between independent attempts to measure the same theoretical concept” (Bagozzi, 1994:17). Despite their differences, both are concerned with the consistency of measures among different respondents or groups of respondents.

Both reliability and validity (discussed later in this section) are important concepts within the broader construct of measurement error where, due to random or systematic error, observed scores differ from ‘true scores’ by virtue of the degree to which the researcher can reduce measurement error whilst recognising that no data collection instrument is perfect. This raises the question of whether the ‘true’ score can be known *ex-ante*. This is particularly problematic when applied to this study since it deals with respondents’ perceptions and whether a perception has equivalence with the truth, and also because the exploratory nature of the study infers a lack of prior knowledge about what these perceptions might be.

Even were a perception to be considered equivalent to ‘truth’, the absence of knowledge (known criterion groups) problematises the determination of what the true score is. As Oppenheim (1976) noted, the assumption behind tests such as coefficient alpha (Cronbach, 1951) is that attitudes are both true and stable. However, pre-testing was undertaken to ensure that measurement quality was maximised by reducing systematic error, although random error cannot be controlled for and is argued to be self-compensating (Diamantopolous and Schlegelmilch, 1997) as the sample size grows and becomes more representative of the population.

Reliability has several facets, many of which were addressed in the pre-test. These include stability (consistency after time), equivalence (consistency between sets of respondents), and generalisability (applicability in different settings and methodologies). Given that the data collection instrument is entirely new, reliability testing approaches, such as test-retest were not used due to the problem of ‘practice effects’ which can arise within short time periods (Litwin, 1995).

Alternate-form reliability would also prove to be problematic since its prerequisite, alternative wording, could give rise to alternative meaning which, as Oppenheim (1976:73) argues “will no longer be the same question”.

Despite the problems of using co-efficient alpha, an adapted approach to internal consistency reliability is fundamental to the design of the pre-test. Given the item pool of 32 statements are focussed on specific variables (the classes) one could develop a surrogate measure of how successfully the different statements measure the same (relevant) variable. That is to say, could the respondent readily associate the statement with the pre-determined class? By using the focus groups, elements of interrater reliability were also adopted.

The design of the pre-test meant that sensitivity could not be addressed. However, the choice of a five-point Likert scale used in the final questionnaire design (Section 5.4.4) is based on previous studies using multivariate analysis in the study of perceptions (Bowman, 1991; Elliott, 1998; Knight *et al.*, 1999; Kaufman *et al.*, 2000), prevailing consensus in this regard (for example, Bagozzi, 1994) and Elmore and Beggs (1975) who found that seven or even nine points did not improve reliability. Likert scales are considered to enhance reliability because of the range of answers available to respondent, precision of response and the ability to include statements “whose manifest content is not obviously related to the attitude in question, so that the subtler and deeper ramifications ... can be explored” (Oppenheim, 1976:141). The choice of measurement scale is a critical consideration in validity, where the concern is with the suitability of the measure in serving to measure that which is intended to be measured.

Next we turn to validity, that is, “the extent to which the answer given is a true measure and means what the researcher wants or expects it to mean” (Fowler Jr 1993:80). Validity cannot be inferred using complex statistical methods from the pre-test since it has not used the five point likert scale that will be used to measure the ordered relationship of the statement against the priorities of respondents. There is a further problem attendant with validity evaluation in this study. As DeVellis (1991:43) commented “the issue [of validity] is more subtle when measuring attributes, such as beliefs, attitudes or dispositions, because it is

difficult to determine exactly what the range of potential items is and when a sample of items is representative”.

However, the ability of the comparative focus groups to classify the statement correctly (discussed shortly) would suggest that validity could be achieved since it echoes Bagozzi’s view of “a group [the classes] of interrelated ideas [statements] whose totality captures the essence of the phenomenon under consideration [perceptions of competitive advantage]” (1994:18). Furthermore, the matter of validity is a central consideration in the choice of principal components analysis and the need to ensure that value biases are not introduced by the researcher (Connor and Becker, 1977), although the need to capture those of the respondent may be an objective which is established in advance of data collection.

The content analysis represented the simplest and least credible form of validity – face validity. Of the commonly used alternatives, only content validity could be used. The approach involves ‘judges’ who are asked to evaluate the items. In this pre-test, respondents were asked to classify the statements within the item pool. Whilst this is not normally accompanied by scientific or numerical measures, the pre-test described shortly does attempt to evaluate the rigour of the survey instrument’s validity. Concurrent, predictive and construct validity could not be established due to the original and exploratory nature of the study, the item pool and (by implication) the lack of established criterion with which to compare items.

The subjects for the pre-test comprised of two groups – a group of (‘general’) managers from a variety of industries/industry sectors and another consisting of managers within an automotive company.⁷⁰ Each group would bring different characteristics to bear upon the pre-test, thereby accounting for the term ‘comparative focus group’. The ‘general’ managers would provide a broad insight into the reliability of the statements and highlight terminology that would be difficult to interpret. The ‘automotive’ managers would provide further insight into the reliability of statements which had a specific industry focus. Taken together, the pre-test respondents would furnish an understanding of the equivalence reliability.

⁷⁰ The term ‘general’ refers to these managers’ professional domain rather than their operating activity.

The 'general' manager group comprised of 25 managers attending one of the researcher's strategic management modules. The group had a mean managerial experience of 8.6 years and contained managers from manufacturing, services and the public sector. All major functional backgrounds (production, marketing, finance, etc) were represented. Appendix 5 provides further information on the 'general group' to substantiate their suitability for the pre-test. The pre-test was scheduled to take place prior to the respondents having studied external analysis or internal analysis elements of the taught course to ensure that the content did not distort the pre-testing exercise and to attenuate the effects of respondents having being taught about different approaches to competitive advantage (since it is presumed that a number of industry respondents will not have undertaken formal business education).

The 'automotive' manager group comprised of 16 managers attending a company-management development programme on two occasions in which the researcher was involved.⁷¹ The module content was based around operational, logistical and retailing issues, thereby having no effect in distorting respondents' efforts in the pre-test. By virtue of their attendance on the management development programme, this group included respondents of sufficient experience of the automotive industry to test the reliability of the questionnaire.

Both groups were informed of the purpose behind the pre-test and were given a proforma (Appendix 6) which contained the list of 32 statements (randomised) and the eight categories. They were instructed to consider each statement and to write in the box (adjacent to each statement) the number of the category (1-8) they believed the statement should be classified within. The reader will recall that the 8 classes (categories) were highlighted earlier in this section. In addition, they were asked to annotate the proforma in instances where they found a statement to be confusing, ambiguous or erroneous. In both cases, the groups required between 15 and 20 minutes to complete the exercise.

⁷¹ VW Group Management Development Programme (Wadenhoe Consultancy). The group comprised of managers from Volkswagen, Audi, and Seat.

Since the eight classes represent a category nominal scale, subsequent data analysis was limited to enumeration rather than calculations based around the arithmetic mean. Since each of the classes is a factor within a larger construct, the purpose was to examine the degree to which respondents could recognise the association of a statement with a category (class). This echoes the Likert's assertion that the item pool/battery should seek to measure "the attitudes of members of the [respondent] group, not those of the experimenter" (1967:93).

In the light of these quantitative limitations, criteria were devised in order to examine the degree to which a statement could be considered reliable in terms of its recognisable association with one of the classes.⁷² The expected distribution of statements to classes should be uniform (four statements in each class). Assuming that each outcome is likely, the probability of a pre-test respondent choosing the correct class is 1/8 (i.e. 12.5%). The criterion had to recognise the possibility of inadvertently 'correct' guesses within the results.

The first criteria was that the reliability of a statement would be accepted if the number of correct respondents in the 'general' group was greater than 63.5%. This figure was derived from 51% (representing a majority) and 12.5% (the probability of guessing the correct class). Therefore, if 63.5% of the 'general' managers correctly associated the statement and its predetermined class the statement was accepted (criteria A). Were the 51% level to have been used, it could be argued that some 49% of respondents could have scored incorrectly to no avail in the questionable acceptance of the statement. Moreover, the acceptance criteria represents a near two-thirds majority. Thus, a high 'correct' score indicates the relevance and appropriateness of the statement/item to the class, *i.e.*, content validity. Next, when a statement failed to reach the acceptance criteria within the 'general' group, the scores for the 'automotive' managers were used. If the

⁷² Several criteria were developed in order to deal with the problem of using category nominal scales, but were rejected. These included, the number of alternative classes used, the number and percentage of position classes used, the number and percentage of RBV classes used, the second choice as a percentage of the first choice and a 'class test' – where the number of correct classes (i.e. RBV if the statement was RBV related) subtracted from the number of incorrect classes used. None of these criteria offered any further refinement to those finally used in this study.

acceptance criteria of 63.5% failed to be reached, the statement would be rejected outright (criteria B).

The combination of both pre-test datasets was considered and rejected since it would obscure the degree to which the 32 statements had a clearer meaning among managers operating in the automotive industry (the domain of the study) rather among a variety of industries.⁷³ The results of the pre-test led to the acceptance of 11 statements from the 'general' group, shown in Table 5.3 where accepted statements are indicated by a shaded score. For no statement was an incorrect class the most popular.

Table 5.3 shows that the level of disagreement with the classes did not reach above 20% for an accepted statement or 36% for a statement which did not meet the criteria A. These latter statements were subjected to criteria B, where 21 statements successfully met the threshold of 63.5%, with a minimum score of 75% and with the second highest (yet incorrect class) score reaching no higher than 19%.

The pre-test indicates that the statements, whilst meaningful for managers from a variety of industries, are highly meaningful and reliable for managers in an automotive industry context. The research instrument, whilst reliable in terms of stability and equivalence, cannot be said to be generalisable without further refinement. This not unexpected since the 32 statements have been devised with the industry context (Chapter 3) in mind.

A further benefit from the pre-test is that it provides further assurance in terms of the reliability of attitudinal questions/items:

By using sets of questions, provided they all relate to the same attitude, we maximise the more stable components while reducing the instability due to particular items, emphasis, mood changes and so on (Oppenheim, 1976:74).

⁷³ Indeed, all of the statements would have been accepted using the combined data sets. Furthermore, by combining the datasets, the researcher would not have been able to examine the concept of 'equivalence' in the context of reliability.

Statement	Correct class	'General' Managers n=25		'Automotive' Managers n=16	
		% correct	% in 2nd	% correct	% in 2nd
1.	1	56	24	75	19
2.	1	60	12	100	0
3.	2	68	12	65	32
4.	1	48	28	82	18
5.	4	52	20	88	12
6.	5	64	12	94	6
7.	1	60	12	75	13
8.	2	60	16	82	12
9.	3	68	20	88	12
10.	4	80	12	94	6
11.	2	76	16	75	25
12.	6	68	16	69	13
13.	8	64	24	69	25
14.	2	60	24	94	6
15.	3	72	12	82	18
16.	4	44	12	100	0
17.	6	48	12	88	12
18.	6	68	20	88	7
19.	5	44	20	75	13
20.	5	52	36	88	12
21.	5	60	28	75	18
22.	8	56	20	88	12
23.	8	56	20	94	6
24.	6	52	20	88	6
25.	7	48	12	82	13
26.	3	64	28	82	13
27.	7	56	16	88	6
28.	3	56	20	88	12
29.	8	56	8	94	6
30.	4	56	16	82	6
31.	7	72	20	75	25
32.	7	52	12	82	18

Table 5.3: Pre-test results of Comparative Focus Groups

Bearing in mind that no research instrument is perfect, the pre-test sought to ensure validity through content validity and reliability through internal consistency.

The next stage in the questionnaire development was to enhance content validity. Despite the request to the pre-test groups for annotations to the proforma where necessary, none were made, with the exception of where a respondent reconsidered the category into which they thought a statement should be classified. This provided further confirmation of the unproblematic nature of the 32 statements.

Despite the success of the pre-test, it was not the intention to suggest that the statements and classes are mutually exclusive. By the very nature of the statements, classes and divisions, mutual exclusivity cannot be asserted nor guaranteed. For instance, a statement relating to size could also be considered to relate to the ability of an organisation to successfully manage relationships with customers and industry structure, whereby entry barriers have limited the entry and growth of newer entrants (Porter, 1980). The RBV statements are considered to be associated in their role as constituents of a perspective relating to competitive advantage. However, since the statements were devised in order to capture data relating to the differing perspectives on competitive advantage, the pre-test served to confirm that the construction of the statements were as reliable as possible, rather than their isolation from others in the data collection instrument.⁷⁴ The pre-test has examined the reliability of the research instrument through internal consistency reliability and inter-rater reliability (internal reliability), and validity through face validity (content analysis) and content validity (comparative focus groups testing).

The next stage in the questionnaire design process involved the development of a second prototype (Appendix 7) incorporating the 32 pre-tested statements and expert opinion about further aspects of design, layout, rubric and completion.

⁷⁴ Subsequent to the pre-test activity and analysis it has been found that a study published in the *Strategic Management Journal* used a similar approach to pre-testing as that used in this study. Sutcliffe and Huber (2000) used a group of 22 industry executives – a smaller number than that used in this study.

5.4.3 'DELPHI' TESTING OF QUESTIONNAIRE DESIGN AND COMPLETION PROCESS

Further refinements were sought from experts in the field of market research and strategic management. However, rather than seeking feedback and making changes in a sequential fashion one by one, it was decided that feedback should be sought simultaneously, considered and incorporated into the questionnaire design. It was expected that each expert would offer different, and in some cases contradictory advice, which would hamper sequential consultation. Consequently, aspects of the Delphi forecasting technique (Delbecq *et al.*, 1975) were adopted for this final development stage of the research instrument. These include the selection of individuals who are experts in the field of study and limited contact between the experts. For this 'Delphi'-type test, six experts were given a copy of the questionnaire. They were asked to consider:

- The clarity of the rubric used
- The time taken to complete the questionnaire
- Issues of ambiguity, controversy or irrelevance in the questions
- Layout
- Miscellaneous issues

A meeting with each took place within a week of receipt of the questionnaire. The profile of the experts in terms of the expertise which was sought is shown in Table 5.4 (overleaf). From this exercise, several useful amendments were made to the questionnaire. Experts A and B suggested the inclusion of a glossary to guide the respondent through themes such as resources and platforms, although no other experts made this suggestion. However, since these themes were contained within the pre-tested statements there would be the danger of colouring respondents' perceptions through the inclusion of such material. Experts A and C suggested amendments to the geographical origin question which could have created the impression of political bias.

Differences in opinion relating to the ordering of questions also arose. Expert A suggested that the profile questions (turnover, customers, *etc.*) should be positioned at the end of the questionnaire. It was argued that the most valuable

information (*i.e.*, the attitudinal statements) would be captured first and a sense of escalating commitment would arise. In contrast, experts, D and F suggested that these questions should occupy less page space but remain at the start of the questionnaire. It was decided that to move these questions to the end (particularly about turnover) might appear suspicious and therefore jeopardise confidence in the researcher, although Denscombe (1998) does suggest that contentious/sensitive questions should appear later in the questionnaire. All agreed that it would take not more than 15 minutes to complete and that the size and layout of the questionnaire was unproblematic.

Taken together, there were few substantive changes upon which major differences between the revisions suggested by the experts. Most suggested clarification of rubric which referred to “statements”, “terms” and “criteria”. This was achieved through the use of arrows and amendment to the original rubric.

Expert	Profession	Industry knowledge	Strategic management knowledge	Market research knowledge
A	Senior lecturer in strategic management		✓	
B	Business professor	✓		
C	Senior lecturer in strategic management	✓	✓	
D	Senior research manager		✓	✓
E	Senior lecturer in marketing			✓
F	Senior lecturer in marketing. MRS Chief examiner			✓

Table 5.4: Profile of Experts used in ‘Delphi’ Testing of Second Prototype.

5.4.4 FINAL QUESTIONNAIRE DESIGN

The changes suggested by the Delphi testing of the second prototype were incorporated into the final design of the questionnaire (Appendix 8). Bearing the same dimensions as its predecessor, the folded A3 questionnaire comprised of five parts:

1. Profile questions about the company (questions 1 to 8)
2. Questions about the background and experience of the respondent (questions 9 to 12)
3. Questions about the terminology used by the respondent (question 13)
4. Questions about the importance of resources (question 14)
5. Statements about competitive advantage (questions 15 to 46)

The final page included the researcher's address and telephone for use in the event that the questionnaire was accidentally separated from the covering letter and return envelope. In addition, a small box was included in order to include a code to identify the respondent in a discrete manner whilst maintaining anonymity and confidentiality. In this way, were the questionnaire to have been lost, a third party could not associate the responses within a given questionnaire with the senior manager that had responded.

Questions 1 to 12 (parts one and two) provide data by which to assess the nature of the respondent organisations and the respondents themselves. The structure of these questions varies according to the data sought, but where possible, established classifications have been used in order to enable comparisons with other studies. The turnover question (question 2) was retained in its original position since such a question could not be considered polemic and, if the question was perceived in this way, the respondent would simply ignore it. If the question were to be ignored, turnover figures could be obtained from publicly available sources. A different position for this question could not guarantee a higher rate of response. As Table 5.5 shows, questions 1, 3 and 4 are derived from well established sources. Scale types include nominal and category nominal, although several questions rely on direct quantification and determinant choice where appropriate.

Question	Purpose	Basis of question structure
1	Profile respondents according to number of employees.	DTI definitions of company size (Bank of England, 2000). Category nominal.
2	Additional profile data.	None – direct quantification used.
3	Determine products manufactured by respondent's company.	Product groupings based on Bosch (1996) using checklist format. 'Other' categories added for exceptions.
4	Ascertain respondent company's tier in the supply chain.	Definitions of tiers 1, 2 and 3 are well established in the industry, although short descriptions were provided. Category nominal.
5	Establish the degree of coverage among the main volume assemblers.	Compiled from top 15 passenger vehicle manufacturers using checklist format. 'Other' categories added for exceptions.
6	Determine current ownership/origin of the respondent company.	Four (non-political/economic) geographical areas plus two further 'other' category nominal categories for exceptions.
7	Determine alliance linkages in the supply chain.	None - dichotomous format plus 'don't know' category.
8	Determine R&D linkages with customers.	Three category nominal statements developed.
9	Determine functional background of respondents.	Determinant choice plus one 'other' category. No category nominal since question refers to 'main' background
10	Determine experience within the automotive industry	None – direct quantification used.
11	Determine experience as a senior manager	None – direct quantification used.
12	Establish differences in role at senior level	None – open ended question

Table 5.5: Question Types used in Final Questionnaire

The remaining questions (parts 3 to 5) rely on interval scales to generate metric data. Parts three and four of the questionnaire were developed as a result of two factors. First, the content analysis (Section 4.1) led to the removal of statement 40 to 43 and 44 to 47 (parts three and four respectively) because their retention in the original prototype would have compromised the effectiveness of the rubric, the statements bore too much similarity, and would necessitate a semantic differential scale to be effective. Secondly, it was considered important to capture data about managers perceptions about the hierarchy of resources and the language that they use to describe competitive advantage prior any consideration of the competitive advantage statements in part 5. This is known as a backfire effect, where “prior

items can also determine what is seen by the respondent as worth saying and what is seen as redundant” (Tourangeau and Rasinski, 1988:302).⁷⁵

Question order is an important consideration given that the study is concerned with capturing the mindset within the data set, rather than influencing the mindset which leads to the empirical precursors. In avoiding any backfire effects, it was hoped that that parts 3 and 4 would perform better in eliciting managers’ views in relation to the question since they require less consideration than those in part 5, and it has been argued that often, the answer which is given most quickly is the one that is more likely to reflect the truth, thereby improving validity (Oppenheim, 1976). Bagozzi (1994:41) suggests that questions with similar content should be grouped together in order to maintain the focus of the respondent and Denscombe (1998) advises the commencement of a questionnaire with simple and undemanding questions to encourage the respondent to proceed.

Finally, parts were designed and ordered in such a way that the earlier ones could be completed quickly to give the respondent the impression that they were making satisfactory progress. The risk of respondent fatigue during the completion of the questionnaire could threaten the quality of data collected. Semantic differential scales are used for parts 3 and 4 (bipolar adjectives, exact opposite, no indication of intensity).

Part five of the questionnaire contained the 32 statements which successfully completed the content analysis and comparative focus group pre-test, along with the rubric amended in line with comments suggested by the expert group. As discussed earlier in this chapter, the choice of measurement scale was that of a Likert-style, with associated measures of intensity in order to differentiate respondents on the magnitude of difference on each of the statements.⁷⁶

The questionnaire was professionally printed using paper of the same off-white tone as the University’s headed notepaper and numbered individually to match a

⁷⁵ It should be noted that the avoidance of ‘backfire’ effects is not straightforward. Its mirror image is the ‘carryover’ effect, whereby preceding questions may influence the interpretation of items found later in the survey instrument.

⁷⁶ On the labelling of points on such a measurement scale, Likert (1967:91) commented that “so far as the measurement of an attitude is concerned, it is quite immaterial what the extremes of the attitude continuum are called; the important fact is that persons do differ quantitatively in their attitudes, some being more toward one extreme, some more toward the other”.

general reference list used to monitor non-response and to ensure that the correct organisations would receive a second mailing. The covering letter (Appendix 9) was drafted in accordance with the structure suggested by Dillman (1978) and made reference to the study's adherence to the Market Research Society code of conduct.⁷⁷

Other than the use of official University stationary, survey sponsorship was considered and rejected. Although this could have been sought from a manufacturer and one of the largest UK suppliers, such sponsorship may have been seen to jeopardise assurances of anonymity and confidentiality, and could equally be perceived by potential respondents as a method by which a rival or customer could enrich their knowledge.⁷⁸ Moreover, there is evidence that commercial sponsorship may not improve response rates (Baumgartner and Heberlein, 1984). Faria and Dickinson (1992) and Diamantopolous and Schlegelmilch (1996) reported evidence indicating that managers show a preference toward the completion of questionnaires from academic institutions.

5.4.5 ADMINISTRATION OF THE QUESTIONNAIRE

The supplier database was used to generate a customised mailshot of letters and envelope labels. Each numbered questionnaire was accompanied by a printed, first class pre-paid return envelope and a hand-signed letter. All questionnaires were mailed simultaneously in order to gauge the speed of response at weekly increments. This data is reported along with the actual response rates achieved early in Chapter 6. The researcher kept records of organisations that had responded, refused to participate, were ineligible, or had ceased trading. The known status of organisation was included in a new field in the supplier database which could be used to sort records and generate a follow up mailing. A second mailing was planned and executed exactly four weeks after the first. Only if the number of responses failed to reach 200 (as discussed earlier) would a telephone and fax follow up be used.

⁷⁷ This was suggested by one of the experts during the Delphi interview, who also resides as chief examiner of the Market Research Society.

⁷⁸ Of course, the questionnaire deals with perceptions rather than the content of strategy, but the respondent would see the endorsement first rather than the full content of the questionnaire.

Once the satisfactory response was achieved, non-response could be considered. This is reported in Chapter 6 where, given the public availability of financial data, systematic non-response is considered by using employee and sales figures for an equal sample of respondents and non-respondents.

5.5 SUMMARY

Figure 5.3 provides a summary of the research design. In a single sentence, the design could be described as *'an exploratory and cross-sectional study to establish relationships in a non-contrived environment using a minimal interference questionnaire instrument containing a mixture of measures administered to individuals within a sample frame based on the known population'*.

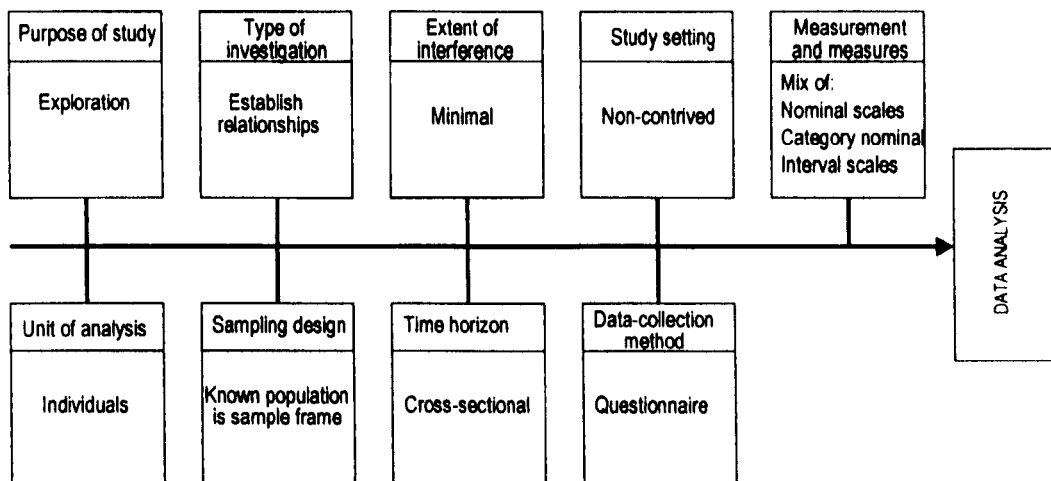


Figure 5.3: Visual Summary of the Research Design

This chapter has set out the methodology chosen in light of the research questions and methodological debates within the field of strategic management and beyond. Since the nature of the study is experimental, item development required a similarly experimental, yet considered approach. The pre-testing process sought to ensure reliability and validity within the limitations of the quantification available.

The next chapter examines the outcome of the data collection strategy which this chapter has discussed. In particular, it considers the achieved response rate, respondent profiles, non-response issues and the sampling adequacy, thereby providing a foundation for the discussion of competitive advantage perceptions in Chapter 7.

Chapter 6 – Characteristics of Respondents

6.1 INTRODUCTION

Previous chapters have dealt with the theoretical and developmental background to the study. The last chapter discussed the research design and pre-deployment activities undertaken by the researcher in order to gather primary data, marking the pivot between the theoretical framework and practical enquiry. This chapter reports on the outcome of the chosen strategy in terms of data collection and the respondents which have contributed to the data set which is the subject of further scrutiny and empirical analysis in Chapter 7.

Prior to the analysis of data in the next chapter, this chapter sets out to address three important questions. First, is the number of respondents sufficient to facilitate adequate multivariate analysis? Second, does the response rate and characteristics of respondent companies allow the researcher to make inferences about automotive component manufacturers? Third, can the respondents from these organisation be considered to be strategic decision makers in terms of their position and experience?

Overall, the purpose of this chapter is to establish the extent to which the data collection process has been successful in terms of data analysis requirements and in comparison with previous studies. In section 6.2, non-response issues are considered using statistical analysis and insights gathered from follow-up telephone interviews. Sections 6.3 and 6.4 portray the salient characteristics of the respondents and their organisations in order to accurately ‘re-frame’ the study, that is to say precisely describe about whom and what (in professional and organisational terms) the study refers, given the data collected. Section 5 addresses the issues of sample size and factorability of the data matrix for the purposes of factor analysis.

This chapter marks the first occasion in which specific reference will be made in the text to an organisation which has provided first-hand, or primary data, for the study. The reference number used to track responses will be used in the remaining text as an anonymous identifier for companies and will follow the convention ‘#number’ (e.g. #479).

6.2 RESPONSES

6.2.1 RESPONSE RATE AND NON-RESPONSE BIAS

Following the inclusion of a unique identification number, all the postal questionnaires were dispatched by first class post at the same time in order to ensure that the follow-up mailing could be undertaken with the certainty that few, if any, very late responses would be received. The mailing phase represented an eight week period, punctuated at the mid-way point by a follow up for organisations for which a reason for non-response was not known. As expected, the highest number of responses was received soon after the mailings with a slow-down in response with the passage of time. Figure 6.1 indicates the number of responses received per week over the mailing period, with the final number of responses reaching 284. The peak in week five is accounted for by returns from the follow-up mailing. A further questionnaire was returned but found to be ineligible for the study since the respondent was making reference to distribution, rather than manufacturing operations.

In addition to the receipt of completed questionnaires, a number of envelopes were returned undelivered with a postal service return sticker indicating “gone away” status. Clarification of how “gone away” is defined was sought from the Royal Mail, but it was found that this description indicates that whilst the address was correct, the company no longer occupied the premises. The reasons for this could include closure of the business, a change in business name or a move to alternative premises. Accordingly, it cannot be inferred with any degree of certainty that these companies have ceased to exist, but rather that they are unreachable. In total, 145 companies (14% of the sample frame) were unreachable due to the return of the envelope. A further 28 companies contacted the researcher

to indicate their ineligibility for the study due to the fact that the company did not operate in the automotive passenger vehicle components industry. These companies were involved in the heavy goods vehicle (HGV) sector or no longer considered themselves to be automotive component suppliers due to low or infrequent production of components.

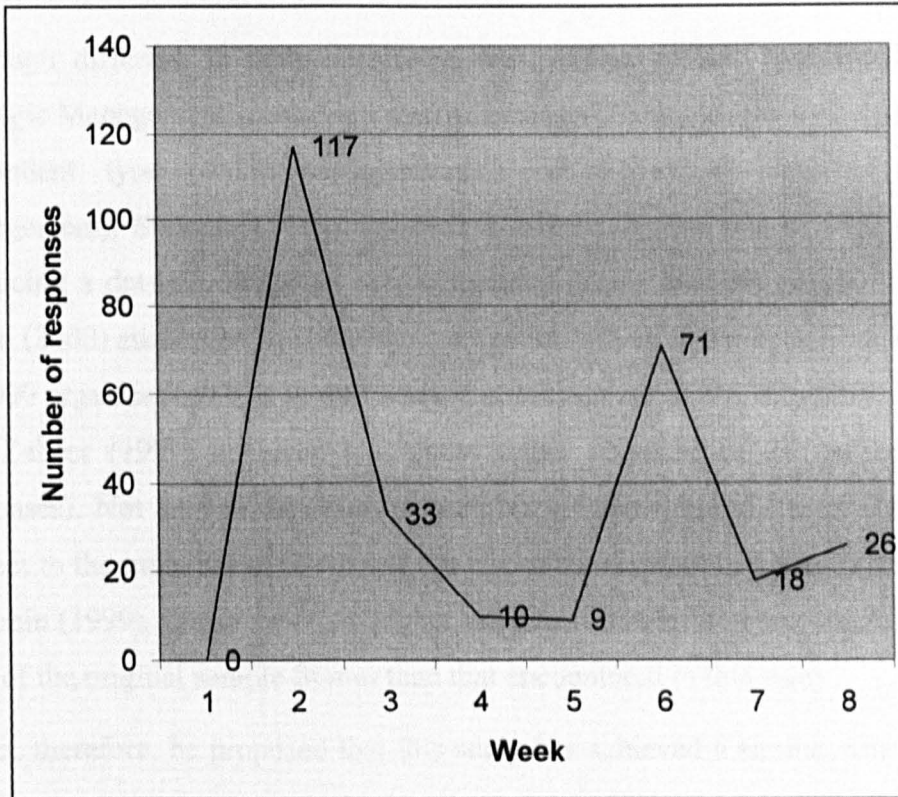


Figure 6.1: Rate of Responses over the Mailing Period.

Having identified ineligible and unreachable organisations, the final response rate for the study can be reported. DeVaus (1991) suggested that response rates should exclude ineligible and unreachables, therefore the size of the revised sample frame is 865 leading to a response rate of 32.9 per cent.

The number of responses ($n=284$) and response rate (32.9 per cent) achieved in this study compares favourably with other studies in the automotive components sector and studies in strategic management using postal questionnaires. In the case of the former type of study, Pickernell (1998b) received 98 responses from a sample frame of 191 (51 per cent) and Leverick and Cooper (1998) received 88

returns from a sample frame of 450 (20 per cent). As was noted in Chapter 5, these studies derived their comparatively smaller sample frames from similar sources to those used in this study, yet were deemed by the authors concerned suitable to generalise about the population that is automotive component suppliers. Also noted in the previous chapter is the definitional uncertainty surrounding the boundaries of the population.

Although differing in their objectives, two studies recently published in the *Strategic Management Journal* are similar in terms of sample frame size ($n=1000$), respondent type (senior management), and theoretical domain (strategic management). Simonin (1999) achieved a lower response rate of 19.2 per cent producing a data set subjected to confirmatory factor analysis whilst Slater and Olson (2000) succeeded in achieving a response rate of 28 per cent from a sample of 1000 organisations in a study focussed at senior executives. Similarly, McEvily and Zaheer (1999) achieved a slightly higher response of 38 per cent (309 responses). Not only is this study a useful benchmark due to its similarity with respect to the traits noted above and the use of the data-set in a similar manner to Simonin (1999), it also reports a higher number of ineligible companies (17.8 per cent of the original sample frame) than that encountered in this study.

It can, therefore, be proposed that this study has achieved a similar, and in some cases superior, response to studies that are equivalent in terms of industry, respondent, sample frame, and theoretical domain. Whilst a satisfactory response rate and no evident non-response bias are positive attributes for any primary study, they are insufficient conditions alone for empirical analysis. A further test – the factorability of the data set – is discussed in Section 6.5.

6.2.2 NON-RESPONDENTS – REFUSALS

A small number of companies contacted the researcher by post and e-mail to indicate their non-participation in the study. (These companies are included within the sample frame given their eligibility, reachability and ability to respond). A total of seven companies returned their questionnaire without completion, two of which (#289 and #935) stated insufficient time for completion. Another company, a small forgings manufacturer (#935), stated that the restructuring of the company,

coupled with economic pressures such as the high value of sterling, meant that the Managing Director's "priorities [were] focussed elsewhere".⁷⁹ A further three organisations (#206, #595 and #672) made reference to their company policy of not completing questionnaires due to the large number of requests which they receive. Two companies (#287 and #671) returned the questionnaire stating the desire not to participate but without providing any reasons.

6.2.3 NON-RESPONDENTS – SYSTEMATICALLY DIFFERENT?

Despite a high number of responses from the mailed questionnaire, there still remained the possibility that non-respondents could be systematically different from respondent organisations. Two variables were selected for this purpose – turnover and employees, since these are organisational traits that are tangible, publicly available and have been used in other recent and comparable studies to examine non-response bias (McEvily and Zaheer, 1999; Simonin, 1999). A random sample of 50 non-respondent companies was selected from the supplier database and turnover and employee figures were taken from the FAME database (FAME, 2000). An equal and random sample of respondents' turnover data was taken from the data entry file and subjected to a Kolmogorov-Smirnov Two Sample test, designed to compare the turnover and employees in the respondent and non-respondent groups (Bryman and Duncan, 1997).

The p-values for turnover and employees were 0.178 and 0.711 respectively. Since these p-values are greater than 0.05 they should be considered insignificant, suggesting that both the respondent groups and non-respondents come from the same population. We can, therefore assume, *ceteris paribus*, that the respondent group is representative of the sample frame, although the problem of the population versus known population of automotive component suppliers (Chapter 5) remains.

⁷⁹ This quotation is taken directly from correspondence received from the Managing Director of the company.

6.2.4 NON-RESPONDENTS – ANECDOTAL INSIGHTS

Following the data collection phase, the researcher spoke by telephone with the Managing Directors of two non-respondent companies in order to explore the reasons for non-participation in the study. With their consent, it provided an opportunity to examine some of the issues relating to the research design in further detail.

The Managing Director (MD) of company #103 explained that his medium sized plastic components company had decided to diversify away from the original equipment components industry like “many other similar companies” due to three main problems encountered by smaller suppliers. First, the continuous price cuts demanded by the assembler no-longer enabled the company to retain historical levels of profitability, despite the assistance from some assemblers in cost reduction programmes. One US-based assembler was identified as the worst client in terms of demanding price cuts without assistance, reflecting the impact of Ignacio Lopez’s sourcing policies developed at GM and now known within the industry as *reine preisdictat* or ‘price is the only concern’ (Bursa *et al.*, 1997:34).

A second problem offered by the MD was that of resident engineers having an adverse impact on the supplier, becoming a surrogate director imposed by the assembler. Eventually, he added, the resident engineer would “take over” and “become god-like”. The perception of resident engineers offered by the MD is in stark contrast to their portrayal in the literature (Chapter 3) as a positive and beneficial facet of the new supply chain paradigm.⁸⁰ A third problem faced by the company was low cost competition from the far east (especially China) which, the MD alleged, use inferior (and cheaper) technology for products such as wheel covers, where solvents are used instead of water-based technology. In response to these problems faced in the automotive sector, the company had diversified into niche markets, such as travel storage boxes, composite doors and other non-automotive plastics applications.

⁸⁰ With further exploration, future studies should examine the perception of the resident engineer from the suppliers’ perspective, thereby provides further insights into the bargaining power of the assemblers.

The conversation with the MD of company #103 addressed a further issue with the research design – the lack of endorsement from the Society of Motor Manufacturers and Traders (SMMT). He commented that the SMMT was perceived to lack support for component manufacturers, particularly those with smaller operations. Indeed, his recent experience suggested that there was little to be gained from membership of the society. One illustration of this was that of having cancelled the company's membership, the company was still invited by the SMMT to attend a funded industry conference in Frankfurt, Germany. This, he suggested, indicated the inconsistency of the industry association, and contributed to a less than satisfactory regard for it.

Although, he added, that the extent to which these views were widely held could not be asserted nor supported, it is possible that such views could also have been directed toward the study, thereby diminishing the response to it. Such comments, although anecdotal, support the decision not to seek endorsement beyond that of the University as detailed in Chapter 5.

Although less revealing, a similar situation was encountered by company #303, the Managing director of which explained in the follow-up discussion that his small (10 person) company had diversified away from the fabrication of aluminium castings for the automotive industry to new markets such as food preparation equipment. Although anecdotal, the insights derived from the Managing Directors of company #103 and, to a lesser extent #303, provide further evidence to support the reduction in the sample frame due to unreachable companies.

These anecdotal insights further address the issue of how companies were defined and included within the sample frame. The need to diversify for the purposes of survival meant that companies may no longer consider themselves to be solely automotive components suppliers, despite their historical legacy in the industry. Companies might, therefore, consider themselves to be a 'plastics', 'metal' or 'rubber' manufacturers competing in several markets and therefore consider themselves no longer eligible to respond to a request for participation to an automotive-related survey.

6.3 RESPONDENT ORGANISATIONS

This section considers the question of whether the organisations that have responded are sufficiently representative of the known population in order for the researcher to make inferences about that wider population. The focus of discussion here is the data provided by the profile questions in part 1 of the questionnaire. Where relevant, the discussion will consider the differences between respondents from different tiers in the supply chain (Chapter 3) in order to examine how the characteristics change according to the suppliers' proximity to the assembler.

6.3.1 NUMBER OF EMPLOYEES

Company size was measured using the recognised classification by number of employees used by the DTI (Bank of England, 2000) where, in addition to the small, medium and large taxonomy, a micro firm (less than 9 employees) is added. When such classifications are compared with the respondent data set, medium and large firms predominate in their representation (Figure 6.2). Together, large and medium firms account for 83.8 per cent of participating companies (40.1 per cent and 43.7 per cent respectively).

Two factors can be said to account for the smaller proportion of micro and small-sized firms represented in this study. First, consolidation within the component sector in the past decade has affected the structure in the industry in this context. Mergers and acquisitions will also have reduced the number of smaller firms, generating a proportionately higher number of medium to large sized organisations. Although there is no comparable historical data on the structure of the components sector, it is likely that for high volume component manufacture and delivery, such operations would require at least 50 employees. In only a few cases of components which are not standard fitments (*e.g.* leather good, wooden veneer, *etc.*) would micro and small firms have sufficient production volume to meet final assembly demand, although such companies might reside at tiers two and three of the supply chain (Section 6.3.4).

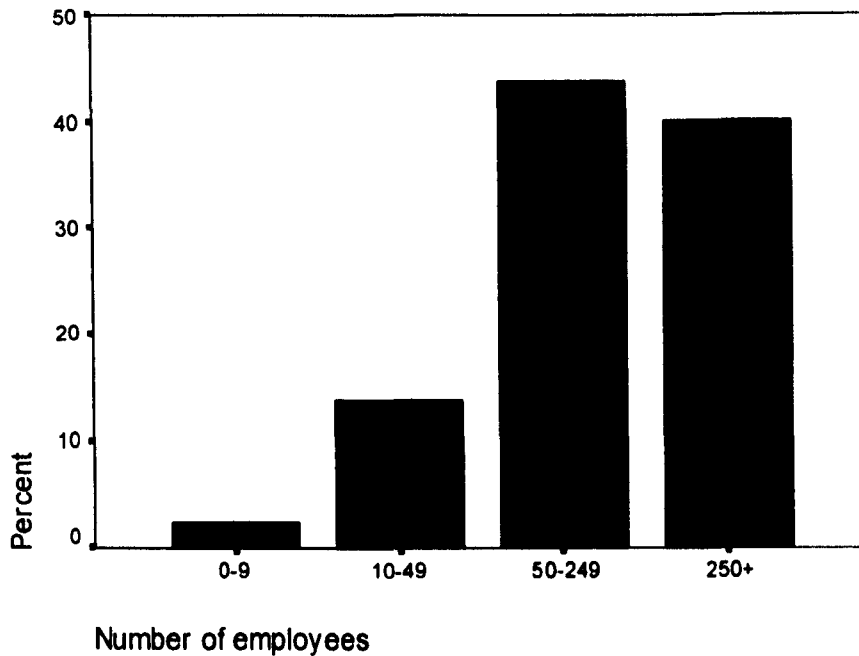


Figure 6.2: Respondent Group Size – Number of Employees

A second reason which might account for the distribution of respondent companies by size toward higher number of employees is the increasing specialisation of companies that is connoted by the tiering of the supply chain, whereby smaller companies supply commodity products (fasteners, hoses, runner products, electrical parts, *etc*). It is, therefore, possible that a number of companies did not respond because the addressee did not perceive the company to be an automotive component manufacturer by virtue of the general application of the component produced rather than the level of output supplied to the industry.⁸¹ Furthermore, the lower number of micro and small firms may also be influenced by the industry trend of subsystem/module delivery. First and second tier suppliers are now responsible for seeking their own component suppliers and the *status quo* may not be preserved with these suppliers seeking new component suppliers in order to meet delivery unit prices determined in negotiation with (but often dictated by) the assemblers.

⁸¹ The 'non-automotive'-automotive supplier has been addressed in Chapter 4 and Section 6.2.4. of this chapter.

The respondent profile should not be taken to suggest that there are very few small (and micro) firms operating in the industry. Companies of this type are increasingly more difficult to identify, having diversified away from a dependence on the sector (Section 6.2.4 above) and may no longer perceive their operations to be dominated by the automotive sector. The trend toward consolidation that is taking place downstream can also have been seen to have taken effect upstream.

6.3.2 TURNOVER

The positioning of questions was addressed in the previous chapter and reference was made to the possibility that respondents might not be willing to complete the question relating to company turnover for automotive related operations. In conclusion to this discussion, the turnover question was retained at the start of the questionnaire (as question number two). The outcome of this question reveals that 90.5 per cent (n=257) of respondents completed this question, offering support to the choice of question position and its non-polemic nature.

The turnover figures for respondents reflects the broad nature of sample in terms of its size, with minimum and maximum turnovers of £300,000 and £2,000,000,000 respectively. The mean turnover figure was £51,538,911. The total turnover accounted for by the sample is £13,245,500,000.

The total revenue figure reported by the respondents suggests that previous estimates of the sector's contribution has been underestimated. For instance, Autoindustry (1999) offers £12 billion as the value of turnover from the sector in 1998, when this study (albeit using 1999 data) exceeds the turnover by nearly £1.25 billion and comprises of only one-third of the known suppliers operating in the UK.

A further, and more significant, indication of the how the sample compares with known features of the UK automotive component industry can, in part, be discerned by turnover figures from SIC groups. However, Chapter 5 noted that organisations producing parts and components for passenger vehicles could be included in a wide variety of SIC codes which did not indicate the direct usage of the product concerned but that the SIC would include many companies with no automotive sector involvement. Accordingly, the aggregation of data from

different SIC groups is a potential dangerous undertaking. Since one SIC code has been designated specifically for automotive component manufacturers (SIC 34.4) official statistics provide some benchmark comparisons (albeit conservative ones given the caveats noted above). ONS (2000c) reports that the turnover/sales from manufacturers of parts and accessories for motor vehicles and their engines (*i.e.*, SIC 34.3) totalled £7.963 billion in 1997. Although comparable figures for 1998 are not currently available, an estimated index of turnover (ONS 2000d) indicates that turnover will have risen in this group by approximately 0.81%, suggesting that turnover in 1999 will have been at the level of approximately £8.027 billion. This figure represents a shortfall of £5.218 billion compared with the turnover figures of the respondent group.

A single fiscal/calendar year and the inability to desegregate OE and AM revenue does not account for what is clearly a major underestimation of the value of automotive component manufacture in terms of the UK's trade balance, GDP and economic growth. The diffusion of component suppliers across SIC groups appears to account for the diminished measurement of the sector's direct contribution to the UK economy in contributing to others, according to official statistics.⁸²

Whilst the highest turnover recorded in the study (£2 billion) may appear to be reasonably high, it reveals the potential for further consolidation in the UK components base. Although subsidiaries of seven of the world's top 25 suppliers (Bursa *et al.*, 1997) are represented in the study, none of the remaining organisations in the study currently meet the 'super-supplier' criteria (*i.e.* > \$3bn per annum).⁸³ Further consolidation, through merger or acquisition to either defend their current operating position or to achieve global (*i.e.*, super-supplier) status seems likely in the near future. Although turnover alone does not constitute a rationale for merger or acquisition (strategic and operational considerations and synergies are further points of scrutiny prior to the pursuance of such a strategy) a

⁸² A further reason for the high level of turnover reported could be the respondents' inclusion of group and non-automotive turnover, despite being asked explicitly to include automotive OEM business only.

⁸³ SBUs of the top 25 global suppliers represented in this study include companies #316, #326, #546, #563, #635, #814 and #982.

turnover level of \$1 billion (c.£640 million⁸⁴) has been suggested as the minimum than can be expected of tier one suppliers. As Bursa *et al.*, (1997:98) note, otherwise “they will be squeezed out, one way or another”, reflected in a move to tier two or three, or exit from the sector altogether. This issue is addressed further in Section 6.3.4 which examines the tier representation of respondent companies and how turnover differs accordingly.

6.3.3 COMPONENT TYPES

The respondent organisations produce a wide variety of automotive components, with a minimum of five companies (in the case of tyres and wheels) within each component category. Table 6.1 details the number of respondent companies in each component category and shows that internal engine components, interior trim and metal stampings and pressings have the highest representations.

Component type	Number of suppliers	% of total
Braking systems	27	9.5
Engine – internal components	39	13.8
Engine cooling	23	8.1
Exterior trim	23	8.1
Fuel supply	34	11.9
Gearbox/clutch components	33	11.6
Glazing products	9	3.2
Heating and ventilation	31	10.9
Hydraulics	14	4.9
Ignition/engine management	26	9.2
Instrumentation	21	7.4
Intake air/exhaust systems	23	8.1
Interior trim	49	17.3
Lighting	17	5.9
Seating	28	9.8
Stampings/pressing	36	12.6
Starting systems	17	5.9
Steering systems	27	9.5
Suspension	31	10.9
Vehicle body parts	21	7.4
Wheels/tyres	5	1.7

Table 6.1: Component Types and Number of Suppliers

⁸⁴ Exchange rates based on average Q1 and Q2 \$/£ rates (CBI, 2000).

It is also clear that several organisations are multi-product manufacturers due to their presence in more than one category. However, this is more noticeable among the large companies than in the smaller companies, where there is a focus on a single product or component of a secondary nature (stampings which form part of a larger subassembly). Not only should diversification and related product development be attributed to the multiple responses found in Table 6.1, the convergence of technologies and modularisation of components (Warburton, 1999) could also be advanced to account for this finding. Although the data collection instrument sought to find the most effective component classification (based on Bosch, 1996), respondents were given the opportunity to include components not formally specified in questionnaire. A further 165 entries were made (Table 6.2), although some of these could have already been specified in the questionnaire, such as stamping and pressing. A number of the miscellaneous entries could be categorised within existing ones. Some examples of these include electric motor cores (starting systems), speed control systems (ignition/engine management) and fuel senders (fuel supply). The components listed in Table 6.3 indicate that some of the product gaps identified by Pickernell (1998a) have been removed.

Acoustic parts/insulation	Occupant safety components
Adhesives	Oil sumps
Airbags	Paint
Batteries	Pneumatics
Bearings	Polymers
Body panels	Rubber mouldings
Coatings	Sealing products
Control and regulator cables	Seals and gaskets
Doorlock sensors	Seat belts
Drive belts	Seatbelt retractors
Engine mounts	Security components
Fasteners	Springs
Gear shifters	Sunroofs
Gyroscopes	Timing belts
Headlamp cleaning	Vibration isolation components
Hose assemblies	Wheel hubs
Hose clamps	Wheel weights
Injection mouldings	Window regulators
Interior hinges	Window/boot linkages
Leather trim	Wipers
Moulded foam	Wiring harnesses/connectors

Table 6.2: Representation of Miscellaneous Component

6.3.4 TIER IN THE SUPPLY CHAIN

Companies from all tiers of the supply chain (Chapter 3) were targeted for participation. Responses were received from companies from each tier, though in greater proportion according to their proximity to the assembler. The final dataset comprised of 152 tier one suppliers, 98 tier two suppliers and 34 tier three suppliers. Figure 6.3 shows the distribution of companies in percentage terms and the higher participation of the upper two tiers.

One could offer several reasons for this skewed distribution. First, the identification of tier three companies was problematised by SIC classifications and multi-industry involvement, both of which are themes discussed extensively in the previous chapter. Secondly, smaller firms have a higher likelihood of business failure (Dunne and Hughes, 1992), and may therefore not be in a position to respond or be identified as a potential respondent. Thirdly, the original database would simply have replicated the lack of third tier suppliers due to its triangulation of disparate sources.

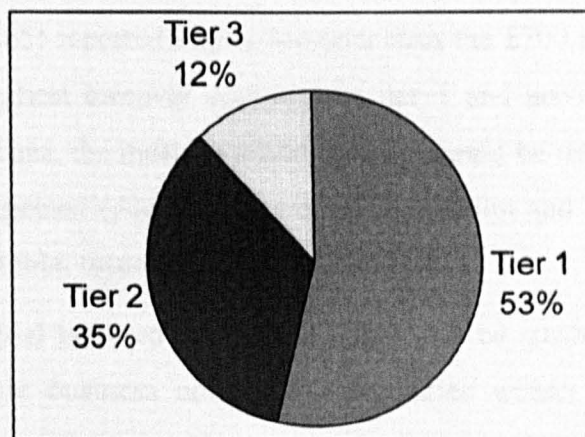


Figure 6.3: Respondent Organisations' Position in the Supply Chain

It has already been established that representativeness cannot be addressed because the population cannot be ascertained accurately. However, an observation can be made in respect of the form of the supply chain. The concept of tiering

(Womack *et al.*, 1990; Bertodo, 1991; Lamming, 1993; Saunders, 1994) has portrayed the number of organisations within a given tier diminishing with the proximity of the tier to the final assembler. Indeed, Bertodo (1991a) used a triangular representation in which the apex of around 300 first tier suppliers would be supplied by some 2000 second tier suppliers who in turn would receive their inputs from approximately 7000 third tier subcontractors. In contrast (and noting the caveats above), the form of the supply chain found in this study indicates the predominance of the first two tiers.

Since the hiatus of literature about supply chain tiering in the late 1980s and early 1990s, greater consolidation has taken place and a specific third tier in which suppliers produce the majority of their output for tier two component manufacturers no longer exists to the same extent as a decade or more ago.⁸⁵

Given the relationship, importance and value-added ability of higher tier suppliers, one would expect this to be reflected in measures of company size – turnover and employees. These are presented in Tables 6.3 and 6.4. The highest turnover per tier was reported from tier 1, although the highest mean turnover and maximum turnover was found in tier two. Moreover, three companies in tier two (#192, #285 and #565) reported higher turnover than the £700 million per annum reported by the highest turnover company in tier 1 and accounted for 74% of revenue in tier 2. Thus, the mean turnover per tier should be treated with caution. Nonetheless, as expected (due to its lower representation and volume) tier three has both the lowest total turnover and mean turnover.

The small differential between tiers 1 and 2 can also be attributed to the higher number of strategic business units and subsidiaries within tier 1. Since the turnover is SBU specific rather than group turnover, in the case of most tier 2 companies, the turnover at the highest tier could be considered to be somewhat conservative.

⁸⁵ Although not central to this study, the current status of tier three suppliers requires further investigation, and is considered in Chapter 8.

	Tier 1	Tier 2	Tier 3	All Tiers
Number of companies ^a	138	86	33	257
<i>Turnover</i>				
Total turnover (£)	7,220,950,000	5,182,900,000	841,650,000	13,245,500,000
Mean turnover (£)	52,325,725	60,226,279	25,504,545	51,538,910
Minimum turnover (£)	300,000	500,000	600,000	300,000
Maximum turnover (£)	700,000,000	2,000,000,000	35,000,000	2,000,000,000
^a Companies that have provided turnover data				

Table 6.3: Turnover per Tier

A clearer picture of the differentials between the tiers in the supply chain can be seen in the use of the number employees as a measure of size. Table 6.4 shows the absolute number in each category per tier and the associated percentile.

First tier companies are mostly large and medium sized, although the requirement for specialised components for high performance model variants has meant that 13 small and micro-sized companies had first tier status in the respondent group.⁸⁶ The second tier is dominated by medium sized firms and has equal numbers of large and small/micro firms, whilst the lowest tier has a relatively even distribution of firms across the large, medium and small/micro categories. The distributions presented here are those which, *a priori*, would be expected given that the individual company volume per model rises significantly per tier as the relationships increasingly become confined to a few suppliers only. Consequently, the labour force will reflect the level of output in a manufacturing context.

<i>Employees^a</i>	Tier 1		Tier 2		Tier 3	
	Number	%	Number	%	Number	%
Micro (0-9 employees)	1	0.7	4	4.1	2	5.9
Small(10-49 employees)	12	7.9	18	18.4	9	26.5
Medium (50-249 employees)	58	38.2	54	55.1	12	35.3
Large (250+ employees)	81	53.2	22	22.4	11	32.3
Total per tier	152		98		34	
^a n=284						

Table 6.4: Employees per Tier

⁸⁶ Such companies are first tier by virtue of their direct supply relationship with the assembler rather than as a supplier of modules/subassemblies, a role which requires extensive R&D and coordination skills.

The caricature of supply chain tiers and company size are reflected in the respondent group, although only partial support is provided by turnover figures due to the inclusion of three companies with disproportionately high revenues relative to their tier. The data provides stronger support for the understanding that small firms tend to reside at tier 3 and the largest firms at tier 1.

6.3.5 HEADQUARTER LOCATION

Unsurprisingly, the respondent group is mainly comprised of companies which have their headquarters based in the UK and continental Europe (Figure 6.4). Although 'ownership' of many of these companies is difficult to determine due to their public listing status, the geographical bias partly reflects the indigenous supply base within the UK and regional sourcing policies (*i.e.*, the European automotive industry will source most of its components from within Europe due to logistics costs). UK based companies accounted for 60.2 per cent of respondents with Europe and US companies constituting 21.1 per cent and 13 per cent of respondents respectively. All Pacific Rim respondent companies were based in Japan and albeit fewer in number compared with Europe and US geographical areas (5.3 per cent of the total), their representation is slightly higher than the proportion within the known population.⁸⁷ Only one respondent used the 'other' category, which in this case was to describe its HQ location in South Africa.

However, the use of headquarter location as a measure of geographical origin should be treated with caution. Differences in the organisational structure of respondent organisations may have led to a distortion in the responses to this question. To evidence this, two US companies (#328 and #563) have geographical organisational structures with a global HQ based in the US and a regional HQ (Europe, North America, Asia, *etc.*). The respondents of these organisations identified their headquarter location as Europe, suggesting that in the absence of a simple structure (subsidiary to HQ), respondents may have used the immediate reporting line as a surrogate for the ultimate headquarter location.

⁸⁷ Willings (1998:185-187) has identified 39 Japanese component manufacturers in the UK, which represents 3.8 per cent of the known population (n=1038).

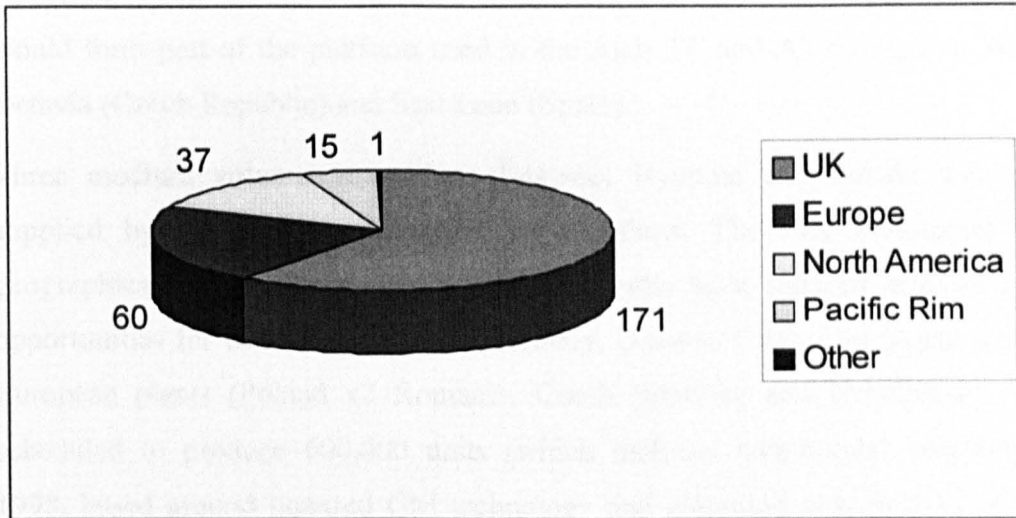


Figure 6.4: Headquarter Location of Respondent Organisations

6.3.6 CUSTOMERS

Respondents were asked to identify the *immediate or indirect* customers for their components/materials to provide an indication of respondent set coverage of the major volume assemblers. The phrasing of the question would ensure that second and third tier suppliers would not merely include other component suppliers downstream in the supply chain. With the exception of Mazda, which has neither UK nor continental European production, all the major European volume assemblers were supplied by at least 23 per cent of respondent organisations (Table 6.5). The low number of respondents reporting supply relationships with Mazda provides further corroboration of the proximity/logistics dimension in sourcing policies noted earlier in the chapter.

Furthermore, there is evidence of significant export activities to continental Europe given that five of the volume assemblers have no high volume assembly presence in the UK (Daimler-Chrysler, Fiat, Saab, VW and Volvo) although between 23 and 37 per cent of suppliers had component supply relationships with these assemblers. Indeed, this could rise to six (Renault) despite the difficulty in establishing whether the component sourcing that was part of the alliance with Nissan announced in April 1999 is manifestly reflected (and is omitted from this assertion). Moreover, with the popularity of platform usage (Chapters 3 and 4;

Appendix 1), a UK manufactured component for the Volkswagen Golf/Bora would form part of the platform used in the Audi TT and A3 (Hungary), Skoda Octavia (Czech Republic) and Seat Leon (Spain).

Three medium volume assemblers, Daewoo, Hyundai and Suzuki were not supplied by any of the respondent organisations. The FDI investment and geographical position of Suzuki's plants in Iberia have reduced new business opportunities for UK-based suppliers. Equally, Daewoo's five central and eastern European plants (Poland x2 Romania, Czech Republic and Uzbekistan) were scheduled to produce 600,000 units (which includes commercial vehicles) in 1998, based around licensed GM technology and emerging new models (AEM, 1997).⁸⁸ Hyundai has no European plants and along with Daewoo, are noted for their sourcing of components from Korea and within their own Chaebols (Bursa *et al.*, 1997:43).

Information about the number of suppliers per assembler is very rare, but two studies indicate that the respondent group includes many of the suppliers of individual assemblers. For example, Bursa *et al.*, (1997) states that Nissan has 131 suppliers based in the UK compared with the 119 companies in this study. In another study in which the author has been involved (Foley *et al.*, 1996) identified 80 UK suppliers compared with 128 in the respondent group (the larger number reflecting the higher plant volume and model variety since the start of production).

The respondent group also supplied to a number of specialist, low volume or alliance assemblers (Table 6.6). Eight respondents indicated that they supplied General Motor's US operations and one other respondent supplied Daihatsu's production in South East Asia suggesting a small amount of component export outside western, central and eastern Europe. The low number of Nedcar suppliers will have been influenced by the joint platform development of Volvo (Ford) and Mitsubishi for the Charisma/S40/V40 models, including a high number of Japanese sourced carry over parts from previous models. The small number of Rolls Royce suppliers is not unexpected due to the high proportion of in-house

⁸⁸ By way of comparison, in the same period (1999), VW's Wolfsburg plant produced 604,025 Golfs and a further 255,298 units (FT Automotive, 1999).

component production for current models, although some integration with VW component sources will arise in the future alongside the trend toward multi model component sharing and platform usage within the industry.

Assembler	Respondent suppliers	% total respondents	UK Plants	Non-UK European Plants ^c
BMW	125	44.01	✓	Germany
Daimler-Chrysler	91	32.04	✗	Austria, France, Germany, Spain
PSA Group	81	28.52	✓	France, Portugal, Spain
Ford	202	71.13	✓	Belarus, Belgium, Germany, Netherlands Poland, Portugal, Spain, Sweden ^a Turkey
Fiat	65	22.89	✗	France, Italy, Poland, Turkey
Honda	147	51.76	✓	Turkey
Jaguar	170	59.86	✓	✗
Mazda	28	9.86	✗	✗
Nissan	119	41.90	✓	France
Rover/Land Rover	214	75.35	✓	✗
Renault ^b	82	28.87	✓	Belgium, France, Portugal, Slovenia, Spain, Turkey
Saab ^c	85	29.93	✗	Sweden
Toyota	128	45.07	✓	France
Vauxhall (GM)	136	47.89	✓	Belgium, Germany, Hungary, Poland, Portugal, Russia, Turkey
Volkswagen Group ^d	106	37.32	✗	Belarus, Belgium Czech Rep., Germany Hungary, Poland, Portugal, Russia, Spain, Slovakia
Volvo (specific)	90	31.69	✗	Sweden

^a Volvo operations; ^b Equity alliance with Renault; ^c GM Group; ^d Includes Seat, Skoda, Audi (excludes Rolls Royce), ^e Excludes alliances with Central and Eastern European alliances for re-badged models

Table 6.5: Respondents' Customers – UK and Continental Europe

Sources: Author's own data, Automotive Emerging Markets (September 1997; June 1998), and Brown (1999)

The downstream and final assembler relationships of the respondent group are broadly in accordance with the plant locations of major volume producers in the UK and continental Europe. As expected, there is clear evidence of export activity of components and geography still remains an important factor in the sourcing policies of the assemblers, evidenced by the low number of supply relationships outside Europe.

Company	Suppliers	Parent	Plant location(s)
Aston Martin	4	Ford	UK
Daihatsu	1	Independent	S.E. Asia
GM (US)	8	n/a	U.S.A.
Lotus	5	Proton (Malasia)	UK
Morgan	1	Independent	UK
Nedcar	3	Volvo-Mitsubishi	Born, Netherlands
Porsche	2	Independent	Zuffenhausen, Germany
Reliant	1	Independent	UK
Rolls Royce	7	Volkswagen/BMW ⁸⁹	New UK plant announced (2000)
TVR	2	Independent	UK

Table 6.6: Additional Assemblers Supplied by Respondent Companies

6.3.7 INVOLVEMENT IN ALLIANCES

Collaboration between suppliers and assemblers has been a major feature in the change in supply chain relationships within the sector for over twenty years, with the adoption of the 'Japanese' model of supplier development (Chapter 3). Recently, there has been evidence to suggest that alliances have now become a feature upstream in the US-based automotive component sector where suppliers have attempted to absorb some of the advantages inherent within *kieretsu* structures (Virag and Mount, 1998).

In their study of 131 suppliers, Virag and Mount (1998) discovered that 54 per cent of respondents had entered into a strategic alliance with another supplier with 45 per cent having chosen not to pursue such inter-organisational linkages (1 per cent replied 'not applicable').

⁸⁹ The final arrangements for BMW and Volkswagen following the takeover of Rolls Royce are as follows – the Rolls Royce company is split into two with Volkswagen retaining the Crewe factory, Bentley brand and the right to manufacture Rolls Royce Cars until 2001 at which time BMW will obtain the Rolls Royce brand.

In this study (n=284), a smaller percentage of companies (44 per cent) had entered into strategic alliances with other component manufacturers (Figure 6.5). Not known is the degree to which these alliances are voluntary or hostile, where in the latter it is the assemblers which require two or more suppliers to work together to develop and bid for a component supply contract. However, *prima facie*, the UK-based sector bears only minor differences to its US counterpart and indicates the degree of interconnectedness and interdependence among organisations upstream of the final assembler.

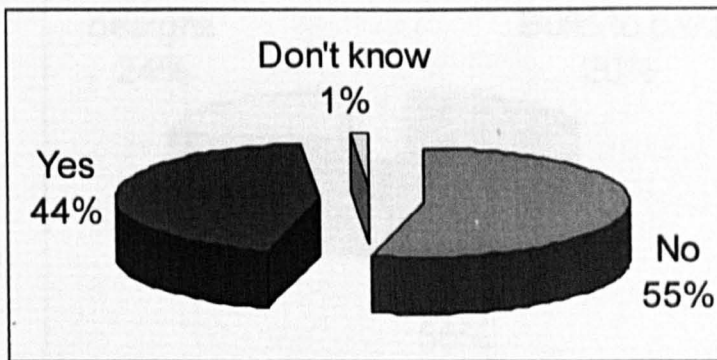


Figure 6.5: Alliance Involvement with other Suppliers

Alliance involvement varies slightly according to the tier of the respondent in the supply chain (Table 6.7). Around one third of tier two and three companies were involved in formal alliances with other suppliers. However, over half (55 per cent) of tier one companies did have formal collaborative arrangements in place. The need for, or requirement to form, alliances is stronger with the proximity of the supplier to the assembly, predicated by the need to supply systems and modules which require a greater range of design manufacturing and technical expertise.

Alliances with suppliers	Tier 1		Tier 2		Tier 3	
	Count	%	Count	%	Count	%
No	68	44.7	65	66.3	21	61.8
Yes	83	54.6	32	32.7	11	32.4
Don't know	1	0.7	1	1.0	2	5.9

Table 6.7: Supplier Alliances according to Supply Chain Tier.

6.3.8 R&D RESPONSIBILITY

Evidence of the formal linkages with assemblers can be examined through the extent to which collaboration is a central pillar of research and development. Over half of the respondent group was primarily involved in joint R&D with the assembler with fewer than a quarter of companies 'building to print' (using the customer's designs) or developing components on their own (Figure 6.6).

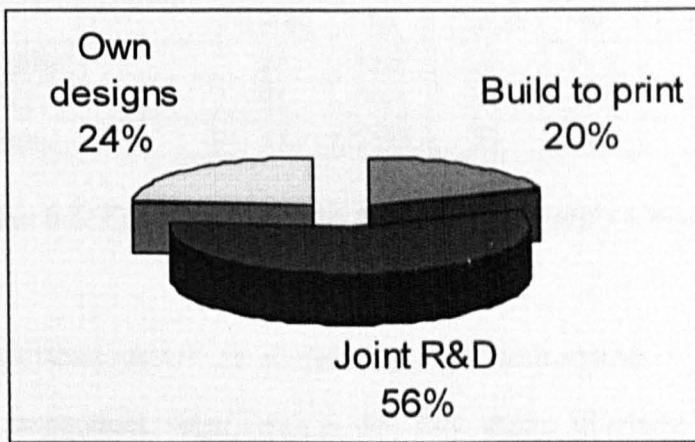


Figure 6.6: R&D Involvement of the Respondent Group

Between the three tiers, few salient differences were observed in the approach to R&D used by the respondents (Table 6.8). Clearly dominant is a joint R&D approach across the tiers. Tier one suppliers rely least on customer designs (15.1 per cent) whereas tier two companies have the highest rate of build to print involvement. This suggests that these tier two companies are working to the designs developed by the tier one supplier and assembler.

The tier three suppliers are still involved in joint R&D with their customers (tier two suppliers) but have the highest rate of sole R&D involvement of the tiers (26.5 per cent). This could be, in part, due to the commodity nature of the product (fasteners, plastics, basic materials, etc.). However, this is not an anomaly – all three tiers still have levels of sole R&D which cannot be ignored. Between one fifth and one quarter of all companies in each tier have taken this approach. These companies need or believe research and development to be central to their strategy and/or their competitive advantage. A joint R&D approach clearly has advantages

in terms of cost, time, learning and commitment (Chapter 3), but companies are seeking to forgo these in favour of competitive differentiation and advantage – ultimately their survival. This clearly indicates the importance of further research within the automotive components industry in relation to *why* organisations still choose (or are forced to adopt) sole R&D approaches. The study returns to this theme in Chapter 8.

R&D Involvement	Tier 1		Tier 2		Tier 3	
	Count	%	Count	%	Count	%
Build to print	23	15.1	26	26.5	7	20.6
Joint R&D	91	59.9	51	52.0	18	52.9
Own designs	38	25.0	21	21.4	9	26.5

Table 6.8: R&D Involvement According to Supply Chain Tier

6.3.9 OBSERVATIONS ABOUT THE RESPONDENT ORGANISATIONS

The set of respondent organisations for this study illustrate the variety of companies which operate within the UK automotive components sector. Although predominantly UK or European-based, the presence of US and Japanese companies denotes their technological capabilities and associations with assemblers of similar origins with operations in the UK and Europe. Indeed, a high level of export activity can be observed from the respondent organisations, predominantly into mainland Europe but with a small amount of production exported to farther afield. Although the automotive industry can be considered to be global in manufacturing, logistics and operations, it is an industry that has firmly rooted regional infrastructures and systems.

The number of companies and their size according to the tier in the supply chain as found in this study bear the hallmarks of the sectoral structure indicated in preceding studies although turnover data suggests a high degree of similarity between companies in the first and second tier. Equally, respondents' involvement in supplier alliances suggests congruence of the respondent group with preceding studies. In terms of products and customers, the respondent group can be said to produce all major components and assemblies to all major assemblers. Indeed, the

group includes companies that also supply to smaller volume vehicle assemblers and supply specialised components in addition to their high volume component portfolio. Furthermore, the multi-product nature of the group demonstrates the technological convergence that will become increasingly important as modularisation becomes the norm in vehicle design, component sourcing and final assembly.

The respondent group is unlikely to remain untouched in the next few years. Consolidation strategies are likely to affect those organisations that are not already SBUs or subsidiaries of larger automotive concerns, and few of the respondents presently have reached the turnover threshold for super supplier status. However, the respondent group is sufficiently well comprised to constitute a suitable foundation for an analysis which purports to examine the UK automotive components sector.

6.4 RESPONDENTS MANAGERS

Next the chapter considers the managers that have supplied data for the investigation. In particular, this section examines the respondent's credentials for assignation as 'senior' managers and the success of the researcher in achieving responses from this relevant group. Without the correct type of manager as participants in the study, no inferences can be made about strategic decision makers. The principal foci are the managers' positions, background, automotive experience and tenure as a senior manager.

6.4.1 FORMAL POSITION OF RESPONDENTS

The target respondents within the organisations ('respondent managers') within the sample frame were senior managers, given their direct involvement in strategic decision making. The questionnaire asked the respondents to state their formal job title in the expectation that there would be some minor variations and to ensure that the person who had completed the questionnaire could be deemed eligible for a study about senior managers. All respondents were found to be eligible according to their job title (Table 6.9).

The overwhelming majority (96.4 per cent) of respondent managers were Directors or Managing Directors, the latter of which is a term frequently replaced by Chief Executive Officer. Directors are regarded to be the highest level manager with a direct managerial and budgetary remit for a specific functional area (finance, marketing, production *etc.*) and generally occupy a company board position, thereby providing the Director with a direct influence upon strategic decisions. In addition, functional (business level) strategic plans are the responsibility of a given director and should be aligned with the corporate level strategy. The Managing Director is considered to be the highest ranking manager responsible for day-to-day operations within an organisation. He or she will normally report to the Company Chairman/President.

Title	Number of respondents	Percentage
Chief Executive Officer	10	3.5
Chairman	4	1.4
Director	116	40.8
Managing Director	148	52.1
President	3	1.1
Vice President	3	1.1
TOTAL	284	100.0

Table 6.9: Formal Job Descriptions of Respondent Managers

Accordingly, the respondent managers are clearly senior managers which (at least in authority) are responsible for their organisations' strategic initiatives. On this basis, where subsequent chapters make reference to strategists and strategy makers, they do so through a known and explicit understanding of the hierarchical position of respondents.

6.4.2 BACKGROUND

The background of the manager was included in the questionnaire since this might have an influence upon a manager's perceptions of competitive advantage. Indeed, the notion of functional bias is well established within the literature (Anderson and Paine, 1975; Barnes, 1984; Norburn, 1986; Ireland *et al.*, 1987). Such data was necessary not only to provide further depth into the characteristics

of the respondent manager group, but to provide further information for interpretation in the next chapter. Correspondingly, respondents were asked to identify their main background in terms of training and experience. The word 'main' was used to avoid split-decision responses where a respondent might tick two or more boxes in the questionnaire and render the response of little use for analysis given that no weighting would be supplied.

Given the nature of the industry, one would expect a functional bias in the respondent manager group toward production and this was found to be the case (Table 6.10).

Background	Number of respondents	Percentage
Production	119	41.9
Sales	23	8.1
Marketing	59	20.8
Research and Development	19	6.7
Purchasing	7	2.5
Finance	24	8.5
Other	33	11.6
TOTAL	284	100.0

Table 6.10: Backgrounds of Respondent Managers.

A production background was found to be the most common, with 42 per cent of managers having their formal training as experience. Marketing backgrounds were the second most common among the respondent managers whilst sales, R&D, purchasing and finance reaching only single figure percentages in the respondent manager group. The 'other' category was ticked by 33 managers although the request to specify the type of background was inconsistent. Several indicated engineering backgrounds (which in certain cases could be considered to form part of production) and a smaller number still had backgrounds in logistics (which, again, could be considered to form part of purchasing, or *vice-versa*). Although there was the expectation that some of the senior managers might have background in Information Technology or Law, with explicit provision for this in the questionnaire, no respondent managers indicated backgrounds in these two areas.

6.4.3 EXPERIENCE IN THE AUTOMOTIVE INDUSTRY

Respondents were asked to provide information about their experience within the automotive industry and experience in their present position *i.e.*, length of current tenure as a senior manager (Table 6.11).

Experience	Mean	S.D.
Industry	19.91	10.73
Tenure	6.48	6.68

Table 6.11: Experience of Respondent Managers (n=284)

Whilst we would not expect industry experience to exceed tenure, the respondent manager group has lengthy experience within the industry (mean =19.91 years) with only a small number of managers with experiences less than ten years (SD=10.73). By way of comparison, Mudambi and Helper's (1998) study of senior managers in the US automotive components industry reported an average industry experience of 18 years. From the study's perspective and for the purposes of interpretation of findings, it can be posited that most of the managers within the respondent group have experienced the transition of the UK automotive components sector since the influx of Japanese assembly foreign direct investment in the late 1980s.

Equally, Table 6.11 above presents the respondent manager group as holding sufficiently long tenures to constitute at least medium term (1-7 years) insights into strategic decision making and the outcomes of previous strategic decisions. They should not, except for in only a few extreme cases (SD=6.68), be considered novice managers in their respective senior positions. It could also be assumed that many of the senior managers may or will have occupied another senior position, particularly in the case of Managing Directors (52.1 per cent of respondents) who will have occupied a functional directorship (Director of Finance, Director of Production, *etc.*) prior to promotion to their current position.

6.4.4 OBSERVATIONS ABOUT RESPONDENTS

The data set has been constructed with the contributions of strategic managers. This statement is supported by the overwhelming number of Managing Directors and Directors in the study, with the balance occupied by non-operational senior managers (Chairmen and Presidents). Moreover, these managers have adequate levels of industry experience and positional tenure for the researcher not only to be certain that these managers have sufficient experience to be involved in strategic decision-making, but that they do so with a thorough understanding of the impact of industry context on business strategies.

6.5. SUITABILITY OF SAMPLE SIZE AND SAMPLING ADEQUACY

This chapter has addressed the suitability of the respondents in respect of the organisations' characteristics and the seniority of managers such that we can consider the data to have been contributed by strategic managers in the UK automotive components industry. In addition, statistical analysis has revealed no significant differences between non-respondents and respondents. However, prior to the undertaking of the empirical analysis of data, two final issues require attention – the suitability of the sample size and the factorability of the data matrix generated from responses.

6.5.1 SUITABILITY OF SAMPLE SIZE

Prior to any undertaking of factor analysis, two important considerations must be overcome. These are sample size and sampling adequacy. In Chapter 5 it was observed that there is some disagreement among statistical experts as to the sample size required for factor analysis. Sample size is important because of its influence upon the reliability of factors. The achieved number of responses (n=284) means that the criteria of 5 subjects per variable⁹⁰ and a minimum response of either 100 or 200 (Guilford, 1956; Hair *et al.*, 1987; Tinsley, 1987; Kline 1992; Coakes and Steed, 1999) have been met with a high margin of comfort. Only the strictest criterion set by Sekaran (1992), that would have

⁹⁰ The reader will recall that there are 32 statements in the questionnaire. On this basis, the threshold of 160 has been met.

required 320 responses has not been achieved, although by a margin of 36 returns. On the consideration of sample size, the data set provided by the respondent group is apt for factor analysis.

6.5.2 SAMPLING ADEQUACY AND DATA FACTORABILITY

However, as the previous chapter noted, factorability of the data set is an important consideration prior to analysis since data matrices can have one of two characteristics – functional and identity. A functional matrix (necessary for factor analysis) contains underlying relationships between variables which cannot be identified *prima facie*. An identity matrix would only tell us that what is factored is exactly the same as that which is already known (Rendall, 2000a).

Sampling adequacy/factorability of the entire data matrix can be tested in two ways, through the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Applied to the data set, Bartlett's test is large at 1620.921 with a small significance level (Sig = .000) indicating that factorability can be achieved, and the KMO measure of sampling is above 0.5 (MSA = 0.717). The MSA criteria of 0.717 would be classified as 'middling' by Stewart (1981). A functional matrix has been achieved, and data reduction techniques can be suitably applied to the data to derive further insights.

6.6. CHAPTER SUMMARY

This chapter has examined the response to the research strategy and design developed in the previous chapter. A primary consideration was to audit the respondents and data set in order to ensure that the study could reasonably purport to be that which it set out to be.

There is clear evidence to establish that the respondent organisation group is not significantly different to the known population. The response rate compares favourably with previous studies and the respondent group reflects the known characteristics of component suppliers developed in previous studies. Additionally, the chapter has clearly shown that respondent managers are sufficiently vocationally and industrially experienced to provide a clear indication of a wider group of managers' attitudes toward theories of competitive advantage.

Finally, the data matrix derived from the respondents has been tested for its suitability for data reduction techniques. In this respect, testing has shown the potential for further insights to be derived from the contributions of respondents.

The data, and therefore the inferences and outcomes of the analysis are derived from a suitable sample of strategic managers in the UK automotive components industry. The next chapter examines the responses of respondent managers and the inferences that can be made through the empirical analysis of the data.

Chapter 7 – Research Results and Analysis

7.1 INTRODUCTION

Having established the nature and composition of the respondent organisations and managers in the previous chapter, the principal objective of this chapter is to provide a detailed discussion of the empirical findings and their contribution in relation to the research questions for this study.

The chapter begins with a reiteration of the research questions, noting in each case how the empirical analysis will be used to derive answers and conclusions. Following this, the chapter continues with a detailed examination of the factor analytic solution which is used to address the research questions, complemented with further statistical techniques used to explore differences in the data.

The chapter concludes with an explicit consideration of how the research questions have been resolved and observations about the industry, respondents and strategic management theory are made in order to form the basis for the final chapter, which examines the contribution and implications of the study to the industry and its theoretical domain.

7.1.1 ADDRESSING THE RESEARCH QUESTIONS

Prior to embarking upon the analysis of the data collected from the respondent organisations and managers profiled in Chapter 6, it is appropriate to reiterate both the research questions and how each will be addressed using the chosen data analysis procedures.

- i. *Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?*

Were one to observe such a clear loading structure for one of the views of competitive advantage (position or resources) with an ambiguous structure explaining the remaining variables, such a question could be answered in the affirmative – that managers perceive competitive advantage in a clear way, reflecting the preceding discussion of the literature (Chapters 3 and 4). Thus, for instance, were factor analysis to present a component matrix in which the relevant four factors clearly loading the variables of company size, industry structure, strengths and weaknesses, and supply chain relationships, in contrast to a number of ambiguous, weak, or un-interpretable factors (by virtue of the variance explained), one could support the view that a perception based on competitive advantage based upon position was held by the responded managers.⁹¹

ii. Do managers perceive resource accumulation to be part of the RBV construct?

The second research question can be considered through an inspection of how the resource accumulation statements load (either together or separately) in the component matrix. *A priori*, the four ‘access to resources’ statements will load together onto the same factor.

iii. Do managers associate portfolios of resources with product platforms, families and technology convergence?

Similarly, for support to be given to the move from the abstract notion of resource bundles into the perceptions of strategists one would expect to find that the four statements relating to combining resources load in the component matrix. *A priori*, the four statements will load together onto the same factor. Accordingly

⁹¹ The reader will recall that the resource-based items in the survey instrument fall into four classes - Uniqueness and competitive advantage, access to resources, managing resources, and combining resources. The position based classes are size, industry structure, strengths and weaknesses, and relationships.

loadings on different factors would suggest that the cogency of the concept is limited, if non-existent.

iv. *Do managers recognise the importance of resource management?*

For the importance of resource management to be supported, one would expect that the statements referring to resource management loads onto a factor for which a specific management interpretation can be made (such as managing resources, as had given rise to the four items in Chapter 4).

v. *Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?*

Here, one would expect that support for the proposition of a hierarchy of resources would be offered by the means scores for questions 14a to 14d (referring to valuable, rare, inimitable and organised respectively). The mean scores for each of these statements in order would have to increase to provide support for the VRIO framework. Equally, the spread of scores for the terminology used by the respondent in questions 13a to 13d (referring to strength, capability, competence and core competence respectively) would suggest that managers use individual, rather than a variety of, terms, the latter indicating a higher degree of indiscrimination between the terms.

7.2 FACTOR ANALYSIS OF COMPETITIVE ADVANTAGE STATEMENTS

A principal component analysis using orthogonal solution reveals a simple structure comprising of nine factors with eigenvalues over 1.1 which explain 52.6 per cent of the variation in responses (Table 7.1).⁹² The balance of variance still to be explained and the number of factors provides some indication of complexity

⁹² The final structure was chosen following a trial rotation procedure detailed in Appendix 2.

within the data-set, despite having achieved simple structure. The nine factors consist of two doublet factors, four triplet factors and three factors on which five or more items load (Thurstone, 1949). Two of the nine factors (8 and 9) are bipolar indicating negative relationships between items within these factors.

Given that the number of factors exceeds the number of classes (8) from which the statements were derived, one can already discern that there is not a precise resemblance of the factor structure to that proposed from the antecedent literature. The nine factors identified in the factor structure in Table 7.1 have been labelled as follows:

Factor 1 – Organisational Transparency

Factor 2 – Management Advantage

Factor 3 – Relationship Uniqueness

Factor 4 – Platform Advantage

Factor 5 – Scale

Factor 6 – Market Power

Factor 7 – Resource Accumulation

Factor 8 – Immediacy of Superiority

Factor 9 – Historical Advantage

The remaining parts of this section examine the individual composition of each of the factors, how they differ from the expectations suggested in the strategic management literature and how an interpretation (and label) can be developed in the context of the UK automotive components industry. The individual interpretation of the factors provides the basis for addressing several of the research questions as indicated in Section 7.1.1 (overleaf). Taken as a whole, and following the individual interpretation of the factors, the factor matrix provides the foundation for a response to the principal research question “Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?”.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
s23	0.75								
s42	0.74								
s31	0.58								
s40	0.53								
s33	0.39								
s41		0.71							
s39		0.65							
s45		0.57							
s46		0.52							
s19		0.46							
s24			0.61						
s30			0.55						
s28			0.55						
s35			0.49						
s34			0.43						
s27			0.41						
s37				0.75					
s36				0.65					
s43				0.52					
s15					0.81				
s16					0.68				
s17						0.69			
s18						0.65			
s21						0.37			
s26							0.72		
s38							0.63		
s32								-0.74	
s29								0.61	
s22								0.51	
s25									0.54
s20									0.39
s44									-0.38
Eigenvalue	4.32	2.29	2.09	1.63	1.49	1.41	1.26	1.22	1.11
% of variance explained	7.5	7.4	6.8	5.8	5.6	5.2	5.1	5.0	4.2
Cumulative % of variance explained	7.5	14.9	21.7	27.5	33.1	38.3	43.4	48.4	52.6

Table 7.1: Rotated Factor Solution

7.2.1 FACTOR 1 – ORGANISATIONAL TRANSPARENCY⁹³

Factor one – *organisational transparency* – accounts for the most variance in the rotated factor matrix and can be considered to be the strongest strategic concept.

⁹³ For the convenience of the reader, the final page of this thesis takes the form of a pull-out flap containing the full list of statements referred to in this chapter. Hence “s23” in the text is used as a short notation for statement 23.

Three of the four items originally designated to connote the relativity of analysis (Chapter 4.2.3) load on this factor (s23, s40 and s42) and this factor can be interpreted as the respondent managers' beliefs about whether he or she can easily identify competitive advantages through analysis rather than the whether the advantage, once gained, can be sustained or imitated (Table 7.2). The factor label connotes a clear 'vista' of strategic issues, strategic analysis, and competitive advantages between organisations. It implies that there is a relatively easy diffusion of knowledge, which in this industry could be attributable to supply chain management, resident engineers and tiering.

The loading of statements 42 and 31 reflect the belief that a strategic competitor analysis can reveal the hidden sources of competitive advantage, albeit under conditions of uncertain imitability. In particular, our attention should be drawn to our interpretation of statement 31 (originally a RBV statement) in the context of this factor, where respondent managers do not perceive resource advantage to be hidden or mysterious. Were this to be the case otherwise, s27, s34 and s35 would have been expected to load on the same factor.

Factor number	Factor name	Eigenvalue	% of variance explained	
1	<i>Organisational transparency</i>	4.32	7.5%	

Statement number	Statement text	Rotated loading	Original class	Original division
23	<i>A rival's strengths and weaknesses can be evaluated objectively.</i>	.749	3	Position
42	<i>A company can collect enough information about rivals to enable comparisons of strengths and weaknesses.</i>	.737	3	Position
31	<i>The relationship between resources and competitive advantage can be clearly understood</i>	.584	6	Resources
40	<i>A SWOT analysis enables managers to effectively analyse rivals' strengths and weaknesses.</i>	.526	3	Position
33	<i>The differences between companies' resources account for differences in competitive advantage.</i>	.392	5	Resources

Table 7.2: Factor Structure – Organisational Transparency

Accordingly, factor one is about the analysis of advantage which is perceived to be transparent which is confirmed by the loading of s40, which provides explicit recognition of using simple techniques to compare organisations. The corollary of the analysis – implementation of the advantage and perceptions about whether imitation can succeed or innovation be sustained – are central themes exhibited in factors three and four.

Statement 33 loads at .392 (*i.e.* <.40) and despite its original purpose to convey some of the basic notions of the resource-based view, the statement loads onto this factor since, whatever the interpretation of ‘resources’, the statement conveys the idea of differentials (*c.f.* s40). It should be noted that this statement suggests asset mass efficiencies (Dierrickx and Cool, 1989) whereupon there are instances in which planning *per se* does not account for the differences between organisations even though such differences can be identified.

Statements s23 and s42 have very strong loadings, suggesting a positive relationship between information collected and objective analysis. In other words, rationality of decision making and analysis is presumed, despite the insights of bounded rationality, groupthink and cognitive biases in respect of decision processes. To further advance the understanding of this factor as referring to analysis is the failure of the remaining SWOT item to load onto this factor (s29). Closer inspection of the wording of the statement (“companies always exploit their strengths to gain a competitive advantage”) reveals that respondents have distinguished between the identification (analysis) and deployment (implementation) of resources which are perceived to be superior to those of rivals (*i.e.*, a strength). Accordingly, it is not the analysis *per se* that generates the advantage – it merely highlights the potential to do so. Managers appear to echo the classical approach to strategy formulation, *i.e.* analysis, choice and implementation examined in Chapter 2 (Ansoff, 1965; Learned *et al.*, 1965, Andrews, 1971). The ability to use a resource deemed to be superior is central to factor two (below).

The first factor gives rise to a number of important implications. First there is an estimation of the perceived difficulty of strategic analysis, which among the respondent managers is perceived to be relatively easy on account of organisational transparency. Secondly the importance of resources or strengths are determined by their ability to generate value and advantage in the context of the external competitive environment. Third there is confirmation of the intuitive attraction of the SWOT concept. Fourth, a preliminary indication is presented (to be supported by later factors) to indicate that managers do not make a clear distinction between residence or resources as portrayed in the literature.

Whether the perceived transparency of analysis has implications remains to be seen. However, this transparency could reflect a lack of true insight into competitive and strategic issues. Consequently, if competitive advantage does not arise from planning (the search for new opportunities), one would expect advantages to accrue from other sources such as technology, organisational size, history, management and relationships. Indeed, subsequent factors appear to reflect these sources of competitive advantage.

The organisational transparency factor reveals much about the assumptions and perceptions of managers within this industry. Absent from the loaded items is uncertainty, whereby the dynamics of the business environment, human cognition limitations, the ambiguity of planning techniques and inter and intra-organisational politics conspire together to reduce the efficacy of strategic planning activities (Chapter 2). Organisational transparency presupposes the senior manager's ability to identify, understand and influence the context in which he or she is planning (Camillus and Datta, 1991). In essence, organisational transparency is underpinned by the notion that management is, in part, about control, not only of the factors of production but also those forces which influence the productive ability of those factors and the future circumstances and configuration of resources in which those resources will be deployed (*i.e.*, the organisation's strategy).

Strategy formulation is a clear pillar of organisational transparency. To an extent, the loading of items which resonate deliberate and predetermined processes of

strategic analysis and strategic choice are unsurprising, but nonetheless revealing, since the respondent managers' remit is widely considered to be as strategic architects. However, since the factor does not load items which refer to intra-organisational relationships, functional involvement or size-based items (for which several statements are available in the item pool of the survey instrument) one can infer that high level strategic activities are commensurate with the hierarchical level of managers directly involved. In other words, factor one reveals that managers perceive strategic planning activities to be the sole preserve of equivalent peers, rather than the calls for subordinate involvement in those same activities (for instance Mintzberg, 1977) or a combination thereof (Petroni, 1983; Moyer, 1996).

The notion of rivalry is strong in organisational transparency, where one finds that three of the five statements contain the word 'rival' load the factor. Not only is an understanding of who rivals are an absolute necessity in order to carry out a comparison between two organisations, rivalry connotes the immediacy of industry competition, that is to say, all those organisations among which there is a potential for cross elasticity of demand already resides in the industry. Hence, the planner's concern should be with those organisations, rather than those who, subject to the attractiveness and strategic benefits of the industry, seek to enter only to face entry barriers (Caves and Porter, 1977; Dixit, 1980; Milgrom and Roberts, 1982; Breshnan and Reiss, 1987) such as capital requirements (physical plant and equipment), customer access (given the longer term nature of supply contracts than in the past) and technology issues (joint R&D forming the basis of platform strategies). Such an observation can be made due to the non-loading of statements referring to entry barriers (s25) and the number of rivals (s17). Despite the often compelling message from the literature that senior managers should pay as much attention to those organisations that are currently not part of the industry but have the potential to do so (Porter, 1980; Prahalad and Hamel, 1991), comparative approaches (*i.e.*, SWOT oriented) to analysis are based around existing rivals rather than potential entrants or diversifiers.

What could account for such a view to be taken by the respondents in this study – or more accurately, for the views to be reflected in this factor? Clearly, unlike so-

called newer industries such as consumer electronics, personal computing and biotechnology, competitive shifts have been characterised by punctuated stability, where shifts in the extent of in-house component production by the assemblers and their technology, cost, logistics and quality priorities.⁹⁴ So, why would a UK radiator/cooling system manufacturer have considered a Japanese supplier of equivalent components to have been a rival until such a company's entry was precipitated by the commencement of UK production for a Japanese assembler in the 1980s?⁹⁵ Plant location decisions could not be influenced by the indigenous supplier and, accordingly, agency over the selection of suppliers and their entry could not be controlled.

Next, it could be argued that the existing rivals or (industry resident) potential rivals are known relatively easily. Managers will be acutely aware of who rivals are since componentry can be identified from a simple under-bonnet search, company publicity and previous bidding activities (where rival bidders may have been identified by the assembler). Such historical knowledge of rivals and the assumptions of stability in rival clusters (*i.e.* strategic groups) would merely confirm that comparative strategic analysis is best served, achieved and enlightened through a focus on those existing rivals. If, in addition to this, and hitherto argued in Chapter 3, lower transaction costs, higher asset specificity (due to joint R&D), and higher switching costs (due to shared resources) may contribute to longer contract lengths (as the basis and reward for collaborative behaviour), it could be suggested that the dynamics of buyer-supplier switching are more stable than in the past (when short-term price orientations reigned supreme).

Although industry context may explicate why rivalry is perceived to be a direct presence in the industry at a given point in time alone, there is a danger that potential rivals from other industries or geographical locations are ignored such that strategic analysis becomes a benchmarking exercise against known rivals rather than a wider (albeit more problematically investigative) search for new

⁹⁴ The world's first petrol driven motor car was launched into the German market by Gottlieb Daimler in 1885 (Bessel, 1990).

⁹⁵ Garrahan and Steward (1993:16) note that in a ten year period (1981-1991) some three hundred Japanese components suppliers began production in the USA.

demand threats. Accordingly, organisational transparency reflects these strategists' view of the competitive world seen through a fixed telescope, used to focus on those known elements from a single angle of view such that rivalry is limited by both perceptives and assumptions of certainty, rather than the kaleidoscopic or holographic perspectives implicit in those arguing a chaotic or hyper-competitive view of competitive dynamics (Stacey, 1993; Levy, 1994; Beinhocker, 1997; Lengnick-Hall and Wolff, 1999) which challenges both the notions of stability and repeated planning using similar techniques. Further, the simplification of reference points against which a company's resources are evaluated may lead to incorrect conclusions in respect of the source of strategic threats (Amit and Schoemaker, 1993).

It is not lethargy or lack of experience which necessarily accounts for a limited conception, and thereafter analysis, of rivals, but rather the industry conditions which set the context and priorities for planning and analysis events. Consequently, one can already discern from our first factor that industry has, not unexpectedly, an influence on the perceptions which drive the analysis and understanding of strategic options and possibilities, as postulated by Huff (1982) and termed 'borrowed experience'.

In summary, the organisational transparency factor reveals a strong perception in respect of a formulated top-management activity of planning and analysis based on a clear vista of the competitive landscape and known rivals. Hence, despite the articulations of resource-based writers that competitive advantage is internally derived (Lado *et al*, 1992; Mahoney and Pandian, 1992; Amit and Schoemaker, 1993), underlying of the resources at the organisation's disposal and to be considered more widely than industry boundaries, managers perceive a more limited view – that the comparison of the organisations' aptitudes is relative to immediate rivals which are clearly understood. The notion of 'best-fit' (Learned *et al*, 1965) rather than 'stretch' (Prahalad and Hamel, 1993) reverberates this factor.

7.2.2 FACTOR 2 – MANAGEMENT ADVANTAGE

On factor two – *management advantage* – all four ‘managing resources’ items load strongly (Table 7.3). This meets the expectations of the salient strategic concept of ‘managing resources’ derived from the review of the RBV literature in Chapter 4. Accordingly, the central tenet of the second strongest factor is that competitive advantage is delivered through the management of throughputs, outputs and activities. Luck does not play a part in this construct since statement 26 (acquisition of resources due to luck) does not load on this factor. An important observation to make about this factor is that the statements refer to senior managers’ involvement in the management of the different (but nonetheless related) building blocks of an organisation’s activities (products, processes and resources). The factor reveals the degree to which senior managers ascribe importance to the management of these different building blocks, in addition to their formal duties as Managing Directors, functional directors, CEOs, *etc.*

Factor number	Factor name	Eigenvalue	% of variance explained	
2	<i>Management advantage</i>	2.29	7.4%	

Statement number	Statement text	Rotated loading	Original class	Original division
41	<i>Process management is an important senior management role</i>	.710	7	Resources
39	<i>Product management is an important senior management role</i>	.646	7	Resources
45	<i>Resource management is an important senior management role</i>	.574	7	Resources
46	<i>An important senior management role is to look for new opportunities for current platforms and technologies</i>	.518	7	Resources
19	<i>Geographical proximity to customers (assemblers) is a source of competitive advantage</i>	.461	4	Position

Table 7.3: Factor Structure – Management Advantage

Once again, one can observe that the nature of the industry has a discernible impact upon the perceptions of respondent managers. For instance, process management (s41) has the highest loading, which is unsurprising given the

industry priorities of price/cost, quality and the reliability of delivery. Although these are generic competitive attributes that are important in many other industries, each of these are contingent on the ability of senior management to manage key associated processes.

Product management (s39) has the second highest loading. Since the development and evolution of components/subassemblies/modules is a necessity (Chapter 3), often driven by the assemblers requirements (or downstream suppliers), the ongoing management of the product rather than its initial development is important for the ongoing sustenance of the advantage which the supplier holds given its current contract with the buyer (assembler).

Albeit important, by virtue of its strong loading (.518), statement 46 reflects the priority given to initial development. This does not mean that R&D is disregarded but rather that it is perceived that once an organisation has an advantage the management priority resides with sustaining and enhancing the advantage, rather than developing new ones immediately. Moreover, the pertinence of process management (s41) suggests that once a supply contract is won, the emphasis changes to ongoing cost reduction and improvements in quality, provisions for which are often included in contracts with assemblers. In other words, the improvement of performance is considered to be a precursor to the next supply contract so that, in effect, an objective of process management appears to be the building of 'next contract prerequisites'. This is especially relevant to the automotive components industry given that supply contracts are awarded or renewed at intervals similar to the life of a vehicle model (*i.e.* 3-5 years) and are contingent on past performance or the potential ability to supersede the performance of an existing supplier of a component.

Resource management (s45) also loads strongly on this factor, although it would have been unsurprising were this statement to have loaded elsewhere given the loading structure – particularly factor seven which has been interpreted as resource accumulation. Notwithstanding, the loading of this statement augments the management advantage interpretation chosen. Statement 46, which refers to the strategic management of technology and product platforms could have loaded

with related statements from the same class (combining resources). Instead it has loaded on factor two since respondent managers appear to perceive a relationship between the management of resources and the planning for new technology applications. The fact that the statement refers to “new opportunities” clearly ascribes priority to the need to widen subassembly usage across suppliers, particularly as industry consolidation downstream may threaten continuity of business upstream given the convergence of platforms across assembler or newly merged assembly concerns.

Statement 19 is the only item that has loaded onto this factor but that does not originate from class 7 (managing resources). However, its loading on the management advantage factor suggests that geographical proximity to the assembler is considered to be an important condition for the successful management of the relationship, further to the locational benefits of collaboration, logistics savings and process integration that are common to *Keiretsu* structures (Miyashita and Russell, 1994) and a rationale underpinning supplier parks (Chapter 3).

One should also note that the statements refer to senior management and thus a high level of agreement from the group of respondent managers is unsurprising. However, the reader will recall from Chapter 6 that 51.1 per cent of respondent managers had production, R&D or procurement backgrounds. Senior managers might, therefore, consider ‘hands-on’ operational expertise and involvement to be an imperative given that ultimately it is the component supplied and the manner in which it is supplied that manifests the advantage (or otherwise) of the supplier. This will further enhance the (semi) permanency of the relationship with downstream parties. So, management’s role is not merely to plan for advantage, but to contribute to it in ways other than simply through planning activities.

Returning to the propositions offered by the resource-based view (Chapter 4), it is suggested that the management of resources is necessary to bring alive the resource endowments of an organisation to generate a sustainable competitive advantage. It is clear that since only one factor (organisational transparency) precedes the management advantage factor in terms of accounting for the largest

amount of variance in the data-set, factor 2 is a strong strategic concept in relation to views about competitive advantage and can be said to reflect RBV thinking. Accordingly, the interpretation of this factor is that managers' abilities to successfully manage different levels of organisational resources (from product to process to resource) is considered to be, at the very least, a prerequisite for success in the automotive industry.

Seemingly, the predisposition of the respondent group to a multi-level management of organisations' resources seems to match the conditions suggested by Doz (1993) where the leverage and renewal of competencies can only take place with the development, diffusion and integration of key skills and assets. Since products are the outcomes of processes (which in turn are the socio-technical manifestation of the organisations resources bundled together) the loading together of statements making reference to products, processes and resources appears to suggest some coherence in managers' understanding of these vital linkages. Indeed, knowing that close linkages with downstream parties are important within the industry context, geographical proximity offers enhanced opportunities to strategically manage shared products, processes and resources in a superior manner.

Moreover, the senior management involvement in their management suggests that a strategic overview of the management of these processes is imperative to ensure (for the pragmatic competitive reasons discussed above) that an organisation can meet customer expectations. The loading of s46 further evidences the close perceived relationship between current resources and their use, and the further/future deployment of resources by the organisation, central to which is the involvement of senior management. So, whilst the automotive industry is technology driven (either to reduce costs, improve quality or add value downstream), respondents clearly attribute the leverage of current technologies/platforms as an integral part of achieving an advantage through management.

The search for new opportunities suggests that, whether due to formal planning or otherwise, the search for entrepreneurial rents through future deployments of

resources is important, albeit underpinned by the necessary precursors of product, process, and resource management (Mahoney and Pandian, 1992; Amit and Schoemaker, 1993). Given the nature of the organisational transparency factor, it can be suggested that respondent managers may trade-off the sophistication of isolated planning activities in place of direct managerial influence on those organisational attributes than will generate or sustain competitive advantage. This is particularly important given the nature of the next factor, which deals with relationships along the supply chain, where competitive battles are won and lost.

Accordingly, competitive advantage arises through decisions and actions, whether premeditated or not which lead to a better use of resources in meeting objectives and customer's expectations than rivals. In this sense, the perceptions of managers in this study is not dissimilar to Seth and Thomas' (1994:177) view of competitive advantage derived from "purposeful strategic behaviour [doing rather than planning] and stochastic processes [which are observed outside the planning environment]".

As with the interpretation of all factors, caution should be exercised. An alternative view of this factor is that the loadings reflect managerial hubris (Roll, 1986). If this is to be the case, however, the danger of overestimation of abilities by managers themselves is well documented to have an adverse impact on the choice and outcome of corporate strategies (Leontiades and Tezel, 1980; Leonard-Barton, 1992; Hartley, 1994).

7.2.3 FACTOR 3 – RELATIONSHIP UNIQUENESS

The *relationship uniqueness* factor comprises three position and three resource-based items, providing further evidence (as with organisational transparency) that two competing views of competitive advantage are mutually inclusive when interpreted by the respondent group.

Factor three is an unexpected hybrid of classes 4 (relationships) and 5 (uniqueness and competitive advantage) with items from classes 2 and 8. Together, however, the factor can be interpreted as relationship uniqueness, whereby the behaviour of the supplier toward downstream buyers is perceived to generate competitive advantages (Table 7.4). The development of unique, value-adding and long term

relationships (in contrast with variants based simply on economic exchange) concurs with the industry literature, particularly at tier 1. However, tier position (s22) *per se* does not contribute to this factor (in fact it loads on factor 8) and thus it can be suggested that the perception of relationship uniqueness does not appear to be affected by supply chain position. Indeed, the devolution of responsibility up the supply chain designed to introduce hitherto under-exploited benefits from the tiering approach (Chapter 3) supports this.

The long term nature of the relationship (s24) is a critical bedrock of this factor. So, although time is argued for the most part to confer a competitive advantage when it is shortened (cycle time, lead time, delivery time, *etc.*), here it is the passage of time that is essential to competitive advantage. Parties in the relationship have a prolonged opportunity to collaborate, learn, evolve adapt and improve. This is critical to the development of a value-adding partnership, from which other statements which load on this factor can build. In essence, *duration* rather than *speed* is assigned importance in relation to time.

Factor number	Factor name	Eigenvalue	% of variance explained	
3	<i>Relationship uniqueness</i>	2.09	6.8%	

Statement number	Statement text	Rotated loading	Original class	Original division
24	<i>Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage</i>	.608	4	Position
30	<i>R&D involvement with assemblers is a source of competitive advantage</i>	.555	4	Position
28	<i>The ability to change quickly due to the demands of assemblers is a source of competitive advantage</i>	.546	2	Position
35	<i>Intangible resources such as skills, patents, and processes influence competitive advantage.</i>	.487	5	Resources
34	<i>Resources which are difficult or impossible to acquire lead to competitive advantage</i>	.429	5	Resources
27	<i>The combination of resources through product platforms/new technologies increases value added</i>	.411	8	Resources

Table 7.4: Factor Structure – Relationship Uniqueness

Shorter, and the shortening of, time spans are embraced within s30 and s28 where the supplier's contribution to the reduction of R&D lead time (possibly using simultaneous engineering) and the ability to change quickly according to the needs of assembler are of central importance to meeting downstream demand conditions. Both of these statements indicate that the ability to exhibit flexibility in responses required downstream offer behavioural evidence to enhance the longer term relationship (Asanuma, 1988). It is in this light that factor two's emphasis on advantage through management is further delineated.⁹⁶

In the light of the loading of statement 30 onto this factor, there is a clear rationale for statement 27 doing so. This latter statement, with regard to combining technologies, demonstrates the integration of suppliers (especially those at tier one) into assemblers' R&D structures and the trend toward modules, subassemblies and platforms. Here one can understand that long term relationships and high R&D involvement (noting that 56 per cent of the respondent organisations are involved in joint R&D with buyers – see Chapter 6) provide an opportunity to develop new component inputs which not only enhance the relationship, but also provide the supplier with occasion to capture greater value added (via margin) on account of their ability to contribute more than simply the manufacture of *taiyo-zu* (build to print) parts.

The inclusion of statements referring to the uniqueness of resources (s34 and s35) indicates that relationship uniqueness is enhanced where inimitable and inaccessible resources are used in prolonged transactions between upstream and downstream organisations. Thus, resource uniqueness necessarily augments the causal ambiguity and uncertain imitability (Lippman and Rumelt, 1982; Reed and DeFillippi, 1990) which can protect the advantages upon which the longevity of the relationship is predicated. Further corroboration of this can be seen in Chapter 6 (sections 6.7 and 6.8) where R&D and alliance activity increases as proximity to the assembler draws closer, reflecting the commensurate value-added and de-commoditisation of goods supplied.

⁹⁶ It is noted that the orthogonal rotation offers no insight into the relatedness of factors. Here the point is being made that factor two is highly important due to the variance explained relative to other factors.

A relationship statement that did not load this factor was s19 (geographical proximity). It has already been seen that this item loaded on factor 2 and so one can infer that geographical proximity is not perceived to be a central contributor to relationship uniqueness. Albeit important in assisting with managing the relationship, capital investment requirements, assemblers' production location shifts and so-called global sourcing introduce a degree of uncertainty to its contribution to relationship uniqueness. So, whilst geographical proximity is beneficial to the management of the relationship, technology and resource issues obtain precedence.

Similarly, statement 44, which refers to superior logistics does not load on this factor, although one might have expected it to do so, given that it represents the nexus operation between buyer and supplier. Its loading on another factor suggests that logistics is no longer considered to be a source of advantage which contributes to bipartisan relationship longevity and success. Logistics, it seems, has been relegated to a prerequisite capability given that logistical performance terms (delivery windows, percentage of late deliveries, *etc.*) now come to form provisions within the supply contract.

Once again, industry conditions are important in explaining this factor. Not only is there a well established body of literature in the field of supply chain management which affirms the need to engage in collaborative value-adding supply relationships (Asanuma, 1985a, 1985b; Clark *et al.*, 1987; Cusumano and Takeishi, 1991), the assemblers themselves have clearly made efforts to develop new supply chain relationships underpinned by supplier development programmes and rewards for performing suppliers (Chapter 3). Nonetheless, the relationship uniqueness factor is not simply a reflection of these industry drivers. The threat of buyer switching still remains and it is clear from the loading of factors which refer to unique resources held by the component supplier (s34 and s35) that unique resources not only consolidate the relationship, thereby aiding its longevity, but also put into place conditions which mitigate against supplier switching. If the supplier is able to develop a relationship in which the assembler depends on the unique resources held by the supplier, the relationship involving design, manufacture and delivery becomes imperfectly imitable. Accordingly, switching

costs for the assembler are raised and the power-dependence relationship is less one sided than under conditions where such unique or rare resources are not possessed (or indeed used in the relationship) by the component supplier.

The ordering of statements in the factor and their original classes give rise to another observation (Table 7.4). The position-based statements rank one to three whilst the resource-based statement rank four to six in this factor's structure. From this one could suggest that the supply relationship is more important than the unique attributes which support its longevity, at least in the initial stages. Only once a supply relationship is in place can the supplier influence the relationship to the extent noted above to reduce the risk of losing the revenue stream at the end of a given model's life. Although, such an inference could not be regarded as remarkable, the respondent managers' perceptions would likely influence the differing approaches to winning new contracts and subsequent collaborative behaviour. This suggested order of priorities arising from this factor has implications for the strategies of both new entrants and incumbents. For either, suppliers need to embark upon a strategy to achieving residence (*i.e.* win the supply contract where, as sole supplier, a small advantage is gained) and then solidify the relationship using rare or unique resources to develop advantages which reduce the threat of rivals and raise switching costs. At this time, the supply relationship can develop into a form of 'extrapreneurship', whereby new ideas are developed along the supply chain and thereby reflected in the form of component modules, product platforms and unique resources.

However, the incumbent already has, *prima facie*, an advantage over new/newer entrants in that it may be the current supplier of the component to the assembler. Accordingly, the incumbent has an advantage not only in that it has no entry barriers to overcome, but it is likely to develop relationship uniqueness more quickly than the new entrant based on its prior or current experience in embellishing a supply relationship with traits which are likely to preserve the stream of income from the customer. In so doing, inadvertent entry deterrence is achieved, whereby the nature of post-entry competition is altered by virtue of the investments made by the supplier to continuously improve relationships with downstream parties.

There are pragmatic reasons why a logic for a strategy of residence advantage followed by resource advantage should be followed. The development, scope and uniqueness of a given supply relationship cannot be ascertained accurately by any party in advance of its commencement. Instead, the prevailing criterion of price, delivery and quality, for which measurable targets and contractual arrangements can be made in advance of a new trading relationship (with an existing supplier or new one). The minimum conditions for performance are set, aligned with the sourcing priorities of the customer. Despite the overtures of the component suppliers in the pre-supply contract period in respect of the value that they can bring to the assembler, such supra value-added benefits cannot be assured. Only the existing presence and the reputation arising from the supplier's presence in the industry can manifest latter intentions and behaviour. So, to a further extent, the incumbent has a further advantage (unless they are considered by the customer to have performed to a lesser degree than was expected).

7.2.4 FACTOR 4 – PLATFORM ADVANTAGE

There is little to doubt the interpretation of factor four as referring to a *platform advantage*. Three of the four statements devised for the representation of combining resources offered by the resource-based view of competitive advantage load very strongly. This 'triplet' factor is solely comprised of three items from the same class, suggesting congruence with the expectations of perceptions developed in Chapter 4 (Table 7.5). The remaining item from this class (s27) has been found to load on the relationship uniqueness factor and a rationale for it having done so has been offered in the previous section. Nonetheless, one can observe from this factor that a sequence of relationships is observable in this cogent perception held by the respondent managers. Since product platforms (or the more common subassembly, module or subsystem found at the supplier level) are a manifestation of design, technical and manufacturing advantages (Warburton, 1999), the ability to achieve such an advantage requires superior abilities in the coordination of these aforementioned functional areas. This is not only a functional management responsibility but also a senior management priority, given the need to ensure that coordination is achieved. Functional managers' priorities reside in sustaining and developing the individual function's contribution to the platform/module. Further

support for this observation can be derived from factor 2 which has been interpreted as an explicit advantage from management perceived by respondents.

Factor number	Factor name	Eigenvalue	% of variance explained	
4	<i>Platform advantage</i>	1.63	5.8%	

Statement number	Statement text	Rotated loading	Original class	Original division
37	<i>Product platforms/technologies reflect a company's competitive advantage</i>	.754	8	Resources
36	<i>The ability to develop/supply a product platform requires superior coordination & management skills</i>	.649	8	Resources
43	<i>Product platforms, modules or new technologies reduce the threat of imitation</i>	.522	8	Resources

Table 7.5: Factor Structure – Platform Advantage

The reward for the achievement of advantage through resource combinations is also very clear from this factor, given that the reduction in the threat of imitation is equidistant to the erosion of a platform advantage (which in turn is central to the supply relationship – factor 3). Further, by developing components jointly or solely on behalf of the customer, there is an amelioration in the threat of switching due to the component specificity which is intrinsic to the uniqueness of the subassembly. Although the sharing of proprietary knowledge could be seen as a threat to competitive advantage (Lei, 1993), the shared processes leading to the physical innovation will reduce the threat of imitation arising since a process cannot be reverse engineering in the same manner as a physical product (Mansfield, 1985; 1988; Lieberman and Montgomery, 1988).

Although this factor represents a lower percentage of the variance than its predecessors, the need to manifest capability in the form of advanced subsystems or modules is clearly a coherent strategic concept for managers within the industry, particularly given the trend toward the involvement of suppliers in the final assembly of the vehicle (Kochan 1999a). Although such demands may be driven by the needs of assemblers themselves, the factor would seem to confirm

the notion within the resource-based view that the ability to integrate technologies (c.f. Chapter 4) requires a multifunctional, stretch oriented approach to management, products and technologies. The outcome of this is increased buyer value and the closure of entry points for imitators, which form two of Prahalad and Hamel's (1990) three criteria for core competence.

The appearance of such a factor would be expected in an industry which is driven by and is strategically dependent upon complex subsystems of components in the assembly of the finished product. This, in itself, generates a conundrum in the implications of this factor. Does the factor reflect industry conditions and practices, or does it reflect a resource-based perception held by the managers, manifest through the loading together of statements relating to product platforms? Although such a question is mildly circular, what clearly emanates from this factor is that the respondent managers' agreement and coherent understanding of the importance in combining resources to generate competitive advantage. Accordingly, the strategies considered and chosen by these managers may be driven by the imperative and need to exploit their organisations' resource combinations, manifest through product platforms.

The importance of this factor in respect of the resource-based view is that Chapters 3 and 4 suggested that product platforms and families practically reflect the notion of bundling resources both in the automotive industry and beyond. Although this forms only one way in which an organisation's resources (skills, processes, tangible and intangible assets) can be combined – indeed, relationship uniqueness represents another bundled resource – product platforms have become popular due to the transaction, manufacturing and research and development costs associated with them. Platforms are clearly perceived to be a cornerstone in the development and sustenance of competitive advantage

The platform advantage factor seemingly reveals further associations made about product platforms by the respondent managers. Platforms/resource combinations require superior coordination and management skills to be fully successful. They are not simply about constituent technologies. Rather it is the ability to add value by seeking new technologies and materials, developing needs in line with

customers' R&D programmes (Clark, 1989), and renewing the platforms as new vehicle models are planned, which enable the supplier to leverage resource combinations. In so doing, a competitive advantage can be gained, since the resource combination (component) for a customer's platform will, in effect, be the equivalent of a component supplied to several different modules, given the proliferation of platforms and platform strategies (Appendix 1). Furthermore, the resource combination of the platform itself, combined with the development of unique supply relationships (inferred from the management roles which are central to factor 2) would seem to reduce the threat of imitation and position the current supplier in a superior position for the future in respect of maintaining supply contracts with assemblers. This resonates the suggestion by Meyer and Utterback (1993) that the renewal of core competencies is as important as their initial development. This renewal is best achieved intra-relationship rather than extra-relationship.

Whilst the respondent group is taken as a whole in deriving and explaining this factor, what would account for the consensus shared between senior managers of suppliers at different stages/tiers of the supply chain, given that it is known that the prevalence of the resource combination (subassembly, module, *etc.*) is more prevalent downstream in the supply chain, normally at tier 1? One possible explanation is that suppliers at tiers 2 and 3 clearly make a contribution to the final system delivered to the assembler and, in some cases, are involved in the black box development of parts delegated upstream by the tier 1 supplier. Accordingly tier 2 and 3 companies not only contribute their resource bundles to the bundled resource that is the final subassembly, but their resources are intrinsically important to its assembly and delivery. So, the materials, components or processes of these upstream suppliers not only contribute to the platform advantage, but also 'lock-in' that supplier to its delivery and supply. Despite their lower involvement in terms of value added, senior managers of the non-tier 1 suppliers seem to perceive platform advantage as offering a win-win scenario in which they can secure future revenues (with the assembler's platform strategies and the use of carry-over parts) and expand current production output. Indeed, further support for this is offered in the next factor – scale.

In summary, managers recognise the association between the advantage arising from a platform and the important skills require to design and deliver a resource combination. This perception is found to concur with a resource-based view of combining resources (Chapter 4).

7.2.5 FACTOR 5 – SCALE

Factor five clearly represents *scale* as a strategic concept considered to be important and salient in the perceptions of the respondent group (Table 7.6). Furthermore, in a similar manner as factors 2, 3 and 4, it reflects the current status and structure of the automotive industry. Both items in this ‘doublet factor’ (a factor involved in the variance of two statements) originate from the class of statements labelled ‘company size’ and statement 15 has the highest loading in the entire factor structure (.814).⁹⁷

Factor number	Factor name	Eigenvalue	% of variance explained	
5	<i>Scale</i>	1.49	5.6	

Statement number	Statement text	Rotated loading	Original class	Original division
15	<i>High production volume generates a competitive advantage</i>	.814	1	Position
16	<i>Process improvements (due to long production runs) lead to competitive advantage</i>	.678	1	Position

Table 7.6: Factor Structure – Scale

One would expect that scale would be an important factor in a volume industry such as the automotive industry. However, the scale factor is not merely concerned with size *per se*, but rather with the ability to generate volume related savings such as economies of scale and improvements (with downward cost connotations) derived from learning and experience curve phenomena (Chapter 3). So, not only does high volume enable the spread of fixed investment and costs over a greater number of units produced, it offers repeated occasions in which

⁹⁷ Irrespective of variations in the trails extractions (section 7.1.2), this factor remained intact and omnipresent, with the only deviation being in its order in the factor rotation.

process improvements can be sought, identified and implemented (Robinson, 1991). Further to this, without high volume, R&D cost amortisation would be impeded given the high level of R&D involvement across all tiers on behalf of the assembler (80% of respondent organisations involved in sole or joint R&D).

Well established also is the relationship between scale and learning and experience curve concepts. From a supply chain perspective, where supply contracts are awarded periodically (*i.e.* every 3-5 years), knowledge of the relationship between scale and cumulative volume related savings are an important consideration in bidding for future contracts and in the evaluation of bids from suppliers upstream. Whether or not the respondent managers in this study have transferred their clear awareness and perception of the importance of scale into such considerations cannot be discerned from the data. Nonetheless, it is sufficient to state that without scale being such a priority, one would unlikely find such considerations to materialise in a practical planning context.

In contrast to competitive advantage achieved through unique resource combinations and relationships (factors 2 and 4), scale offers a more fundamental source of advantage, although one could present scale as a reflection of advantage derived in other ways rewarded through large order volumes and contract longevity. In turn, the repeated transactions through scale offer further scope to improve in-house activities and inter-organisational relations.

The scale factor recognises a relationship between output growth and productivity growth necessary to derive a competitive bidding advantage (Yelle, 1979). In addition to this, the scale of the organisation's operations will not only determine proximity to the minimum efficient scale of operations but also determines the extent to which a new entrant faces scale based disadvantages and/or the degree to which the new entrant must invest in high levels of capacity utilisation (Besanko *et al*, 1996). Given the high level of overcapacity in the industry (Brown, 1999), scale clearly offers both a credible deterrent (reflecting the game theoretic development of Dixit, 1980) and a precursor to superior capacity utilisation within the supplier's plant(s).

In the previous section it was noted that assemblers' platform strategies offer the potential for higher volume production of single components against which fixed costs can be distributed. For those suppliers which succeed in winning a contract for the supply of components central to a product platform, a potentially winning position is created. Equally, no longer is the loss of a supply contract for a given component linked to a single vehicle model. Increasingly, the loss of the contract implicates the loss of component demand across a large proportion of a company's models and, in the most severe of cases, the loss of component demand across assembler groups (e.g. VW Group, GM group, Ford Group). Consequently there is a logic to suggest why relationship uniqueness, management advantage and platforms precede this factor in explaining higher percentages of variance in the respondent manager data-set – without them, scale will not be achieved.

Finally, in a continually cost driven industry, scale should confer component suppliers a greater degree of bargaining power in negotiating the costs of their own inputs. However, such 'procurement economies' (Alberts, 1989) would only lead to parity since any cost savings arising from the greater scale would be expected to be shared with the assembler in the form of component price reductions given contractual provisions and open book/cost transparency accounting practices in the automotive supply chain (Lamming, 1993).

Given the prominence of the factor in terms of items loadings and origins, it is surprising to find that two company size related statements did not load onto this factor (s17 and s18). However, it seems that managers are acutely aware of a distinction between the size of output (pertaining to this factor) and the size of the organisation (with implications for market share and the degree of power that it is bestowed with). Accordingly, s17 and s18 load on the sixth factor – market power. Moreover, the measurement of scale is internally relative, based on the factor-cost function whereas market power (factor 6) is externally relative where the denominator is the size of the market and incumbent rivals. It is to this externally relative factor that is considered next.

7.2.6 FACTOR 6 – MARKET POWER

Factor six – *market power* – comprises those company size items (s17 and s18) that did not load onto factor 5 (scale). This triplet factor (a factor involved in the variance of 3 statements) is completed with the loading of statement 21, originally developed to convey the notion of bargaining power (Porter, 1980). It should be noted that s21 loads at .372 which, although lower than 0.4 chosen earlier in this chapter is acceptable since it exceeds the minimum threshold of 0.3 (Table 7.7).⁹⁸

Factor number	Factor name	Eigenvalue	% of variance explained	
6	<i>Market power</i>	1.41	5.2%	

Statement number	Statement text	Rotated loading	Original class	Original division
17	<i>A low number of direct rivals is an indication of a company's competitive advantage</i>	.687	1	Position
18	<i>Organisations with high market shares have a competitive advantage</i>	.649	1	Position
21	<i>A company's power over its suppliers (due to its size) is a source of competitive advantage</i>	.372	2	Position

Table 7.7: Factor Structure – Market Power

The highest loading item (s17), where a low number of direct rivals indicates competitive advantage, may be determined by a multitude of influences such as entry barriers (s25 which did not load), isolating mechanisms (Rumelt, 1979), *etc.* An outcome of a small number of direct rivals is that the denominator upon which market share is based is favourable given that the total share is spread across a smaller number of firms. Correspondingly, the correlation of item s18 (market share) is unsurprising given this explicit relationship and the origins of the two statements in terms of their class ('industry structure'). In addition, the lower the number of alternative sources of supply, the higher are the switching costs for the assembler, unless the latter decides to integrate backwards to overcome switching costs and potentially higher market prices. The trend toward de-integration and

⁹⁸ The decision to retain this item was supported and informed by the consistent loading of the item during trial extractions (Appendix 2).

the need to secure lower market prices bestow suppliers with few direct rivals since the dependence on their outputs on the part of the assembler is heightened.

There is an additional implication of a low number of direct rivals. Since this not only determines comparative company size, it also indicates that concentration (a small number of large companies) is considered to be more amenable to the development of competitive advantage. It simplifies the growth in market share through acquisition because market share shifts (with its attendant effects upon scale based savings) can be achieved through the acquisition of fewer, but larger, companies. Thus, a low number of direct rivals enables companies to develop advantages which it can deploy to achieve improved performance in relationships downstream and, as a result, increase market share. Market share would also confer advantages which the supplier could exploit upstream since the supplier's market share determines its input requirements, affecting order quantities placed with upstream suppliers. So, whilst a second or third tier supplier could benefit from the market share gains of a tier one supplier, it correspondingly becomes more dependent on that tier one supplier as an important single revenue source. Such an interpretation for the achievement of advantage *vis a vis* upstream companies through market power is made with the support derived from the loading of s21 which, despite its weaker loading, suggests the possible presence of motive for such an approach under conditions where a supplier has achieved market power.

Once more, this factor reflects industry conditions (*i.e.*, the suggestion that managers are influenced by their industries) and represents the way in which respondent managers perceive the method by which they should achieve growth and stability. Related issues in respect of the interpretation of this market power factor include the imperative to achieve super-supplier status (Chapter 3) which can only be achieved through share building strategies, which in turn promulgate acquisitive or merger activity. Next, the continuous consolidation which is taking place downstream in the automotive industry necessitates greater organisational size in order to ensure that the supplier is capable of meeting demand for the increasingly large (but decreasing number) of assemblers in terms of design, manufacture and logistics.

Not only is market power necessary to achieve the scale necessary to compete effectively on cost, it also offers a protection of the organisation's advantage through the acquisition of potential threats to its product. The coherence of the market power factor would appear to suggest that the market imperative is clearly understood by managers, as is its relationship to bargaining power and the extent of immediate rivalry.

For the respondent managers, the market imperative of share building is clearly strong. In an industry cognisant of concepts such as 'best practice' and 'world class', the symbolism of market leadership is not only tonal, but is also clearly attributed to competitive advantage through technology, performance, quality or price (or combination thereof) and thereafter financial performance. In addition, the loading of statement 21 suggests that managers perceive organisational size to be commensurate with the degree of control that the organisation can exert in the supply chain. The consequence of this is that although respondents perceive collaborative behaviour to be a source of competitive advantage (factor 3), this does not represent a sacrifice or abandonment of a view in favour of, or efforts directed toward, the use of market power as the basis for exerting influence on other organisations. Whilst commercial pragmatism may explain this perception, it is sufficient to propose that a mindset of collaboration does coexist alongside a mindset of competition among strategic managers within the automotive components industry.

A danger with such the perception of market power is that since market share is a relative term, managers may be limited in their view of what constitutes the market. As the market for components is becoming increasingly transnational, the composition of rivals may change significantly. Consequently, a component supplier based in mainland Europe may not be perceived to be a direct rival given its geographical location compared with rivals based in the UK and the lack of a supply contract with a UK based assembler.

However, a wider view of rivals might reveal that the small number of rivals that are perceived to exist represent only the leading edge of a rather larger body of

rivals located close by in what is, from a sourcing and logistics perspective, if not from a geographical one, a shrinking world.⁹⁹

7.2.7 FACTOR 7 – RESOURCE ACCUMULATION

The seventh factor in the matrix can be interpreted as *resource accumulation* since it is loaded by two statements designated with the ‘access to resources’ class (Table 7.8). Statement 31 has loaded on factor one and has been interpreted as transparency related rather than (the originally anticipated) relationship to the understanding of linkages between strategically significant resources as a precursor to strategies for their acquisition or accumulation. Equally, statement 32 did not load onto this factor, although as the reader will find with the next factor, this statement’s loading offers intriguing possibilities for interpretation.

Factor number	Factor name	Eigenvalue	% of variance explained	
7	<i>Resource accumulation</i>	1.26	5.1	

Statement number	Statement text	Rotated loading	Original class	Original division
26	<i>The acquisition of important resources is often due to luck</i>	.722	6	Resources
38	<i>Senior managers differ in their view of which resources are important</i>	.627	6	Resources

Table 7.8: Factor Structure – Resource Accumulation

The resource accumulation factor comprises items which suggest that the resource endowments of organisations vary due to luck (s26) and due to the variability of senior managers with regard to the identification and selection of resources. The expected non-loading statements enable us to discount the role of formal planning as a contributory factor to such variations (s31) and to not consider the ability or otherwise to acquire resources subsequent to this (s32). Accordingly, the underlying construct of this factor suggests that differences in managerial perceptions of those resources which are important may lead to variations in the success in acquisition and success of newly obtained resources. One can envisage virtuous or vicious cycles in which the lucky (*i.e.* non-planned) acquisition of

⁹⁹ The reader will recall that this problem was found to be evident among UK automotive component suppliers in Chapter 3 following the work of Leverick and Cooper (1998).

strategically important resources confirms to incumbents the lesser importance of formal planning for resource acquisition, whereupon the successful (albeit lucky) behaviour is repeated.

Notable about this factor is that it marks a departure from its predecessors. Here one finds that conscious, predetermined and systematic strategic management activities are not always perceived to contribute to the development of an advantage. Indeed, the variability and disregard for resource analysis, needs requirements and the managers involved may have little impact (given the items that did not load) on emergent strategies of resource accumulation, whereby luck or unexpected events transpire to present the organisation with a strategic choice, lacking in any preceding analysis, of whether to acquire a resource or otherwise (Barney, 1986b).

A possible explanation for this perception is the frequent use of alliances and partnership arrangements within the automotive industry. Since it has been suggested that the evolution of an alliance brings with it opportunities to develop new skills, products and processes (Faulkner, 1995), resource accumulation opportunities cannot be accurately forecast in advance since these will evolve and present themselves as alliances and partnership arrangements flourish and mature. Accordingly, the nature and strength of factors 2 (management advantage) and 3 (relationship uniqueness) are necessary to propagate the conditions for resource accumulation to arise within an inter-organisational collaboration.

The resource accumulation factor found in this study is more limited than that derived from the literature in Chapter 4. Luck and disagreement are associated with (imperfect) resource accumulation where luck and causality are related, since the understanding of causality would determine the extent to which resource accumulation is a deliberate action. Disagreement among managers may be influenced by limited information or may destroy potential informational advantages where senior managers fail to reach agreement about those resources which should be acquired. In part, this might be due to differences in functional background, where the knowledge of how important particular resources are might only be known to those operating within a specialist area. Furthermore,

knowledge about resources may be tacit and therefore unlikely to be subjected to 'scientific' or financial analysis. Accordingly, for a manager to persuade peers in a group decision making situation that the given resource should be sought and acquired may prove to be difficult in the absence of tangible evidence to this effect. The respondent managers have not, however, associated linkages, immobility and availability as issues which affect the decisions about, and processes of, resource accumulation.

The strong loading of statement 26, which makes reference to luck in the process of resource accumulation, may not be altogether unexpected in the automotive industry, given the increased use of collaborative forms of behaviour between organisations wherein opportunities for resource accumulation are presented to the parties concerned as has been noted above. In addition, where an organisation desires to increase scale and market power through acquisition, such a strategy may be decided prior to the identification of acquisition targets. Therefore, although a company has decided to grow through acquisition, the precise nature of the bundle of resources that it will acquire will vary from company to company given that organisation's resource endowments are unique, *i.e.* a central tenet of the resource-based view.

Although partial support is offered by this factor for the notion of resource accumulation, in the minds of our respondent managers, it is less multifarious than that suggested in the literature and does not resonate the deliberate informational advantages which offer managers the opportunity to pre-empt the strategic importance of resources and subsequently acquire them. As factor 2 suggests, management advantage of current resources, processes, products and relationships are a clearer priority for managers within this industry.

7.2.8 FACTOR 8 – IMMEDIACY OF SUPERIORITY

The factor structure ends with two triplet bipolar factors (factors involved in the variance of three statements with both positive and negative loadings). The first of these is factor 8, which can be interpreted as *immediacy of superiority*. Three items (s22, s29 and s32) load on this factor despite having originated from different classes. The negative loading of statement 32 (-.745) means that access

to resources is negatively related to other items loading on this factor (Table 7.9). It transpires that for the respondent managers, the acquisition of resources does not necessarily lead to an advantage, nor does the position of the company in the supply chain (in terms of tier) influence the ability of organisations to identify and acquire resources. This echoes the interpretation of the previous factor, where the planning for resource accumulation *per se* is not perceived to generate or present opportunities. Instead, it is the relationship with other organisations in the operating environment which facilitate this. Although orthogonally derived factors must be interpreted alone, one can observe complementarity rather than contradiction in factors 7 and 8.

Factor number	Factor name	Eigenvalue	% of variance explained	
8	<i>Immediacy of superiority</i>	1.22	5.0%	

Statement number	Statement text	Rotated loading	Original class	Original division
32	<i>Some organisations are better able to identify and acquire useful resources than others</i>	-.745	6	Resources
29	<i>Companies always fully exploit their strengths to gain a competitive advantage.</i>	.608	3	Position
22	<i>Position (tier 1,2,3) within the supply chain is an indication of a company's competitive advantage</i>	.510	2	Position

Table 7.9: Factor Structure – Immediacy of Superiority

Factor 8 is labelled the ‘immediacy of superiority’ since as resource accumulation is not perceived to be immediately relevant to the competitive position of the organisation in its supply chain. It appears that respondent managers perceive that competitive advantage is due to the ability to use *current* resources (rather than those that would be available post-resource accumulation) and due to a supplier’s *current* position within the supply chain. Therefore, the immediacy of the resource advantage, rather than the currently inaccessible potential for it, is construed to be important.

Seemingly, the immediacy of superiority factor reveals a short-term orientation in the development of strategically significant resources. The nature of the industry, however, can once more inform us of the rationale which may underpin the perception of immediacy of superiority. Since the tight coupling of the supply chain implies a sense of shared destiny, that destiny can be better secured more effectively through strategies designed to demonstrate capability and commitment until the end of a vehicle model's life, whereupon negotiations for new supply contracts will be undertaken. In the interim, incumbents develop new advantages jointly with supply chain partners, through continuous improvement processes, joint R&D, and the expansion of alliances and partnerships designed to augment the final product. These developments and initiatives are shared and are outside the total and direct control of component suppliers and are driven, for the most part, by the assemblers' or downstream partners' product and technology objectives.

So, although a short term, or more accurately a current, view of how organisations achieve superiority is reflected in this factor, factors elsewhere suggest that a longer-term orientation toward the development of competitive advantage is prevalent among senior managers in this industry. However, this would seemingly produce a contradiction between short-termist and long-termist orientations from the same managers. A transactional view of the industry may provide some insights. Since it has already been seen that managers perceive relationship building and enhancement using unique resources and platform advantages to be highly important and conspicuous concepts, these relationships mark a vehicle in which continuous (often daily) transactions take place between buyer and supplier. In each of these transactions there is an opportunity to demonstrate partnership capabilities, logistics and product advantage, and increase scale and market share. Accordingly, the short-term orientation is complementary and supplemental to building long-term relationships. It is clear from the other factors that actions speak louder than words (or bids) in sustaining and winning new supply contracts.

Not only is a sense of immediacy resonated in this factor, so too is a sense of inevitability in the conditions for competitive advantage because of the negative loading of s32. One can infer that position in the supply chain has an influence upon the organisation's ability to acquire resources and that the strengths exploited by companies within their strategies are determined by position rather than unique or advanced resource accumulation skills on the part of senior managers within these companies. This might, in part, be a reflection of the increased size and turnover of organisations as they near tier 1 status and may be enhanced by their transnational reach and ownership status (for instance, whether they are publicly listed). In addition, Chapter 6 has highlighted higher rates of collaborative R&D and intra-supplier strategic alliances among tier 1 companies in the sample.

Combined with an immediate interface with the assembler, tier 1 suppliers will have a greater exposure to, and therefore opportunity to acquire useful tangible and, especially, intangible resources such as know how and technical skills. Consequently, the immediacy of superiority clearly conveys ideas about a positional view of competitive advantage rather than a resource based view of imperfect resource accumulation, heterogeneous superiority and causally ambiguous planning processes.

7.2.9 FACTOR 9 – HISTORICAL ADVANTAGE

The final factor has the same structure as the penultimate (bipolar and triplet) and appears to represent a perception of historical factors contributing to competitive advantage (Table 7.10). In this, the *historical advantage* factor, entry barriers (s25) are deemed to render new or recent entrants with a comparative disadvantage due to the cost and difficulty of entry. Having done so, the new entrant will face scale-based disadvantages and will have to compete from scratch for supply contracts having little or no 'track record' in the industry. Cost advantage independent of scale and a lack of asset mass efficiencies (Dierickx and Cool, 1989) merely compound their problems in relation to delivering equivalence of cost/price downstream compared with incumbents. The notion of asset mass efficiencies is communicated by the loading of statement 20 on this factor, where

an organisation's stock or bundle of resources collected in the past has a bearing on its ability to generate value and advantage. Since this is not intimately related to scale (factor 5), this current factor bears more resemblance to resource-based notions of advantage than positional perspectives. One must, however, be circumspect with this factor given that the two items' loadings are marginally below the .4 threshold.

Factor number	Factor name	Eigenvalue	% of variance explained	
9	<i>Historical advantage</i>	1.11	4.2%	

Statement number	Statement text	Rotated loading	Original class	Original division
25	<i>New entrants to an industry face a competitive disadvantage</i>	.540	2	Position
20	<i>Organisations are 'bundles' of resources which influence competitive advantage</i>	.393	5	Resources
44	<i>Superior logistics and delivery are a source of competitive advantage</i>	-.382	4	Position

Table 7.10: Factor Structure – Historical Advantage

Historical advantage is an unexpected factor since the development of divisions and classes led to the development of a 'uniqueness and competitive advantage' category (Chapter 5). Although it infers a historical development of advantage it was not expected that historical dimensions would present themselves in the factor matrix without the loading of most, if not all, of the class 5 statements onto the same factor. Instead, the converse is observed to have occurred. One such statement does, however, load (s20). Accordingly, it appears that managers perceive the passage of time or the duration of presence of an organisation within an industry to be a striking strategic competitive concept, but few items load to improve this factor's conceptual clarity despite having seen the time dimension is critical to the relationship uniqueness factor.

Notwithstanding this, supporting evidence from the industry context suggests that the incumbent still retains advantages (Chapter 3). For instance, the vehicle for industry entry is increasingly costly – scale is clearly imperative (factor 5) and organic growth (*i.e.*, internal investment in a new subsidiary) represents a costly,

and possibly prohibitive, mode of entry. Acquisition is increasingly costly since, as has been seen earlier, the need for scale (driven by downward price pressure) has conspired to stimulate consolidation, thereby making acquisition a costlier option than in the past (since incumbent's acquisition targets will also be larger than in the past). Strategic alliances may offer a further alternative, predicated on the basis that the level of investment and risk is reduced through the sharing and pooling of resources (although subsequent returns may be reduced). Once more, a potential entrant may face a disadvantage due to its lack of industry experience, expertise and involvement, making it a less attractive alliance partner.

In few circumstances, where the new entrant can achieve entry through the diversification of its core technologies into automotive applications to effect substitution for incumbents products, does the credible threat of entry rise. Such a threat does not originate solely through the availability of alternative sources of supply, but more importantly with the threat of technology substitution (Chapter 3).

Statement 44 loads negatively onto this factor and marginally below the threshold. It appears that respondent managers no longer perceive superior logistics to represent a source of competitive advantage and, specifically in the case of this factor, that the logistics function no longer yields advantage, irrespective of the historical development of capabilities in this area.¹⁰⁰ In contrast, the rigidity of logistics capabilities are deemed insufficiently flexible to deal with the changing locations of production (*i.e.*, the North-west and South-east no longer dominant as geographical clusters of assemblers in the UK) and delivery protocols (JIT, modular delivery, SILS *etc.*). The skills of 'moving materials' in and of themselves will not generate excessive value. Instead, overcoming logistics problems through proximity has become a priority in the relationship uniqueness factor. Location is to be considered the revision to logistics competence, particularly given the threat arising from the location of a rival or new entrant closer to the assembler (which at a fundamental level could signify lower total costs in a cost driven industry).

¹⁰⁰ Logistics in this context is defined as the movement and transportation of materials and components from one location to another, whether in-house or along the supply chain.

The development of supplier parks, SILS, and the location of suppliers within the plant complex boundary as a tenant, such as Ikeda Hoover and Nissan Yamoto at the Nissan plant in Sunderland offer further corroboration (Garrahan and Stewart, 1993; FT Automotive Components Analyst, 1997) to suggest that resource differentials such as geographical immobility (Grant, 1991), with their implications for resource accumulation, have a role in influencing competitive advantage

The relationship of this factor to the antecedent literature is a fascinating one. First, the notion of bundles of resources has a weak position in the factor structure, possibly reflecting the fact that it is an abstract idea that is rarely considered by the managers (at least consciously) in planning and strategic activities. In contrast, a more practical manifestation of resource bundling, platforms has been found to resonate strongly with respondents. Accordingly, although managers do not think in the (often) abstract terms of the resource-based view, their perceptions of competitive advantage appear to reflect the practical applications of such concepts.

Secondly, the historical advantage factor is a hybrid of residence items and resource-based items. Once again, it can be suggested that the two competing views of competitive advantage do not present an 'either-or' perspective in the minds of our strategic managers. Instead, a concern for the durability of resource prominence, underpinned by a stable industry structure where an advantage already exists seems to be a concern for managers in this industry.

Finally, given the understanding of resource accumulation, organisational transparency and relationship uniqueness, respondent managers seek to preserve and enhance advantages embedded within supply relationships to a greater extent than the ability to prevent new entrants. In part, this may be due to an inability to prevent entry, but also due to the more immediate impact on competitive advantage that can be derived from building for the future rather than building barriers to entry. This is not only beyond the abilities of the single supplier (unless intellectual property and scale enable the supplier to do so), but also cannot

guarantee future revenue streams.¹⁰¹ Given the managers' concern for control, the former resides to a greater degree within the remit of industry respondents (factor 6).

7.3 PRIORITIES AND LANGUAGE

The chapter now turns to the analysis of data which relates to the terminology and language used in the strategic management literature to distinguish between the type and significance of resources. The reader will recall that Chapter 4 identified four terms used to describe types of resources – strength, capability, competence and core competence and four criterion by which to evaluate their strategic significance, based around Barney's (1997) value, rarity, inimitability and organisation. The concern for these issues in the context of this study is that given the perceptions of competitive advantage held by the respondent managers, do the terms and resource trait priorities mirror those expressed in the literature?

7.3.1 TERMINOLOGY OF RESOURCES

Respondents were asked to indicate the degree of frequency with which they used four terms (strength, capability, competence and core competence) to describe important company resources which are prevalent in the strategic management literature. Were a resource-based view to predominate the use of such terminology, one might expect 'competence' or 'core competence' to have higher mean values than 'strength' or 'capability'.

Instead, the term capability is the most frequently used term by respondents (Table 7.11) followed by competence, strength and core competence. Thus, the term that is most particular to (and descriptive of) the RBV – core competence – represents the least used term. However, this observation is marginal due to the narrow range of scores observed in the data (3.32 to 3.97¹⁰²) and tends to suggest that despite the differences inferred from the data, managers distinguish little

¹⁰¹ Indeed a positioning approach to strategy, whereby the strategist chooses a position for the company in the marketplace and consolidates the position by influencing the erection of entry barriers could be described as a 'bunker mentality' approach to strategy, *i.e.*, choose a position perceived to be safe and protect the position.

¹⁰² This could also be expressed as a 13% differential along the measurement scale.

between the terms and, accordingly, use them to a similar extent and for similar purposes.

<i>Term</i>	<i>Mean</i>	<i>S.D</i>
Capability	3.97	.897
Competence	3.62	1.023
Strength	3.49	1.117
Core Competence	3.32	1.280

Table 7.11: Ranking of Resource Terminology (n=284)

The perceived homogeneity of the resource terminology is resonated at all levels of the supply chain. One-way Analysis of Variance (ANOVA) was used to examine whether significant differences existed between groups of respondent organisations according to supply chain tier, with no significant differences found at the 1% level (Appendix 10). Indeed, the rank order of the four terms change only in case of tier 3 suppliers, where ‘strength’ and ‘competence’ change in their position of relative importance.

Tier 1	<i>Mean</i>	<i>Rank</i>	Tier 2	<i>Mean</i>	<i>Rank</i>	Tier 3	<i>Mean</i>	<i>Rank</i>
Capability	4.03	1	Capability	3.96	1	Capability	3.76	1
Competence	3.64	2	Competence	3.69	2	Competence	3.35	3
Strength	3.53	3	Strength	3.33	3	Strength	3.74	2
Core competence	3.45	4	Core competence	3.33	4	Core competence	2.74	4

Table 7.12: Ranking of Resource Terminology by Tier (n=284)

Consequently, although all the terms are used by the managers in the study, no single term appears to dominate the lexicon of competitive advantage. The respondents do not discern, nor presumably feel the need to make, a distinction between the terms despite what is known about the respondents from the factor structure examined in the previous section, where managers have recognised that

some resource bundles such as relationships and platforms are clearly important in the context of achieving competitive parity or advantage within the automotive components industry. Although it cannot be established from the data the extent to which the respondent managers have been exposed to academic literature surrounding the theories of competitive advantage which form the basis of this study, the finding here is not that managers fail to recognise the differences between competencies or strengths (and so forth), but rather that the terms would have the propensity to be used interchangeably, irrespective of the strategic significance of the resources. Hence the burgeoning literature of the resource-based view would appear to have not made an impact upon the differences in the terminology, despite evidence that newer terms such as competence and core competence are used frequently by managers.

7.3.2 STRATEGIC PRIORITIES

Respondents were asked to indicate the degree of importance attached to the 'valuable, rare, inimitable and organised' criteria examined in Chapter 4. These terms were used due to their commonality in the literature and the supposition that the degree to which resources meet each of the VRIO criteria in turn determines the strategic significance of the resource. Once again, scores for the four individual criteria were similar in their position at just above the mid-way point on a five point scale (Table 7.13) although the ability of a resource to generate value represented the highest score (mean = 4.67) followed by organisation, rarity and inimitability (means = 3.54, 3.36 and 3.13 respectively). Thus in reverse order, IROV appears to the order of criteria for strategic significance perceived by respondent strategic managers rather than VRIO.

<i>Term</i>	<i>Mean</i>	<i>S.D</i>
Value	4.68	.55
Organisation	3.54	1.02
Rarity	3.36	1.04
Inimitability	3.13	.98

Table 7.13: Importance of Resources (n=284)

In a similar manner to the examination of terminology presented above, only at tier 3 was the perceived importance of criteria found to differ from IROV, where rarity and organisation trade places in the hierarchy of criteria importance (Table 7.13) although ANOVA revealed no significant differences between respondent organisations according to tier.

Tier 1	Mean	Rank	Tier 2	Mean	Rank	Tier 3	Mean	Rank
Value	4.69	1	Value	4.65	1	Value	4.68	1
Organisation	3.64	2	Organisation	3.42	2	Organisation	3.44	3
Rarity	3.36	3	Rarity	3.28	3	Rarity	3.59	2
Inimitability	3.16	4	Inimitability	3.05	4	Inimitability	3.21	4

Table 7.14: Importance of Resources by Tier (n=284)

The differences between VRIO and IROV can be explained by industry conditions and the findings of the nine-factor solution discussed earlier in this chapter. The high importance given to ‘value’ reflects the cost-driven nature of the industry and the continuous need to add value in the activities undertaken by the supplier in order to fulfil its obligations to customers (other suppliers downstream or the final assembler). The leverage or synergy of activities across an organisation (*i.e.*, ‘organisation’) ranks second and can be understood from the perspective of the nodes of collaboration between buyer and supplier. R&D, logistics, production and quality are common areas/functions from which collaborative activities will be undertaken downstream, upstream and, increasingly given the use of alliances with other suppliers, horizontally at the same point in the supply chain. Consequently, skills and resources that are relevant to the support of collaboration (and the ability to generate value in the relationship) are considered important for leverage across these aforementioned areas (and others besides) in a manner akin to the organisation in the VRIO framework. Further support to this can be found in the strength and coherence of the relationship uniqueness factor identified earlier in this chapter.

Whilst important to the respondent managers, rarity and inimitability have lower scores than value and organisation. Since one would expect rarity or inimitability to enhance value rather than be separate to and less important than it, these lower score must resonate the perceptions of competitive advantage held by the respondent managers. Here, three factors may help to explain why this lesser perceived importance has been found in the data – organisational transparency, relationship uniqueness and resource accumulation. Organisational transparency (factor 1) conveys the sense that the strategic managers in the sample do not perceive the analysis and understanding of other organisation's competitive advantage to be a difficult task. Absent are notions of causal ambiguity, uncertainty imitability, and bounded rationality. Instead, the clear understanding of rival's operations inferred from this factor suggests that the identification of rare and inimitable resources can be known. However, since the acquisition of resources is perceived to be a relatively stochastic process (factor 7 - resource accumulation) the inability to accumulate resources in response to rivals' rare or inimitable resources might prove to be a disincentive, particular, where collaboration (factor 3 - relationship uniqueness) offers a known opportunity to generate and enhance value alongside greater leverage from company resources. Furthermore, the lower priorities assigned to rarity and inimitability reflect a belief that inimitability cannot be assured, given the risk of diffusion of technical know-how through technical communications, employees, reverse engineering and the 'engineering-around' of patents (Lieberman and Montgomery, 1988).

This interpretation of IROV is further enriched by the profile data of respondent companies presented in Chapter 6, where it was found that there were many companies operating in each component type area. Although detailed component knowledge could not be collected and the possibility that companies within each component group may produce smaller components that come to form the subassembly, there is partial evidence to support the limitations of inimitability given the multiple representation in component areas, especially since the dual sourcing policies of assemblers (in essence, a supply chain continuity provision) necessitates the presence of an alternative source of supply for every outsourced component.

Although VRIO has an implicit logic, particularly in that inimitability is superior to rarity (in terms of the supply of a resource), such a logic cannot be discerned from the IROV sequence of priorities. Indeed, rather than a sequence of criterion to be met in turn for the evaluation of strategically significant resources, the findings here should be presented as a ranking of priorities, since rarity cannot logically be superior to inimitability nor, importantly, be a precursor to it (where a single firm is in possession of a strategically significant resource). Perhaps, however, the respondent managers consider inimitability to be both difficult to achieve and lacking in commensurate rewards for its achievement.

Hence, managers do make a distinction between resources in terms of strategic significance, but not in the manner expected or suggested by the literature. Instead, VRIO is replaced by IROV. Indeed, it could be suggested that a definition of strategy inferred from, and appropriate to, the strategic managers in this study is that it is *the use of resources to achieve a leveraged value-added advantage*.

Finally, it should be noted that no correlations were found between the VRIO terms and the terms used to describe the importance of resources. Accordingly, despite the support in the literature, the proposed hierarchy of resources presented in Chapter 4 (Figure 4.5) remains purely hypothetical given the empirical analysis undertaken for this study.

7.4 RESEARCH QUESTIONS REVISITED

Following the empirical analysis of the data collected from respondents, it is now appropriate to address the research questions posited in this study.

7.4.1 RESEARCH QUESTION ONE – PRINCIPAL RESEARCH QUESTION

The first question sought to address the two competing views of competitive advantage – position (residence) and a resource-based view (resources) – and to establish the extent to which the two competing schools of thought could be identified within the perceptions of managers within an industry. The research question was framed as follows:

Do managers perceive competitive advantage to be based on bundles of heterogeneous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?

The rotated factor structure in section 7.7.2 identified nine factors; five of these were hybrids of position and resource statements, two factors could be considered to represent resource-based concepts and a further two factors conveyed residence-based concepts. However, no single factor comprised of the four items originally designated within each division or class.

Alone, the factors reveal little. Only with interpretation and an understanding of the context in which the factors emerge as underlying constructs can one make sense of this empirical outcome. The interpretations offered for each factor are based on the specific industry context as well as institutional context (Oliver, 1997). Moreover, if the interpretation of the factors is dependent on knowledge of the industry, then it cannot be denied that industry context also would appear to be a moderating influence on the perceptions of managers operating within it. The need for studies about the resource-based view to be located within a single industry to examine and take account of its effects has gone largely unnoticed from a methodological and interpretative perspective (Rouse and Daellenbach (1999). In part, this study has made a contribution to this debate in showing that interpretation is context-dependent.

Senior managers in the automotive components industry – the strategic decision makers and strategists – do not perceive competitive advantage to arise from resource or residence alone. Instead, their perceptions of competitive advantage are a hybrid of these two so-called competing schools of thought. The limitations of human cognition, the limited field of vision, and the desire for organisational growth and size are clearly prevalent within the factor structure.

Research question one cannot be answered in yes/no terms. A response to the question can be presented in graphical form, where the perceptions, constructs and their composition are portrayed as a cartography of competitive advantage (Figure 7.1 overleaf).

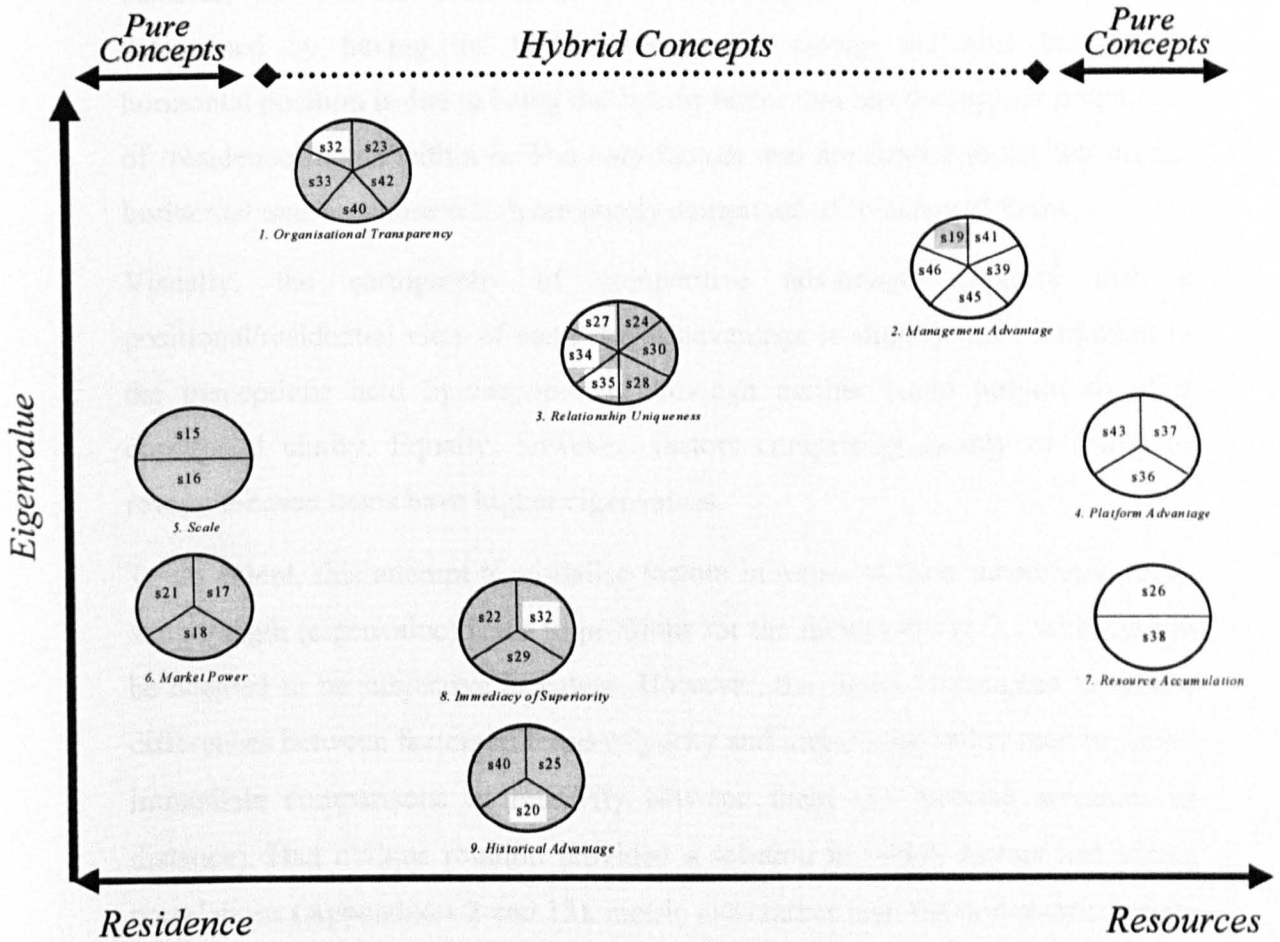


Figure 7.1: The Cartography of Competitive Advantage

The figure positions each of the nine factors in a virtual space where coordinates are determined by the eigenvalue of each factor (which determines vertical position) and the extent to which the factor bears resemblance to a residence view of competitive advantage or a resource-based view of competitive advantage. At the outermost (left and right) points are where the pure factors are positioned, comprising solely of items from the same division (residence or resources). The horizontal positions of the hybrid concepts are determined by the proportion of the residence or resource items that have been found to load on each factor. The circular representations of each factor comprise shaded segments to denote their composition in terms of the number of statements, and the origins of the statement in terms of the residence (dark shading) or resources (light shading). Hence, for

instance, the vertical position of factor 1 (Organisational Transparency) is determined by having the highest eigenvalue among the nine factors. Its horizontal position is due to being the hybrid factor that has the highest proportion of 'residence' items within it. The only factors that are further to the left on the horizontal axis are those which are purely comprised of 'residence' items.

Visually, the cartography of competitive advantage suggests that a positional/residential view of competitive advantage is slightly more dominant in the perceptions held by respondents although neither could purport to offer conceptual clarity. Equally, however, factors comprising mainly or solely of resource-based items have higher eigenvalues.

To an extent, this attempt to visualise factors in terms of their theoretical purity and strength (eigenvalue) leads to positions for the factors in Fig 7.1 which could be deemed to be subjective in nature. However, the figure is designed to denote differences between factors in terms of purity and importance rather than to derive immediate comparisons of relativity between them (*i.e.* precise measures of distance). Had oblique rotation provided a solution in which factors had strong correlations (Appendixes 2 and 12), metric axes rather than the non-metric variety presented here would provide further detail to prevent any visual distortion leading to misinterpretation. A metric for the horizontal axis in which the percentage of the dominant division were to dictate the horizontal coordinate, would also carry a subjective dimension.¹⁰³ However, were similar figures to be derived from replications of this study in different industries, vertical coordinates would be important to highlight the dominance (or otherwise) of factors in the cartography.

Taking these limitations into account, the cartography of competitive advantage represents the mindset of strategists within the automotive components industry.

¹⁰³ For instance, factor 'A' comprises of three items, two of which are position items and one is a resource item and factor 'B' has the same composition of items (2 x position and 1 x resource). In factor 'A' the two position items have the strongest loadings followed by the resource item, whereas in factor 'B' the resource item loads strongest, followed by a position item and with the final position item possessing a negative loading. In terms of eigenvalue and purity, the factors would have the same coordinate, but in terms of their composition they are clearly different. However, we could not allocate different positions to the two factors since the composition of the factors is a reflection of correlations of the items *within* each factor. They are not external measures *per se*. In other words, Figure 7.1 should be considered a 'visualisation' rather than a model.

As a collection of perceptions, they can be said to represent aspirations as much as precursors to decision or actions (Chapter 2). For instance, the ease of strategic analysis (organisational transparency), rational management (management advantage – factor 2) and size based advantages (scale and market power – factors 5 and 6) are optimal conditions for organisational success which might apply to all organisations. Yet despite information to the contrary, such as the impediments to rational decision making and the negative implications of scale identified in Chapter 4, such ideals in the form of the factors identified in the data are strong, salient concepts in the mind of managers.

Nevertheless, the mindset of managers within this industry can also be considered pragmatic through the clear presence of factors which suggest that not every aspect of an organisation is within the immediate grasp and control of its senior managers. The resource accumulation factor (factor 7) suggests a perceived lack of control over the acquisition of resources. Furthermore, the uncertainty that managers have about the longevity of supply relationships downstream is reflected in relationship uniqueness (factor 3), where managers seek to enhance partnership arrangements to ensure (once more for pragmatic reasons) the continuation of income streams. The tight coupling of the supply chain since the widespread introduction of the lean supply model (Chapter 3) underpins the importance of certainty over its antithesis, *i.e.* better the devil you know or have to know than the uncertainty of where a future supply contract may be domiciled.

The cartography of competitive advantage reflects a volume industry. Factors such as scale (factor 5), market power (factor 6) and immediacy of superiority (factor 8) are intimately associated with the ability to sustain a supplier's competitive position. Clearly, scale is volume dependent and market power is a function of the size of the market. The immediacy of superiority is also important since the global nature of sources of supply, the high number of alternative suppliers for many components (given the need for dual sourcing) and the substitution of technologies and materials means that component suppliers must be able to manifest an advantage at any given point in time to win new business and sustain existing relationships. Without such immediacy of advantage, the risk exists that switching will occur.

Furthermore, the mindset portrayed in the cartography of competitive advantage reflects the dynamics of the automotive industry in general, where consolidation downstream may threaten aggregate demand for components (given that merger and acquisition activity is predicated principally on brand access, platform sharing and overcapacity reduction). The extraction of three concepts (factors) manifest the cognisance of managers in this regard; the ability to mitigate competitive threats through relationship uniqueness (factor 3), platform advantages (factor 5) and historical advantages (factor 9) which have led to the accumulation of important resources (for instance, intellectual property, R&D skills, and process capabilities). However, as noted earlier, nothing can be certain, as demonstrated by the appearance of the resource accumulation factor (factor 7).

Despite changes and uncertainties in the industry, the strategists in this study would appear to walk with the two feet in the context of strategy (one deliberate – one emergent) suggested by Mintzberg (1985). A formulation approach to guiding the organisation into the future can be observed in the organisational transparency, management advantage, platform advantage (R&D), scale, and market power factors. Each of these factors connote a deliberate approach on the part of the respondent managers to ensure continuity of current supply relationships and the seeking of new ones. This does not mean that all of the respondents plan and plan well within their respective organisations, but that the cognitive propensity to do so resides within the perceptions of these senior managers. However, despite the rapid changes taking place in the industry as a whole, the strategists seem to favour seeking stability in order to build for the future, particularly through ‘extrapreneurship’ to develop relationship-specific technological advantages and the building of ‘next contract prerequisites’ (factor 2).

Equally, the composition of the factors examined earlier in this chapter offers the possibility that the respondent managers are accommodating toward the adaptive and imitative behaviour that is central to emergent strategies. Although organisational transparency (factor 1) communicates the belief that planning is a transparent and problem-free process, factors such as relationship uniqueness (factor 3), resource accumulation (factor 7) and historical advantage (factor 9)

each suggest that the development of an advantage is time dependent and the outcome may not be predicted accurately.

Relationship uniqueness (factor 3) will not be an instant characteristic of a relationship with a party downstream in the supply chain but, nonetheless, for any durability in the relationship to emerge, the supplier will have to exhibit sufficient flexibility and commitment to the relationship for it to be anything other than a low-added value market-based transaction. Moreover, the tight coupling of the supply chain and the technically elaborate nature of the product signifies the need for suppliers to be able to adapt to customers' (especially assemblers) future product development plans.

Resource accumulation (factor 7) is recognised by the respondent managers to be a process influenced more by luck than clear intention. Rather more characteristic of ambiguous intent, managers may not realise or agree upon, *ex ante*, those resources that could be pre-empted on every occasion that such a decision requirement is presented (Lieberman and Montgomery, 1988). Furthermore, as partnership relations with downstream companies or horizontal alliances (Chapter 6) develop, unplanned (*i.e.*, emergent) resource accumulation opportunities may present themselves to senior managers (or indeed to managers elsewhere in the organisation).

From the preceding factor analysis, interpretation and the cartography presented in Figure 7.1 three observations can be made in respect of the findings:

Perceptions of competitive advantage are complex, comprising pure and hybrid concepts and interpretations.

Neither the resource-based view nor a position-based view of competitive advantage can be said to predominate in the thinking of practising strategic managers.

The perceptions of the strategists in this study suggest that the resource-based view and a position-based view of competitive advantage are not mutually exclusive, despite their portrayal in the literature. Managers do not perceive them to be antagonists.

7.4.2 RESEARCH QUESTION TWO

Without resource accumulation (and impediments to this process), differences in the resource endowments of organisations would not exist. Accordingly, the resource-based view places a great deal of attention upon resource accumulation, portraying the process as one in which historical, mobility and inseparability factors (among other) impede access to value-adding resources. Moreover, managers' skills and organisational politics will often account for differentials in resource accumulation on account of the inability or incapacity to identify important resources, their source and a manner by which to take possession of them. Hence, the study proposed a second research question to examine the degree to which managers perceived, understood and rated the concept of resource accumulation:

Do managers perceive resource accumulation to be part of the RBV construct?

Although a resource accumulation factor was interpreted in the factor structure (factor 7 in section 7.2.7), the resemblance of the factor with the antecedent literature is somewhat limited. Resource accumulation is hampered by disagreement but aided by luck, albeit beyond the control of the managers concerned. However, the perception of organisational transparency (factor 1) finds that managers within the industry perceive the identification of resources and the attributes of other organisations to be an unproblematic process and that the importance of existing supply chains (factor 3), underpinned by platform advantage (factor 4), scale (factor 5) and market power (factor 6) confirms that senior managers understand the supply chain and the relationships undertaken within it to offer the resources necessary to develop, enhance and exploit competitive advantage.

Factor 7 – resource accumulation – suggests that informational advantages (Barney 1986b) may only arise during the course of an alliance or partnership arrangement. In addition, the lack of entry suggested in the process of resource accumulation (Barney 1986b) is not reflected in the factor extract earlier in this chapter. Instead, it is consumed within the historical advantage factor (factor 9).

Section 7.3.2 identified the resource priorities of the respondent managers to be IROV (inimitability, rarity, organisation and value in ascending order of importance) rather than VRIO. This reveals that if managers consider inimitability and rarity to be of lesser importance for a resource, this means that they would not consider inimitability, tradeability and substitutability (Dierickx and Cool, 1989) to be important criteria in the selection and acquisition of a resource.

Furthermore, resource accumulation is perceived to be one problematised by causal ambiguity which may reduce the replicability of resource accumulation efforts by organisations as suggested by Grant (1991). Absent from this factor are statements originally intended to convey concepts from the RBV in relation to the understanding of links between resources and advantage (s31) and the superiority of firms in resource accumulation (s32). Thus, the perception of resource accumulation by the managers in this study is a narrower concept than that proposed by the RBV, reflecting the limitations of managers and planning (in spite of the perception that is central to factor 1). Nonetheless, resource accumulation is a pure concept, devoid of non-RBV items and can be therefore by said to represent a modified version of that which can be identified in the literature.

Consequently, and in response to the research question, one would be surprised to find that the identification of rare or inimitable resources (as suggested in the literature) constitutes a formal planning activity:

Accordingly, the perceptions of respondents can only partially be said to concur with the propositions of the resource-based view.

7.4.3 RESEARCH QUESTION THREE

It was thought, *a priori*, and detailed in Chapter 3 that the concept of product platforms might reflect the more abstract notion of bundling resources proposed by the resource-based view. Correspondingly, the following research question was presented:

Do managers associate portfolios of resources with product platforms, families and technology convergence?

A positive response to this question can be offered following the detailed examination of the platform advantage factor (factor 4) in section 7.2.4 of this chapter. Not only does the notion of resource bundles clearly resonate in the interpretation of factor 4 (platform advantage) which in turn reflects R&D and procurement practices that are increasingly becoming the norm within the industry, one also finds that the combination of tangible and intangible resources that lead to relationship uniqueness (factor 3) also echo the combination of resources which lead to competitive advantage.

Suggested here is that managers' perceptions mirror the articulations of the resource-based view in respect of bundling resources rather than a resource-based view having influenced these perceptions (which cannot be established from the methodology used). However, as a reflection of how practising managers think about competitive advantage, the outcome of the data analysis proposes the following:

The bundling of resources advocated by the RBV would represent one of the more recognisable concepts for managers arising from this school of thought.

Platform advantage is the strongest and least ambiguous competitive advantage concept held by the managers in this study. In the cartography of competitive advantage (Figure 7.1), it is the factor with the highest number of items from the same division (3 x RBV items) in relation to its eigenvalue. Such a strong concept is likely to represent an important strategic priority in the activities and planning undertaken by senior managers.

The discussion in section 7.2.4 also suggested that product platforms could be considered not only a manifestation of technological competence, but also a strategic insurance policy to ensure production volumes in the face of industry consolidation and overcapacity.

However, the identification of this factor and subsequent discussion of research question three raises two questions. First, would such a perception (factor) be found in a study located in an industry where product platforms were less

prevalent or non-existent?¹⁰⁴ Only upon replication of the study in a different industry could such a question be addressed. It is sufficient to say, nonetheless, that the importance of industry context in the interpretation of the platform advantage factor, leads one to hypothesise that industry, operating and product differences would affect the extent to which such a factor could be observed among incumbent strategic managers. Secondly, is the existence of such a strong strategic concept among the senior managers of automotive component suppliers an organic priority (where it is the suppliers' managers themselves that have decided that platform advantage is highly important) or a priority primarily influenced by the assembler that has driven changes to the design and assembly of components?

7.4.4 RESEARCH QUESTION FOUR

A recurrent theme in the literature review (Chapter 4) which gave rise to the research question four was the management of resources. Without this, it is obvious that the productive potential of an organisation's resources may not be fully exploited (although equally resources could be mismanaged to diminish their potential). Important for this study was to make a distinction between products, processes and resources to determine the extent to which managers perceive resource management to be a formal process that is additional, though nonetheless, related, to the management of the outcome of resources – products and processes.

Consequently, the following research question was presented:

Do managers recognise the importance of resource management?

The factor analysis of the data suggests that the question should be answered in the affirmative given the discussion of the management advantage factor in section 7.2.2. The management advantage factor clearly indicates that managers perceive resource management to be correlated with the management of products and processes, but the loading structure of this factor suggests that resource management does not predominate. Instead, product and process management

¹⁰⁴ For instance, petro-chemicals, hosiery and publishing would appear to offer a lower utilisation of shared components/inputs.

have stronger correlations (albeit minor differences) but this, in part, is due to the more tangible nature of products and processes, and their direct impact on the need to secure ongoing supply relationships with assemblers or downstream component assemblers that are so vital to competitive advantage and survival in the sector. In addition, given that the 'managing resources' statements loaded together on the same factor, which is the second strongest in terms of its eigenvalue and accountability for variance, leads one to propose that the perception of managing resources among the respondents bears a high level of similarity to that offered in the RBV literature (Chapter 4), and the management advantage factor more than coincides with factors reliant on resource management, such as relationships and platforms which are represented coherently in the factor structure.

The management of resources is an integral part of managing (often) more tangible elements of an organisation such as product, processes and technologies. Ostensibly, the respondent managers associate resource management with these other manageable elements and understand that resources underlie each of them. This notion is evident within the RBV literature (Chapter 2). Irvin and Michaels (1989) suggested that managers should be familiar with strategically significant resources, and Mahoney and Pandian (1992) argue that without an understanding of how resources contribute to processes, products and services, insights into diversification and new product options will not arise in a planned manner. Otherwise resources will, from a resource-based view, remain under-utilised (Seth and Thomas, 1994).

The understanding of resources and their contributory role across the organisation is evident in the work of writers that have argued that core competencies reside in the resources which contribute to a wide range of product in the form of core technologies (Prahalad and Hamel, 1990) or product families (Meyer and Utterback, 1993). Further afield, the concept of economies of scope (Tece, 1982) can only be realised where managers understand the linkages between resources, product and processes.

The management theme extends beyond factor 2 (management advantage). Sections 7.2.3 and 7.2.4 highlighted the role of management in the interpretation of the relationship uniqueness and platform advantage factors.

Therefore, it can be stated that:

Resource management is considered by strategic managers to be intimately linked to products and process and an important role for senior managers as well as their subordinates.

7.4.5 RESEARCH QUESTION FIVE

The lexicon of the resource-based view is, to say the least, varied and fragmented. Disagreements and differences among key writers with regard to terms used to describe the positive resource and attributes of an organisation, combined with similar differences in views of those characteristics which distinguish between the importance of resources led to the following question:

Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?

Following the analysis of data in section 7.3.1 it was found that the senior managers in this study tend to use the general terms of 'capability' and 'competence', which have an easily recognisable meaning beyond the lexicon of management, to a greater degree than the more specialised term of 'core competence' that is imbued with connotations of the resource-based view. In this respect, at least, the resource-based view is not reflected in the terms used by managers. Moreover, whilst minor differences can be observed in the extent to which the various terms are used, no single term can be said to dominate. The data reveals indifference toward the differing terms at the very least or confusion about the differences in such terms at worst. Given that no correlations could be found with the terms and the criterion of valuable, rare, inimitable and organised, respondent managers clearly do not discern the terms to have *different* meanings. The managers merely use the term in varying amounts. The findings show, at the very least, that managers are likely to use the terms interchangeably since they are

less cognisant of any semantic and practical differentials that theorists tend to highlight.

It could be suggested that were a resource-based view to predominate, we might expect the terms 'competence' and 'core competence' to predominate also. Indeed, the findings in response to question 5 reflect the hybridisation of competitive advantage concepts and theories.

Following this, the empirical analysis presented in section 7.3.2 clearly indicated that the theoretical (and albeit rational) sequence of criterion proposed by the VRIO criteria is not shared by senior managers in the automotive components industry. Instead, and once again reflecting competitive priorities, value is considered to be most important trait for a resource, followed by the ability to organise (leverage) resource. Rarity and imitability are considered to be of lesser importance, in contrast to the literature which suggests that rarity and inimitability are important precursors to core competence status.

Hence:

Practising strategists differ from theorists in respect of those traits which determine the strategic significance of resources whilst making little distinction in terms used to describe important resources.

However, the findings in relation to this comment are not conclusive. It indicates, *prima facie* that data collection is not always equal to insight. However, improvements in relation to addressing this question are considered in Chapter 8.

7.5 CHAPTER SUMMARY

This chapter began by explaining how each of the research questions developed in earlier chapters would be addressed. Following this, the final factor analysis structure was presented and justified. This structure sought to achieve a simple structure and judicious consideration of the number of factors to extract by running a series of trial extractions. The factor structure can be considered to be robust for the purposes of interpretation in relation to the research questions, the nature of the industry and the theoretical domain in which the study is domiciled.

The chapter continued by presenting the factor analysis of the competitive advantage statements from the 284 completed questionnaires. Nine factors were found, each of which were interpreted in turn, bearing in mind the industry context. The analysis of each factor indicated that industry conditions can be considered to have an impact upon the perceptions of managers as found in the empirical analysis. However, the number of factors extracted exceeded the number of classes originally developed (nine and eight respectively) indicating that the perceptions or concepts that are prevalent in the minds of the strategists taking part in this study did not precisely match the expectations developed from the review of the literature.

Individually, the nine factors were; organisational transparency, management advantage, relationship uniqueness, platform advantage, scale, market power, resource accumulation, immediacy of superiority, and historical advantage. These factors indicate that the perceptions of competitive advantage held by managers within the UK automotive components industry are complex, hybrid in their reflection of strategic management theory, and boundedly rational (Chapter 2). Accordingly, the strategic decisions considered and taken by such managers are likely to reflect the cognitive cartography of competitive advantage presented in the chapter.

Further, the language and priorities held by the respondent managers did not echo those offered by the literature. Managers did not indicate that VRIO (value, rarity, inimitability and organisation) was their favoured ascending criteria for the strategic significance of resource. Instead, the senior managers almost reversed this order of significance by indicating that value was the most important criteria for resource, followed by organisation, rarity and inimitability. In the same order of significance as VRIO, the managers' priorities are IROV. Similarly, variation in the terminology used by managers to describe strategically significant resources varied from expectation in the literature. The term 'core competence', emblematic of the resource-based view, was the least used term. It was surmised that the impact of the resource-based view's terminology (*i.e.* core 'competence' and 'competence') appears not to have been extensive in replacing the terms 'capability' and 'strength' in the lexicon of competitive advantage.

Following the discussion of priorities and language, and in the light of the preceding analysis, the chapter returned to address the research questions. The research questions have been answered, although in several instances the answer has proved to be less than straightforward. In the case of each question, a proposition or response to the question was made to summarise how the question was answered. These are presented in Table 7.15.

RESEARCH QUESTION	PROPOSITION/RESPONSE
<p><i>Research question 1 (Principal Research question):</i></p> <p><i>Do managers perceive competitive advantage to be based on bundles of heterogenous resources which facilitate differentiation and diversification rather than external factors such as industry structure and macro-environmental factors?</i></p>	<p><i>Perceptions of competitive advantage are complex, comprising pure and hybrid concepts and interpretations.</i></p> <p><i>Neither the resource-based view nor a position-based view of competitive advantage can be said to predominate in the thinking of practising strategic managers.</i></p> <p><i>The perceptions of the strategists in this study suggest that the resource-based view and a position-based view of competitive advantage are not mutually exclusive, despite their portrayal in the literature. Managers do not perceive them to be antagonists.</i></p>
<p>Research question 2</p> <p><i>Do managers perceive resource accumulation to be part of the RBV construct?</i></p>	<p><i>Accordingly, the perceptions of respondents can only partially be said to concur with the propositions of the resource-based view.</i></p>
<p>Research question 3</p> <p><i>Do managers associate portfolios of resources with product platforms, families and technology convergence?</i></p>	<p><i>The bundling of resources advocated by the RBV represents one of the more recognisable concepts for managers arising from this school of thought.</i></p>
<p>Research question 4</p> <p><i>Do managers recognise the importance of resource management?</i></p>	<p><i>Resource management is considered by strategic managers to be intimately linked to products and process and an important role for senior managers as well as their subordinates.</i></p>
<p>Research question 5</p> <p><i>Do managers make a distinction between resources in terms of their strategic significance and do they use terminology indiscriminately?</i></p>	<p><i>Practising strategists differ from theorists in respect of those traits which determine the strategic significance of resources whilst making little distinction in terms used to describe important resources.</i></p>

Table 7.15: Summary of Research Questions and Responses

This chapter also introduced a cartography of competitive advantage (Figure 7.1). The cartography is intended to visually represent the composition of the factors found in the data analysis and differences in terms of eigenvalues and their theoretical purity. In essence, it summarises the findings in response to the principal research question, but it may also offer a way of developing the testing of theory and comparisons between studies. These implications are considered in the next chapter.

Having completed the analysis of data and the development of linkages to the research questions, the next chapter considers this study in the wider context of strategic management theory, management practice, management education and methodological development.

Chapter 8 – Conclusions and Implications

8.1 INTRODUCTION

In the previous chapter, each of the research questions were addressed, alongside the presentation of a cartography of competitive advantage. In this chapter, the researcher adopts a wider perspective of the issues arising from the results of this study. In particular, it focuses on the impact of the study in methodological, practitioner and strategic management terms.

The chapter begins with an exposition of the consequences of the findings followed by some of the implications of the study for the automotive components industry. Next, the chapter reflects on the methodology used and examines how this methodology could be used as a foundation for more a complex research design in the field of strategic management. In addition, a number of research questions are proposed arising from the analysis and discussion developed in previous chapters. The chapter, and the thesis, concludes with comments which reflect on the contribution of the study to the wider field of study.

8.2 CONSEQUENCES OF THE FINDINGS

8.2.1 THE MIXED PERSONALITY OF COMPETITIVE ADVANTAGE

In Chapter 7, the empirical analysis of the data from respondent managers led to the discussion of the research questions. These questions were developed from the research stimulus which led the study to examine managers' perceptions of competitive advantage. A nine factor solution from principal components analysis was interpreted to suggest that managers do not share the same perceptions as those that are inferred from the literature, where residence and resource are portrayed as distinct (often competing), theories of competitive advantage.

The resource-based view has attracted a great deal of interest from within the field of strategic management. Equally, however, concerns have been expressed about its tautology and circularity (Porter, 1991) and of the problem of observing the unobservable (Godfrey and Hill, 1995) from a theoretical and methodological perspective. Furthermore, the criticisms of this relatively new body of theory in

strategic management (although notable antecedents were identified in Chapter 4) have been forwarded in practitioner oriented developments of RBV theory (Higgins, 1996; Petts, 1997) where disquiet has revolved around the anecdotal and problematic communication of RBV theory to managers.

Whichever the direction of such criticism, the debate has run before it has walked. Anecdotal insights into core competencies and the RBV represent the equivalent of a baby's first steps; sporadic, without precise intention, limited to a short duration and yet exciting to observers. From the outset of this theory's development, and its subsequent comparison to the industrial-organisation approach to strategic analysis and choice (Chapter 4), there has been an assumption among theorists that practitioners would share the same compartmentalised views as theirs.

Although RBV and IO approaches have attempted to isolate the performance of organisations to a number of variables that accord with the theory in question (e.g. IO focuses on market structure, behaviour and performance whereas the RBV focuses on the value, use and isolation of resources), it is assumed that managers will think in those same compartmentalised terms. This notion has been called into question by Sutcliffe and Huber (1998 who argue that:

Given that organizational actions are based in part on top managers' perceptions, ... our ability to analyze, understand and predict organizational actions and performance may be seriously constrained unless we recognise and account for ... these perceptions" (1998:794).

Hence, this study has taken a deliberate step backwards in order to take a useful step forwards in the development of RBV theory and practice. This study has found that the "split personality" (Sanchez and Heene, 1997:304) between residence and resources that is evident in the literature cannot be supported from the viewpoint of how managers perceive competitive advantage. Instead, the cognitive cartography of competitive advantage indicates that managers have a mixed personality insofar as the factors which determine competitive advantage within a specific industry – automotive components – and such perceptions can be attributed to prevailing industry conditions and practices (Chapter 7).

The suggestion that competing theories of competitive advantage “compounded the confusion about strategy that now besets managers” (Collis and Montgomery, 1995) could also be questioned. The findings of this study is that managers have their own mental models of the priorities that assist in the achievement of competitive advantage. Although these do not necessarily concur with the austere black and white portrayal of competitive advantage in the literature, the colour palette considered by managers may be industry and experience dependent. This necessarily implies the replication of the methodology used in this thesis in other sectors (Section 8.5).

Evident from the perceptions of managers is that they have a strong belief in their own ability to influence the competitive position of the firm. This is hardly unexpected, but the strongest factors found in the empirical analysis (organisational transparency, management advantage, relationship uniqueness and platform advantage) do not embrace the idea that matters are beyond manager’s control. They can plan for the future, leverage their management skills, develop unique supply chain relationships and lead the R&D process. Few of the concepts (factors) perceived by managers suggest a recognition of an incapacity to control the immediate destiny of the organisation, nor build for its future (resource accumulation and historical advantage). Managers purposefully believe that the possibility resides for the creation of an asymmetrical position for their organisation in respect of their rivals within the industry. However, intention, action and success are different, though nonetheless related. So, whilst this study does not purport to track the decisions of the managers and subsequent performance (a matter which is considered in section 8.5 below), the cartography represents an informed view of how managers perceive competitive advantage in the industry that is the focus of the study.

8.2.2 SIMILARITIES IN INDIVIDUAL THEORETICAL CONCEPTS

The individual components of the resource-based view (RBV) formed a major theme in this study. Chapter 4 examined the prevailing literature in the domain of the RBV and found that four major elements could be identified: resource accumulation, uniqueness and competitive advantage, portfolios, and managing resources.

In the factor analysis of the competitive advantage statements, the results indicated that the concepts of 'managing resources', 'portfolios' and 'resource accumulation' could be observed in the composition of factors, albeit to varying degrees. For instance, managing resources was echoed in the *management advantage* factor (which also emphasised the role of geographical proximity). The concept of bundling resources into portfolios of resources which are used in several applications was evident in the *platform advantage* factor which directly reflects the nature of vehicle design and assembly. In the case of this factor, three statements developed to convey the theoretical concept loaded very strongly together. The concept of resource accumulation was also perceived as a cogent concept by respondents. However, in this case, the process of resource accumulation was found to be one characterised more by fortuity than design.

The existence of these factors in the analysis led to an affirmative (albeit to varying degrees) response to research questions 2, 3, and 4, indicating that managers do concur with the abstract concepts of the resource-based view. Question 5, which considered the terminology and priorities for managers within the automotive components industry, was considered using less elaborate statistical techniques. In the case of this question, the results deviated substantially from the expectations that were developed from the literature.

8.2.3 KEY ISSUES IN THE PERCEPTIONS OF MANAGERS

The careful examination and interpretation of the factors in Chapter 7 can be used to highlight a number of important issues within the perceptions of managers. In essence they describe the managers' attitudes toward strategic and competitive issues in the automotive components sector. In an irrational world, managers still believe that they can be rational in their decision making and analysis in the light

of organisational transparency. This suggests that rational models of strategic planning will be accepted by such managers and employed in the development of future plans.

The management of supply chain relations (especially downstream) is an imperative for managers. Not only is a senior management role that which is involved in the development of new opportunities, process management is perceived to be an integral part of systematically managing products and other organisational resources (know how, etc.). Hence, senior management is perceived by these managers to be 'hands-on' as well as the conventional strategic role.

Competitive advantage, according to the respondent senior managers of automotive component suppliers, can be achieved through the development of unique relationships with downstream organisations. In this way, the company becomes 'locked' into the final production processes of the vehicle assembler, thereby raising switching costs. The duration of the relationship is critically important since it offers the opportunity to engage in organisational learning with partners, and to manifest the positive and collaborative behaviour that will lead to a higher likelihood of success in bidding for new business once the vehicle model's life has ended.

The ability to achieve a competitive advantage through combinations of resources in the form of a platform or complex subassembly is an evident priority for managers in this industry. Not only do platforms offer the potential to capture greater value from the transformation process in the supply chain, they enable suppliers to increase the volume of production of a given component given the tendency toward automotive platform usage within and across assemblers' ranges and brands. Furthermore, the high rates of joint R&D (Chapter 6) confirm that a form of 'extrapreneurship' is necessary to augment the uniqueness of a buyer-supplier relationship.

Managers make a distinction between scale and market position (power). Scale is concerned with the size of output relative to production capacity. In a volume industry such as this, the ability to maximise capacity utilisation in order to

deliver year-on-year price reductions to buyers is a competitive necessity. Similarly, yet distinctively, market power is perceived to be the size of the organisation relative to rivals. Once more, with the advent of new competition from beyond trading zones (EU, ASEAN, NAFTA, etc.) organisations located within the UK may find themselves in a weaker competitive position by virtue of a shrinking demand for components (as overcapacity downstream is reduced) and a shrinking world in terms of the source and location of rivals.

Although managers believe that they can plan effectively given the transparency of rivalry, competition and industry conditions, they nonetheless recognise that the future cannot be predicted with certainty. This is especially true in the case of resource accumulation, but also in the case of developing unique relationships with suppliers where the commitments made by the supplier may not be reciprocated by the assembler. For instance, an automotive component supplier that had committed a large amount of time and resources to the development of unique relationship with Vauxhall (GM) would find themselves in an uncertain position following the announcement that Luton-based passenger vehicle operations are due to cease in 2001 and be transferred to plants in continental Europe. Although, the supplier would still be contracted to supply components to these overseas plants until the end of the model's life (specifically the Vectra model), renewal of the supply contract (assuming no carry-over parts) would not be a certainty, and might be hampered by locational and currency disadvantages faced by the UK-based assembler. Even were the supplier to be a subsidiary or division of a large multinational, the company would still be faced with the dilemma of whether to locate component production more closely to the customer to improve renewal possibilities. Contrast this, however, with a supplier that has invested similar resources in a unique relationship with Toyota, an assembler which in January 2001 announced a 30 per cent increase in production levels to 220,000 units per annum at its Burnaston (UK) plant.

In the light of the uncertainty noted above, the immediacy of superiority is critical to senior managers in the automotive components industry. This is not a case of impatience but of pragmatism. A rapid response to assemblers' requirements combined with the ability to continuously manifest the supplier's competitive

advantage(s) is necessary. However, managers in this study recognise that competitive advantage will develop over the course of time, whether this be through unique relationships, technical and design excellence, reputation or superior management experience. More importantly in the context of this study's aims – to examine managers' perceptions of competitive advantage – is that position within the industry as much as the unique resources at the disposal of the company are considered critical in the search for competitive advantage. This balance between residence and resources is visualised in the cartography of competitive advantage (Figure 7.1).

In Williamson's defence of transaction costs theory (1999) he advanced a major criticism of the resource-based view – a lack of operationalisation.¹⁰⁵ Such a criticism should be reconsidered in the light of this study. The hybrid perceptions of competitive advantage and the industry-specific cartography that has subsequently been developed is an initial stepping stone to further study which should examine both the impact of perceptions upon actions and decisions, and the performance accruing from those actions. Only with such an initial stepping stone having been identified can large scale studies be pursued. So, whilst the RBV may have developed on the basis of an assumption that the plural of anecdote is data, there has been a call for the RBV to "show its hand" (Williamson, 1999:1093) since it is a theory of the firm which connotes high(er) performance. Instead, it is the decisions (or lack of them) of managers to use the organisation's resources in the context of a competitive environment which determine performance. Since these decisions are informed by factors other than a strategic analysis, such as background, training and, critically in the case of this study, the perceptions that managers have of competitive advantage, the finding that a hybrid of competitive constructs rather than pure reflections of theories of the firm prevailing in the minds of managers leads to a slightly differing outcome. The pursuance of pure theory development is a necessary precursor to management education and economic policy, but when it is found that reality refracts, absorbs and fuses rather than reflects such developments, theorists,

¹⁰⁵ By operationalisation, Williamson is referring to a position whereby RBV theory can be used for the purposes of prediction. In addition, he denounces the anecdotal nature of RBV work.

practitioners and educators should seek a balance between the ideal model of competitive advantage resident on the printed page and the imperfect reality which can be observed in the competitive environs. The difference is that of dendrology compared with biology.

8.2.4 THE LEXICON OF COMPETITIVE ADVANTAGE

One of the main aims of this study was to assess the extent to which the nouns used to describe a competitive advantage (strength, capability, competence, and core competence) were used by managers. A corollary of this was to examine the order of importance associated with certain characteristics of a resource (value, rarity, inimitability and organisation) given the association made by RBV writers between core competencies and many of these characteristics. These issues were embraced within research question 5. As Sanchez and Heene (1997:308) add, “a central concern of competence theory is developing better insights into the ways managers conceptualise and communicate about new possibilities for competing and cooperating”.

Williamson has raised a further concern about the resource-based view – the “often tautological definitions” (1999:1093). Although such a criticism was not originally sought to be addressed, this study can provide a response. Following the analysis in Chapter 7, this study concurs with the view that tautological definitions do exist in the minds of strategic managers within the automotive industry. They make little distinction between terms such as strength, capability, competence and core competence. Whilst not all of these terms are directly attributable to the RBV, the addition of terms used by writers in this field have certainly not provided further clarification in the lexicon used to describe and differentiate between resources of differing strategic significance. Thus we would expect no more of a differentiation between resources that that provided by the simple adjectivisation of a term. For instance, does the phrase “this is a core competence” offer any greater insight for a manager to state “this is a very important resource”?

Seemingly, the results of this study would indicate that the managing strategists participating in this study do not make distinctions between the terms referring to a hierarchy of resources. This does not mean that they will not discern the fact that resources differ in their strategic importance but that practising managers are less concerned (or entirely unconcerned) with such semantic distinctions than their academic counterparts.

The differences in precision and priority between academic and practitioner terminologies have a further implication noted by Petts (1997:551) who argues that the RBV “does not provide an easily assimilated conceptual framework for managers”, adding that “if this new paradigmatic viewpoint is going to be adopted by ... business, there needs to be a straightforward way of explaining it to the uninitiated”. In the light of this study we can discern that the ambiguity of concepts may present a problem in itself, but this is may be exacerbated by differences in precision and priority. There are no easy solutions to the problem of variable terminology. However, if the RBV is to have a wider and longer lasting audience from the practitioner community (beyond curiosity toward the anecdotal), a convergence in the lexicon of competitive advantage will be required, since the potential distortion in the message from the academic when received by the practitioner will devalue the potency and usefulness of the original message.

Furthermore, there are consequences for intrusive research methodologies (Rouse and Daellenbach, 1999) where the objective of the researcher is to examine RBV issues within single organisations using multiple respondents and employing open-ended or semi-structured questions. The findings of this study propose that the researcher should examine, prior or during data collection, whether respondents make a discernible distinction between types of resources. Otherwise, the researcher may be led to identify distinctions where they do not exist or to miss distinctions where they do. This is particularly important if the purpose of the research is to develop normative theories of competitive advantage and ensure reliability in the triangulation of data sets from the same organisation (Jick, 1979).

However, the propensity for managers to misinterpret the importance of resources and deploy them in the fulfilment of a strategy on the basis of their mistaken importance may still remain. This is especially pertinent given the connotations of 'organisational transparency' found in the study of managers' perceptions. In this respect, further research is required to establish whether the mistaken identification of something that is a core competence (a resource that is, at least theoretically, valuable, rare, inimitable and organised) when in fact it is a less strategically significant resource leads to a lower performance for the organisation than might have been the case.

8.3 IMPLICATIONS FOR THE AUTOMOTIVE COMPONENTS INDUSTRY

Chapter 6 provided an exposition of the respondent organisations and managers, providing the basis from which to argue with certitude that the study and its findings were located precisely within the definition of an automotive component supplier in the UK. The non-respondent analysis used at the start of Chapter 7 indicated that the respondent group was not significantly different from a sample of non-respondents.

Consolidation is clearly evident in the size of organisation prevalent within the sample. Moreover, the sample suggests that there is a small proportion of small and micro sized firms within the UK sector. Accordingly, the image of clusters of small machine shops servicing the industry does not necessarily hold true. Increasingly, volume production requirements, international sourcing and cost pressures will reduce the number of small suppliers, leaving only those specialist manufacturers producing low volumes for non-standard parts within the sector. In spite of this, however, the majority of suppliers in this study (60 per cent) can still be considered to originate from the UK.

The study has also found an indication that the contribution of the automotive components sector may be seriously underestimated (Chapter 6). There is a shortfall of £5.2bn between the revenue data gathered in this study and those provided by official statistics. Furthermore, the data collected for this study represents less than one-third of companies recognised to operate within the UK automotive components sector. This study highlights, once again, the problems

arising with industry statistics based upon standard industry classifications. Such statistics could impair policy making at a national level. In addition, the view that tier 1 suppliers are necessarily larger than tier 2 counterparts has also been questioned in this study as measured by turnover.

An assessment of the component types produced in the UK indicates that the component supplier-base can be considered 'full-range' in terms of the major outsourced component types required for final assembly. The product gaps identified in a previous study (Pickernell, 1998a) have been, in part, filled according to the findings of this research. However, despite the supply capability and variety of the UK components industry (given the long history of assembly in the UK) the location of the supplier in relation to the assembler would appear to remain important. The study has found that a lower percentage of suppliers supply overseas that to UK-based assemblers. Further evidence, if this was needed, is provided to support the knock-on effect of assembly plant closures and overseas re-locations (GM and Ford are two recent examples). Foreign direct investment (FDI) initiatives by government should also reflect the impact of FDI assembler investments and their impact on local and regional economies (see Foley *et al.*, 1996). The combination of underestimated contributions and the impact of assembly plant losses should provide a compelling case for the promotion of the UK automotive industry's role in national wealth creation.

Interorganisational collaboration still remains strong within the industry, despite the threat of a slight move back toward price/cost dominated economic exchanges or '*reine preisdiktat*' (Chapter 3). Joint research and development is predominant across all tiers of the supply chain and a substantial number of suppliers have entered into strategic alliances with other suppliers (44 per cent of respondent organisations).

The analysis of perceptions of competitive advantage highlighted that supply chain relationships and product platforms are paramount within this industry. Senior managers, therefore, reflect current competitive issues in the industry and their consequences. These managers also recognise that capacity utilisation is a critical issue in the light of consolidated capacity at the end of the supply chain.

8.4 REFLECTIONS ON METHODOLOGY

The nature of the research questions led to the selection of a research strategy that was based around empirical methods. Although empirical works have come to dominate studies in strategic management in recent years, it was the resemblance of this study to attitudinal testing which informed the choice of the research strategy (Chapter 5). A mixed methodology was not adopted since the purpose of the research study was to examine perceptions of managers across an industry, rather than to link empirical findings to case studies or other forms of qualitative data collection and analysis. The emphasis of this study lies in its focus on examining the foundations of senior managers' strategic decisions – their perceptions of competitive advantage. Without such foundations, it is argued here, neither qualitative nor longitudinal methodologies can be entirely rigorous given that the researcher would not know whether, for instance, how a firm's current resources (in the instance of case-based research) had been influenced by managers or how changing conditions had affected an organisation's competitive advantage (given the changing perceptions of managers across the time period in question). Hence, rather than being all things to all people, this study has chosen to focus as an aid to rigour. In so doing, the study offers a solid, credible platform both methodologically and in its findings for the subsequent replication of the study to be undertaken (Section 8.5). Replication and extension of research studies plays an important role in the development of theories, yet there is a tendency to pursue exploratory and 'new' research.¹⁰⁶

8.4.1 SINGLE INDUSTRY FOCUS

The use of a single industry as the focus of study has enabled the interpretation of data that, *prima facie*, could be considered largely abstract. However, as Rouse and Daellenbach (1999) argue, research in the resource-based view may potentially benefit from a single industry focus since firms within the same may bear similarities in terms of strategic decisions, strategic factor markets and organisational cultures. This study demonstrates that their suggestion of shared

¹⁰⁶ Hubbard *et al.*, (1998) found that only between 5 and 10 per cent of journal articles in the management field are replications and extensions of previous studies.

factor markets and industry characteristics having a bearing on the outcome of RBV-oriented studies can be upheld. Furthermore, in knowing that the strategists in the industry have a long experience and tenure (Chapter 6) the mindsets of incumbents will have been shaped by such influences.

Whilst the choice of a single industry enables the researcher to interpret more specifically the finding which he or she develops in the course of data analysis, such a decision necessarily forces the researcher to consider precisely how an industry is defined and how the sampling should be undertaken. For this study, definitions of the automotive components industry varied to such an extent that firms not considered to be competitors might be labelled as such. For instance, a HGV braking component supplier with no passenger car business and a passenger car braking component supplier would be considered to be rivals on account of their component type. The cross-elasticity of demand does not exist and rivalry, it follows, does not exist between these two suppliers.

8.4.2 CAREFUL SAMPLING

A study which claims to focus on a single industry cannot purport to do so unless judicious consideration has been given to how the industry is defined, whether the definition is suitable and how incumbent organisations are identified. This necessarily adds to the work of the researcher, but without this, claims of an industry focus are unwarranted. In pursuance of such a claim, this study set out to develop a database of component suppliers that met the definition of an original equipment component supplier to the high volume assemblers of passenger vehicles. A multi-source approach was used to identify organisations that met the criteria developed in Chapter 4, because Standard Industry Classification codes both included and excluded relevant firms. The experience of the researcher based on the conduct of this study would lead to the suggestion that how samples are chosen need increasing scrutiny where SIC codes alone are used. In this respect, the omission of important potential respondents in respect of their quantity and type arising from SIC codes has been avoided in this study and can be said to concur with the recommendations of Rouse and Daellenbach (1999) for RBV

methodologies.¹⁰⁷ Careful sampling is an important precursor to the relevance of responses.

Bespoke database development has its benefits despite the work involved in their development where large number of responses are required. The ability to generate mail merges and to manage responses ensures that follow up activities are as effective in targeting actual non-respondents. Furthermore, the database is valuable insofar as non-response bias has been shown to be insignificant. Although the postal survey approach can be considered an impersonal form of contact between the researcher and the subject, the ability to personalise correspondence using database software partially offsets this effect. An additional benefit for the researcher is that he or she has an indication of how the database and the sample subsequently derived from it compares with publicly available information and provides a basis for comparison with similar studies within the industry (as discussed in Chapter 6).

8.4.3 PRETESTING VERSUS PILOTING

Although the pre-testing of statements in the manner used in this study is not new, it offers further evidence that the careful development of statements with the target audience as the central consideration offers the opportunity to examine the data collection instrument in a more detailed manner than would be the case of a typical pilot phase involving the distribution of a small number of surveys to participants. The use of focus groups enables the researcher to gather more feedback and to examine problems and potential solutions with persons similar to the subsequent recipients of the questionnaire. Furthermore, the pre-testing of the data collection instrument with a group of general managers, as employed in this study, also ensures that respondents which may have a lesser experience of the industry and its associated terminologies will have an equal opportunity to respond appropriately to questions. This approach also indicates the extent to which surveys and their content may be used across industries as well as the industry which is the concern of the study. In essence, the researcher is thinking about the applicability and obsolescence of the survey.

¹⁰⁷ Rouse and Daellenbach (1999) recommend on this refinement, albeit theoretically.

8.4.4 THE RELEVANCE AND VALUE OF FACTOR ANALYSIS

Finally, in respect of the methodological dimensions of this study, the primary data analysis technique – factor analysis – has proved to be a success.¹⁰⁸ Such an assertion is supported by a number of outcomes arising from the previous chapter. First, the technique offers a manner by which to deal with a large data set (9088 data items were collected for the 32 statements alone) and reduce the data into a manageable format (*i.e.* nine factors). Secondly, the trial extractions (Chapter 7) used in this study required the researcher to think about how the data was best interpreted in the context of the research questions and research context.

Indeed, this trial extraction process indicated that the first (apparent) answer was not the best one. Such an approach involves the exploration of the data for underlying patterns by the researcher as much as the factor analysis has sought to achieve mathematically.¹⁰⁹ The software package is blind to the research questions and research context. The researcher is responsible for finding the most appropriate answers. Third, the use of factor analysis in this study has once again shown that the interpretation of factors is critically dependent on an understanding of the context in which the data was collected. Abstract data can be given life through logical and thoughtful interpretation. Although exploratory factor analysis was chosen due to its relevance in theory building, future studies of this type may use a confirmatory factor analytical approach (LISREL-based) for the purposes of predicted hypotheses developed by the researcher.

¹⁰⁸ It is worth noting that prior to this study, the researcher's experience had largely been one of explanatory, exploratory and descriptive qualitative studies (*e.g.* Herbane, 1994; Swartz *et al.*, 1995; Herbane *et al.*, 1997; Elliott *et al.*, 1999). Fitness for purpose, methodologically speaking, should be criteria for the selection of the research strategy rather than any predilection toward a favoured methodology.

¹⁰⁹ This echoes the 'grounded' approach to theory development (Glaser and Strauss, 1967).

8.4.5 LIMITATIONS AND MODIFICATIONS TO THE RESEARCH STRATEGY

Whilst the research strategy and data collection can be considered to have been successful for the most part, the deployment of the research strategy has highlighted a number of areas which could generate further or more refined data.

Although findings in relation to question 5 could be interpreted in the industry context, it has clearly shown the limitations of dealing with questions of terminology and the importance of resources through the use of interval scales given the proximity of scores and the lack of correlations. A repertory grid approach (Kelly, 1955) using the terminology as constructs and using combinations of the VRIO criteria as 'objects' could be incorporated into the survey instrument. Although this would yield insights into whether (and if so, how) terms were associated with certain characteristics of advantage, a danger might be to slow down the completion of the questionnaire and endanger its completion. However, with the survey instrument completed and successfully deployed, piloting to examine the effects of this modification could be undertaken.

Additional profile data would be useful to enable further examination of the data derived from the factor analysis. For instance, information about the nationality and educational background of respondent managers would allow inferences to be made about relationships between tenure, education, experience and nationality, and the perceptions of managers.

8.5 DIRECTIONS FOR FUTURE RESEARCH

8.5.1 BUILDINGS ON THE FOUNDATIONS

This study has successfully shown the value in testing theories within strategic management using methodologies akin to personality/attitude testing. It has been found that hybrid interpretations of theories can be observed among a group of managers within the same industry. Earlier in this chapter it was argued that the study of how managers' attitudes reflect prevailing or emerging theories was a necessary precursor to the study of how organisations' performances reflect strategic decisions based on or reflective of these theories given that perceptions will influence actions (Chapter 2). This section is concerned with how this study

can form a basis for future research, how the study could be refined for replication and how the research has generated further research questions.

From the outset of the study, some uncertainty existed in respect of the size of the questionnaire, presenting in turn a trade-off that needed to be reconciled against other considerations. An ideal situation would be one in which the researcher could include as many items/statements as she or he wished without jeopardising respondents' willingness to complete the questionnaire. As the previous section indicated some 9088 data items were compiled from the respondents. In no single case did a respondent omit to provide a response to an individual statement. This completeness of data suggests that the data collection instrument was suitably structured and adequate in its length. The addition of further statements would enable the researcher to examine more detailed, complex and interconnected issues than the 32 statements used in this study could provide. In this instance consultation with pre-test focus groups and limited piloting would help the researcher to discern whether the increased number of statements would lead to respondent fatigue.

The main direction for future research could be to incorporate the research strategy used in this study to form part of a multi-stage methodology which seeks to address competitive advantage within an industry and the perception, decision and performance relationship. Such a methodology would comprise of three stages. In the first, the research would replicate this study's methodology to examine the perceptions of managers within an industry. The second stage would involve the use of intrusive measures such as semi-structured interviews, archival research and content analysis, action research and case study approaches to identify how the perceptions held by managers would have an influence on the decisions taken by that manager, both individually and within group decision making (Eisenhardt, 1989; Yin, 1989; Leonard-Barton, 1990; Hamel *et al.*, 1993). Bibliometric and patent analysis (Chapter 4) would usefully supplement this qualitative data. Thirdly, the methodology would attempt to isolate the linkage between the strategic decision and organisation performance. The measurement of financial performance is by no means a straightforward and agreed upon activity. Perhaps, however, measures of superior performance such as the ability to

premium price relative to alternative products and services, and a measure such as return on premium price might prove to be a useful starting point.¹¹⁰ A wide variety of measures of organisational performance are available, although many remain problematical.¹¹¹ These include stakeholder approaches (Mitchell *et al.*, 1997), accounting measures such as leverage, profitability and liquidity (bearing in mind some of the problems in the use of such measures; see Zimmerman, 1983; Watts and Zimmerman, 1990; Smith, 1996), and present value measures for public companies (Copeland and Weston, 1993). Market measures would clearly be included within a consideration of performance, as would measure of HR measures (turnover and tenure/experience of employees) and technology measures such as R&D expenditure, lead-time, carry over parts and intellectual property applications (Trademarks and Patents).

Once completed in a single industry, the three stage methodology could be employed across industry boundaries to examine how differences in strategists' perceptions differ by industry and subsequent decisions and performances. Such an approach would show the synergies and insights that can potentially arise from the use of mixed methods. The mapping of factors using an approach similar to the cartography of competitive advantage presented in Chapter 7 could be used to highlight the salient differences between perceptions of managers between industries, where they exist. Accordingly, although this study is quantitative in its nature, it by no means eschews the possibilities for a qualitative synthesis.

The proposal of a three stage research strategy such as that proposed above suggests that the operationalisation of RBV research can be achieved, contingent on the acknowledgement of a number of caveats. Although it may appear that such an approach would seek to generalise, more appropriate is that RBV research should seek to identify patterns and re-occurrences which can be used to advise managers to change practices, resources and decisions to improve organisational performance, rather than devise rules and prescriptions that, necessarily by virtue

¹¹⁰ Return on premium price is calculated as follows: Premium price (difference between company' price and average industry prices) divided by industry average prices (IAP). Thus, for instance, where IAP for the product is £10 and company A's selling price is £12, return on premium price is $(2+10) \times 100 = 20\%$.

¹¹¹ See: Wood and Laforge, 1979; Rhyne, 1986; Ramanujam *et al.*, 1986; Pearce *et al.*, 1987; Cool and Schendel, 1988; Boyd, 1991; Veliyath and Shortell, 1993; Brown and Laverick, 1994.

of the historical and social dimension of many resources, are rendered ineffectual (for instance, the study of the organisation of research and development in isolation). Furthermore as Chapter 4 indicates causal ambiguity and uncertain imitability will always be the enemy of generalisation but the ally of uniqueness.

In respect of the exigency to study the RBV empirically, this is actually needed to overcome the charge of 'anecdotalism' that accompanies much of the work already carried out (Chapter 4). However, anecdote and abstract empiricism are two sides of the same coin of the "trivia" currency which both dilute interpretation. Needed, instead, is a balance between strong empirical foundations coupled with the richness of detail so that empirical evidence coupled with rich supporting material will lead to a compelling, coherent and competent body of theory.

8.5.2 NEW RESEARCH QUESTIONS

During the course of this study, the discussion and analysis has itself generated further research questions. Several research themes/questions warrant further investigation and this section develops research questions for further study.

Chapter 4 raised the issue of whether organisations can really benefit from a best practice study (for instance Oliver *et al.*, 1994) given the problems of uncertain imitability and resource accumulation. The question of whether organisations can truly learn from publicly available studies of others requires further investigation if researchers and consultants are to understand the impact that best practice/benchmarking research has on the practitioner community. The following research question is proposed:

Research question A: Do best practice studies enable organisations to successfully emulate best practices?

Such a research question would be most effectively examined through qualitative methods such as the case study, in which the role of an organisation's process transformation is considered alongside the information and advice at their disposal (in the form of a best practice study).

The concept of the tier three supplier would, from the attempts in this study to identify them, be an elusive one. Further research is required to focus on who these tier three suppliers are, their characteristics (size, age, turnover) and their dependence on the automotive sector. The following research question is proposed:

Research question B: Can a large third tier of suppliers be identified in the UK automotive components sector?

The 98 known tier 2 suppliers could be used to assist in the identification of additional tier 3 suppliers to the 34 known in this study. A revised survey instrument, using parts 1-3 of the questionnaire used in this study could be used to specifically examine the issues which led to the proposal of research question B.

The anecdotal insight recounted in Chapter 6 (Section 6.2.4) generated the possibility that 'resident' or 'guest' engineers working within component suppliers may not be perceived as positively as portrayed in the literature (Chapter 3). Here it would be worthy to ask whether seconded personnel from assemblers are perceived generally as a 'friendly foe' and the reasons underpinning the responses. The following research question is proposed:

Research question C: Is the Resident Engineer perceived to be a collaborative asset or a hindrance to the supplier?

Although the source of technical plans in the R&D (Research and Development) process are known (built to print, joint or sole), additional questions which examine the R&D process (rather than the trigger) would offer further insights into this technology driven industry. The following research question is proposed:

Research question D: How is the organisation of R&D related to the source of component plans?

Such a question could apply to suppliers across all tiers and could be examined through a short questionnaire designed to identify which R&D approach is used (for instance simultaneous, sequential, or e-build approaches) and to examine responsibilities for decision making associated with product development and

project management. Thus the researcher could discern whether suppliers control the R&D process or whether it is the assemblers that drive it.

A further question raised in Chapter 6 related to why organisations choose (or are forced to) adopt sole R&D approaches and whether companies might be trading-off the benefits of shared R&D in favour of competitive advantage in other ways. Consequently, the following research question is proposed:

Research question E: Why do companies use a sole approach to R&D?

This research question would need to be addressed through a series of statements designed to examine the motives and pressures for such an approach.

Although these new research questions may appear to be fragmented in their nature, questions C, D and E have an underlying theme - R&D. It is clear that the strategic management of R&D among UK automotive components suppliers is a clear domain for future study.

8.6 CONCLUDING COMMENTS

In bringing this study to a conclusion, it is now opportune to summarise the theoretical, practical and methodological contributions and conclusions of this study.

In theoretical terms, the study has made a contribution in being the first to examine the managers' perceptions of competitive advantage in the context of two 'competing' theories in strategic management. In so doing, the study has discovered a hybrid of perceptions that questions the strategy formulation literature and makes a contribution to the literature in relation to the "Perception → Decision → Action relationship". Insights into the lexicon of competitive advantage have been drawn together to challenge the extant literature (important in the communications between academics and practitioners) and a cartography of competitive advantage has been developed to provide an alternative presentation of factor analysis.

In practical terms, the study questions whether managers have full knowledge and have perfect entropy in spite of their perceptions. In terms of behaviour in the

supply chain, the study has found that managers recognise the importance of relationship management by competitive collaboration and that 'next-contract requisites' are important in the development of long-term success. Furthermore, the study suggests that competence development is better achieved within a collaborate relationship. Alliances between the suppliers themselves has not been studied in the UK context but it is clear from this study that such alliances are not a rarity. Finally, in practical terms, the UK automotive components sector is more important than we might previously have thought. Problems and ambiguities with SIC codes and a shortfall in sector turnover in official statistics (£5.2 bn) compared with the findings of this study cloud the contribution of the sector to the national economy and export activity.

Several methodological contributions and conclusions can be made. First, the study has sampled a larger number of companies than any known UK study by virtue of a bespoke database. The survey instrument has been successfully refined and deployed by using pretesting and use of comparative focus group testing, and Delphi-testing. The high response rate and completeness of the data-set are testament to this success.

Strategic management has, for the most part, developed from the fusion of many separate disciplinary fields (economics, organisational theory, finance, international business, marketing). Together, they have sought to explain how and why organisations should make choices which generate the best use of resources in relation to predetermined goals. It is at this point where, naturally in the case of a developing discipline, disagreement has emerged.

Most business researchers, as indeed all industry managers, are keenly interested in how organisational performance can be improved. The assumption of pure rationality may prove to be a useful starting point in explaining pure theories of optimal returns in the use of resources under conditions of complete information, stability and certainty. However, any departure from these conditions necessarily requires us to think about how political, coercive, and irrational dimensions lead to the management of organisations.

Since no two organisations are the same, one cannot anticipate that the prescriptions of theories undeniably reflect the behaviour of managers within those organisations. Seeking the best in an imperfect world rather than the seeking of what is best in a perfect world should be the intention of strategic management researchers – strategy formation and the cognitive limitations of decision makers are testimony to this. A lack of this recognition has meant that research in strategic management, particularly in the examination of competition theory and competitive advantage, has run the risk of being empirically impenetrable or anecdotally alien. At either extreme, research in strategic management has been guilty of generating “intellectual isolating mechanisms” (Mahoney and Pandian, 1992) which hamper theory development and, potentially, the impact of normative approaches to strategic management.

This study has found that theories of competitive advantage are not centrifuges. The perceptions of managers indicate that they are clearly not pulled in one direction toward a single theory. Furthermore, the study proposes that in terms of the sources of competitive advantage, managers are ‘thinking out of the box’ of rigid competitive paradigms. Indeed, they seem to be thinking without boxes.

The investigation has shown that the variety of terminology on offer by strategic management to describe strategically significant resources is confusing or meaningless. In this respect, Joan Robinson’s remark that “there is no advantage (and much error) in making definitions of words more precise than the subject matter they refer to” (1956:361) should be considered with some regard.

Several contributions have been made by this study. This is the first known study to examine managers’ perceptions of two competing theories within strategic management. In so doing, the findings of this study can be used as a foundation for a re-evaluation of theory development in strategic management since it indicates that theories are not perceived in the same way by managers as the academics which gave rise to them. This is not to say that such theories are wrong, but rather that it is wise to evaluate how strategic management theories match with practitioners’ perceptions on a periodic basis if strategic management is to

excel in both positive and normative roles. Necessary readjustments may be required, as have been proposed in this study.

Furthermore, this study has developed and deployed a robust methodology, capable of replication and extension into a multi-stage research design (Section 8.5.1). The use of factor analysis and subsequent interpretation of data has offered an appropriate manner by which to address the research questions. The development of a bespoke database to assist with sample frame management has enhanced the insights and confidence in the results, and has provided the opportunity to re-evaluate some of the characteristics of automotive component suppliers evident in the antecedent literature. And, the use of a graphical approach to the presentation of a cognitive cartography has been forwarded as a way in which to communicate the salient characteristics of managers' perceptions within an industry.

Finally, this thesis has shown that a great deal of work is still required in order to fully understand the contribution of the resource-based view to managers' thinking and decision making. Although neither residence nor resources predominate in the minds of managers, the industry context – despite its reduced importance advocated by the resource-based view – still remains an important variable in the choice and outcome of strategies, and the interpretation of data in the study of strategic management.

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Appendices

APPENDIX 1: PRODUCT PLATFORMS IN THE EUROPEAN AUTOMOTIVE INDUSTRY

<i>Platform code</i>	<i>Assembler</i>	<i>Vehicle model</i>
B-VX62	Seat	Alhambra
B-VX62	Ford	Galaxy
B-VX62	VW	Sharan
Type B	Fiat	Punto
Type B	Fiat	Uno
Type B	Lancia	Y
Type C/D	Fiat	Brava
Type C/D	Fiat	Bravo
Type C/D	Fiat	Marea
Type C/D	Fiat	Tempra
Type C/D	Alfa Romeo	Alfa 145/146
Type C/D	Alfa Romeo	Alfa 155/156
Type C/D	Lancia	Dedra
Type C/D	Lancia	Delta
XK8	Jaguar	XK8
XK8	Aston Martin	DB7
BE91	Ford	Fiesta
BE91	Ford	Puma
BE91	Mazda	121
106	Peugeot	106
106	Citroen	Saxo
N3	Peugeot	306
N3	Citroen	ZX
X65	Renault	Clio
X65	Renault	Megane
X54	Renault	Laguna
X54	Renault	Safrane
A	Audi	A3
A	Seat	Toledo
A	VW	Golf
A	VW	Bora
A	VW	Vento
B	Audi	A4
B	Audi	A6
B	VW	Passat
AO	Seat	Ibiza
AO	Seat	Inca
AO	VW	Polo
AO	Seat	Arosa
GM 2900	Saab	9-5
GM 2900	Vauxhall/Opel	Vectra

Automotive Platform Usage (European Passenger Vehicle Assembly plants)
1998/1999

Source: Compiled from World Automotive Manufacturing (1998;1999)

APPENDIX 2: TECHNICAL APPENDIX - FACTOR ANALYSIS PROCEDURES

CHOICE OF FACTOR ANALYSIS TECHNIQUE

Although many factor analysis procedures are available to the researcher, two appear to be most relevant to the analysis of data for this study, PCA (Principal components analysis or component analysis) and PAF (Principal axis factoring or common factor analysis). Where these two techniques differ, *inter alia*, is in the way in which they deal with variance (Bryman and Cramer 1997:280). Total variance is understood to be the sum of common variance, specific variance and error variance. Common variance is the variance/variation shared by the scores of people on three or more variables, whereas specific variance refers to variation which is specific/unique to a variable and not shared by another variable. Finally, error variance will occur due to inevitable fluctuations which occur in measuring something repeatedly or in short succession.

Hair *et al.*, (1987) suggest that the selection of PCA or PAF is dependent on the objective of the analysis and the amount of prior knowledge about variance. For example, PCA (also known as component analysis) should be used when there is prior knowledge of variance, when the objective is prediction and when the number of factors is determined in advance, hence the use of PCA in this study.

NUMBER OF FACTORS

A further consideration prior to statistic analysis is number of factors that the researcher decides, *a priori*, to extract or the statistical method through which the number of factors is produced. Two approaches are commonly used, the latent root criterion (eigenvalue) or scree plot criterion. The eigenvalue is the amount of the total test variance that is accounted for by a particular factor and in the latent root approach, factors with eigenvalues over 1 are retained for rotation. Kaiser's criterion proposes that factors with an eigenvalue greater than 1 are retained when the number of variables is less than 30, average communality is greater than 0.70 or when the sample is greater than 250 with an average communality greater than 0.60 (Bryman and Cramer, 1997:283). Kaiser's criterion can, therefore be used for

the data set, given its sample size. The scree plot criterion produces a graphical representation of eigenvalues for each factor extracted in succession. It differs from the pure eigenvalue approach by providing an additional cut-off for factor (other than eigenvalue >1). This cut-off point is that where the plotted line of eigenvalues changes slope.

So, therefore, how do the two approaches differ? Hair *et al.*, (1987:247) suggest that “the eigenvalue is probably most reliable when the number of variables is between 20 and 50” and that the scree plot approach will often produce more seemingly significant factors than eigenvalue criterion (often two or three more factors). Ultimately, the choice is one determined by the interpretability of the factor structure produced rather than differences between the techniques *per se*.

ROTATION

Rotation is used to maximise relationships between variables and factors, to reduce ambiguities, to prevent the first factor including too many items and to increase the interpretability of factors. The most compelling argument for rotation is to improve the ease of factor interpretation, although it is understandable that this stage in the process could be construed to be further, unnecessary manipulation of already distilled data. The aim of rotation is not to change the number of factors but to arrive, instead, at a ‘simple structure’ (Thurstone, 1947), where, in essence, each factor has a few, high loadings. The advantages of achieving a simple structure is ease of interpretation since factor loadings are high, and ease of replication (Cattell, 1978).

Although rotation is an accepted step in factor analysis, the choice of alternative forms of rotation has problematised the process. The correct form of rotation is necessary for achieving a simple structure. Broadly speaking two types of rotation can be used – orthogonal and oblique.

Orthogonal rotation produces factors which are uncorrelated with each other. An advantage is that factors do not contain redundant information yet factors may be forced to be unrelated, whereas in real life they could be related.

Oblique rotation constructs the factor matrix in such a manner that correlations between the factors are computed, thus overcoming the problems of redundant information forcibly included within other factors and their subsequent unrelatedness. Hair *et al.*, (1987) suggest that no single oblique rotational method solution is superior to another when applied (*i.e.* Oblimin, the default oblique solution should be used). Hence Oblimin oblique rotation is often used since, “if the ultimate goal of the factor analysis is to obtain several theoretically meaningful factors or constructs, an oblique solution is appropriate” (Hair *et al.*, 1987:238).

FACTOR LOADINGS

Prior to interpretation, the researcher should be familiar with the meaning of factor loadings. Whilst high loadings account for the most important correlations there are some differences in the level at which a loading can be high or significant. Both Kline (1994) and Hair *et al.*, (1987) agree upon a minimum loading ± 0.3 . Kline only distinguishes between this loading (moderately high) and loadings greater than ± 0.6 (high). Hair *et al.*, (1987) use the divisions of ± 0.30 (significant), ± 0.40 (important) and ± 0.50 (very significant). However, such matters will depend on the size of the data set and item pool (variables). As the number of variables rises, so the acceptable level of loadings decreases and “the larger the sample size, the smaller the loading to be considered significant; the larger the number of variables being analysed, the smaller the loadings to be considered significant; the larger the number of factors, the larger the size of the loading on later factors to be considered significant for interpretation” (Hair *et al.*, 1987:250).

SELECTION OF FINAL STRUCTURE AND TRIAL EXTRACTATIONS

Equally important to the procedure of factor analysis is the interpretability of extracted factors. In order to arrive at a rotated solution to the factor analysis that would offer the best potential for interpretation in relation to the research questions, a number of trial extractions were undertaken. The trial extractions were precipitated by the need to achieve simple structure subsequent to rotation (Thurstone, 1947; Cattell, 1978) which eases interpretability by improving factor

loadings and the replicability of factor structures. Furthermore, early factor analyses of the data-set which yielded eleven factor solutions containing a small number of unique factors (a factor which is involved in the variance of only one variable) with eigenvalues close to one. These proved to be unsatisfactory for interpretation. Since the interpretation of factor structures containing unique variables is not recommended (Kline, 1994) the data was extracted and rotated in the same way with differences made only to the number of factors extracted which varied between five and eleven.

Trial extractions of this nature necessarily mark a decision to select from available criteria for the number of factors to be extracted. Bearing the need for interpretability and structure in mind, the latent root criterion (> 1) and scree-test criterion (Cattell, 1978, Hair *et al.*, 1987) produced eleven and thirteen factors respectively, but with many factorial indistinctions. The percentage of variance criterion is imprecise given the exploratory nature of the study. What remains is the use of *a priori* criterion, which in this case are the simple structure and interpretability indicated.

Accordingly, following each trial extractions, each factor structure was examined and initial interpretations and factor labels were developed. Indeed, several factors were extracted with a degree of regularity, although their degree of importance in explaining variance differed. In other words, underlying structure could be observed within the data-set – simple structure was sought to complement this.

The trial extractions offered an opportunity to observe the frequency of non-loading items and to inform the decision relating to the final item pool to subject to extraction and rotation. A general observation arising from this was that the lower the number of factors extracted, the higher would be the number of items which did not load. However, non-loading factors were not consistent and, as would be expected, the adoption of the .30 level for factor loading (discussed further below) enabled all factors to load onto at least one factor. *Prima facie*, all 32 competitive advantage statements appeared suitable for factoring given their ability to load a factor across a variety of extractions, although further confirmation was sought.

Reliability analysis could not be undertaken in the pre-test phase of the study (Chapter 5). However, the primary data set could now be subjected to tests of internal consistency using coefficient alpha (Cronbach, 1951; Cortina, 1993). Although, there is some variation between authors with regard to the minimum level of accepted alpha, between .70 and .80 are considered acceptable or respectable (Nunally, 1978; DeVellis, 1991). Item reliability for the 32 statements in this study falls between the levels given above ($\alpha=.7376$) with negligible improvement to be gained from the removal of individual scale items (Appendix 11).¹¹² Although objections have been raised about the alpha coefficient and noted in Chapter 5, the alpha is reported to enable the reader to derive comparisons with studies using similar methodological and analytical procedures.

The trial extractions also provided an opportunity to consider the threshold for factor loadings to be used in the adopted structure for interpretation. Once more, variations can be observed in the theoretical and applied literature. Whilst .30 is the minimum level recommended in multivariate analysis texts (e.g., Hair *et al.*, 1987; Kline, 1994; Bryman and Cramer, 1997; Coakes and Steed, 1999), factor analytic studies have used higher levels such as .40 and .50, where it is suggested or inferred that the higher threshold introduces greater rigour.¹¹³ Although the number of subjects and the measures of sampling adequacy should have an influence upon the threshold, whereby sample inadequacy should lead to a higher threshold for the importance of loadings (that is if the data matrix should be factor analysed in the first instance), higher thresholds ignore lower, but nonetheless, important loadings. Equally, to ignore loadings that lie only marginally below a threshold is unwise (Kline, 1994). Thus, for this study, a loading level of 0.4 has been accepted with the condition that marginally lower loadings are considered where simple and interpretable structure can be retained. This level of loading

¹¹² Although based on marketing-related publications, Peterson's (1994) meta-analysis of alpha coefficients reported a mean of .77 from a sample of 4,286 studies – similar to the alpha produced from the data set in this study.

¹¹³ These observations were derived from a comparison of Bowman, 1991; Mueller, 1995; Elliott, 1998; Chattopadhyay *et al.*, 1999; and Kaufman *et al.*, 2000. Each study was examined for the minimum loading used, number of factors extracted, percentage of variance explained, original number of items, number of retained items and, the minimum and maximum item to factor loading.

salience represents a balance between the implications noted above and provided further scrutiny to potential non-loading items.

Since it is recommended that the researcher should perform and compare orthogonal and oblique rotations of the same data-set prior to interpretation, especially in the case of the exploratory research (Stewart, 1981; Rendall, 2000a) this task was undertaken next. Rotation was used to maximise the relationships between variables and factors thereby reducing ambiguities and whilst many techniques exist, their objective is to retain the same number of factors whilst achieving the best structure for interpretation. Varimax and Direct Oblimin were employed and the two loading structures were compared. This revealed three issues which ultimately led to the selection of the orthogonal rotation as most suitable for interpretation. First, an oblique solution nine factor structure bore a high degree of resemblance to the factors extracted in the orthogonal solution, the latter of which has a tendency to force items to load onto factors than the former (Norusis, 1994). Six factors were the same and three were hybrids of the remaining items. Second, the component correlation matrix generated from oblique rotation revealed no correlations of merit between the variables (the highest was .189). Third, the oblique structure matrix produced several inseparable variables compared with orthogonal rotation. Subsequently, orthogonal rotation was deemed superior for the purposes of developing simple structure, *i.e.* where each factor has a few high loadings, and adopted for interpretation. The oblique solution output is retained for reference in Appendix 12. Whether using an orthogonal or oblique rotation, the factor structure produced did not match that which one might expect to encounter were the eight classes to be considered equal or near equal in the respondent's perceptions of competitive advantage.

APPENDIX 3: COMPANIES EXCLUDED FOR AUTOMOTIVE DATABASE

Listed below are companies that have been categorised as automotive component suppliers according to SIC classifications (Chapter 4). However, requests for data led to the exclusion of the companies for a variety of reasons, including:

AM – Aftermarket-only production

HGV – Operations only in the Heavy Goods Vehicle market

Not MVI – Company has no direct involvement in the automotive industry

Company Name	Reason for Exclusion
Acorn Chemicals	Aftermarket (AM) only
Aeroquip	Heavy Goods Vehicle (HGV) only
Aiden Cabs	HGV
Allied Signal	HGV
Alvis	HGV
Autela Components	AM
Avonride	HGV
Bainbridge Silencers	Gone away
Beason Cooke	Gone away
Beldam Lascar	Not MVI
Blowspeed	Refused to provide information
Bpw Ltd	HGV
Brockhouse	Not MVI
Brockhouse Manufacturing	Not MVI
Broughton Group	HGV
Brymar Electrics	Receivership
Burton Delingpole	Not MVI
Bus Engineers	Gone away
C H Industrials	Liquidation
Cam Profiles	Not MVI
Cannon Rubber	AM ONLY
Caradon Elliott	Not MVI
Channel Holdings	AM ONLY
Clarks Crankshaft	Not MVI
Crossland Filters	Gone away
David Brown	HGV
Deans	Not MVI
Dom Nemeff Corbin	Not MVI
Douglas Tugmasters	Specialist vehicles
Duncan Cabs	HGV
Eastfield Engineering	Not MVI
Eberspacher Brochenhurst (Hants) Ltd	HGV
Electricars	Gone away
Em Exhausts	Receivership
Englass	Not MVI
Ernest Derricott	Ceased trading
Fanuc	Robotics

First Line	Distribution
Flexible Lamps	HGV
Fossit And Thorne	Retailer
G E Lighting	Not MVI
Gabriel	Not MVI
Gap	Refused info
Gordon Lamb	Refused info
Gpg Plc	Gone away
Gretsch Unitas	Not MVI
Hatcher	Signs
Hendrickson Europe	HGV
Hi-Ton International	Gone away
Hindle Group	Not MVI
Huco	Not MVI
Interglass	Not MVI
Invertec	HGV
John R. Boone	Not MVI
Jost	HGV
Julius Koch	Not MVI
Kab Seating	HGV
Kenlowe	AM only
Knorr Bremse	HGV
Lab Craft	HGV only
Laird Group	No UK production
Laystall	Development company
M&F Components	AM only
Majorsell	Gone away
Majorsell Ltd	HGV
Midland Radiator	Gone away
Midway	In receivership
Mollard Universal Joints	Not MVI
Motaquip	Distributor
Multi-Stroke Handbrake Controls	Not MVI
Nelson Burgess	Not MVI
Ntn Distribution Only	Not MVI
Omes Faulkner	Not MVI
Paddy Hopkirk	AM
Partco	Distribution
Pesco	HGV
Premier Hazard	HGV
Raydydot Ltd	Refused information
Raydyot	Refused information
Raydyot Ltd	HGV
Resort Ltd	Voluntary liquidation
Reynolds Boughton Ltd	Very little in automotive involvement
Ringshare	Gone away
Ringspan	HGV
Ror Rockwell	HGV
Sachs Automotive	Distributor

Schwitzer Turbos	HGV
Sears	HGV
Shaftfield Fabrications	Not MVI
Silver Shield	AM only
Smc	Automation equipment
Sp	Refused information
Stromag Transmissions	Not MVI
Suitpull	Gone away
T. Harrison And Co	Gone away
Tecalemit Systems Ltd	Not MVI
Thos. Winnard	HGV
Tilt Measurement	HGV
Transport Seating	Gone away
Tyzack	Very little in automotive involvement
Unipower	HGV
Voith	HGV
W.H. Tildesley	Not MVI
Wichita	Not MVI
Williams	Not MVI

APPENDIX 4: LIST OF ORIGINAL STATEMENTS

Company size

1. High production scale leads to lower costs which create price competitiveness
2. Improvements based on long production runs leads to improvements in processes
3. Organisations with high market shares have a competitive advantage
4. A long product life cycle is important for cost reduction and profitability

Industry Structure

5. Position within the supply chain reflects competitive advantage
6. Changes in the industry structure influence competitive advantage
7. New entrants to an industry always face competitive disadvantage
8. Changes within the supply chain affect all organisations equally

Strengths and weaknesses

9. Companies with strengths relative to their competitors have a competitive advantage
10. Competitors strengths are easy to recognise
11. We can compare our activities to those of our rivals
12. We understand where we are stronger than our rivals

Relationships with customer

13. Geographical proximity to customers (assemblers) is a source of competitive advantage
14. Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage
15. R&D involvement with assemblers is a source of competitive advantage
16. Superior logistics and delivery are a source of competitive advantage

Uniqueness and competitive advantage

17. Organisations are bundles of resources which influence competitive advantage
18. Competitive advantage occurs due to an organisation having resources which are different to those of rivals
19. Companies with resources which are difficult or impossible to acquire have a competitive advantage
20. Knowledge (employee skills, patents, trademarks, and processes) lead to competitive advantage

Access to resources

21. The ability to understand the cause-effect relationship between resources and competitive advantage differs between organisations
22. Some organisations are better able to identify and acquire useful resources
23. Decision makers may disagree on which important resources they should acquire
24. The acquisition of important resources is a matter of luck
25. The links between new and existing resources are not known at first
26. Resources are difficult to acquire because they cannot be moved
27. Resources cannot be accumulated because they cannot be purchased

Managing Resources

28. We look for ways of using our resources in new areas and products
29. Managers are responsible for managing products
30. Managers are responsible for managing processes
31. Managers are responsible for managing resources
32. We purposefully plan for the use of resources in our future strategies

Combining resources

33. Organisations are collections of products and services
34. Organisations are collections of resources

- 35. Product platforms reflect an advantage in resources
- 36. Product platforms reflect final demand for products
- 37. The combination of resources enables higher value added
- 38. The combination of resources reduces the threat of imitation
- 39. Platforms reflect the linking of resources together

Terminology

- 40. Strength is a term used to note the superiority of a company over its rivals
- 41. Capability is a term used to note the superiority of a company over its rivals
- 42. Competence is a term used to note the superiority of a company over its rivals
- 43. Core competence is a term used to note the superiority of a company over its rivals

Hierarchy of Resources

- 44. The ability to generate value-added from resources is most important to competitive advantage
- 45. The rarity of the resource is most important to competitive advantage
- 46. The inimitability of the resource is most important to competitive advantage
- 47. The flexibility of the resource is most important to competitive advantage

APPENDIX 5: PRE-TEST GROUP TRAITS (GENERAL MANAGER GROUP)

Respondent #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
Experience (years)	21	6	10	14	3	7	12	8	8	15	16	12	3	6	3	4	10	10	6	6	5	6	8	7	9	Total	
Background																											
Production:													1	1	1				1	1		1	1	1		1	9
Sales:					1		1						1		1	1				1						1	7
Marketing/sales:			1				1						1		1				1								5
R&D:														1					1		1						3
Purchasing:							1						1						1	1				1			5
Finance:	1	1		1													1	1									5
Legal:																											0
Administration:				1	1	1			1	1	1				1	1	1										9
IT:																				1						1	2
Other:								1	1												1					1	4
Industry Sector:																											
Manufacturing:		1												1	1				1	1	1	1	1	1	1	1	11
Service:			1		1	1	1	1	1			1			1	1	1										10
Public:	1			1						1	1																4
																								Mean experience (years)		8.6	

APPENDIX 6: PRE-TEST PRO-FORMA

	Category
High production volume generates a competitive advantage	
Process improvements (due to long production runs) lead to competitive advantage	
A low number of direct rivals is an indication of a competitive advantage	
Organisations with high market shares have a competitive advantage	
Geographical proximity to customers (assemblers) is a source of competitive advantage	
Organisations are bundles of resources which influence competitive advantage	
A company's power over its suppliers (due to its size) is a source of competitive advantage	
Position (tier 1,2,3) within the supply chain is an indication of a company's competitive advantage	
A rival's strengths and weaknesses can be evaluated objectively	
Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage	
New entrants to an industry always face a competitive disadvantage	
The acquisition of important resources is often due of luck	
The combination of resources through product platforms/new technologies increases value added	
The ability to change quickly due to the demands of assemblers is a source of competitive advantage	
Companies always fully exploit their strengths to gain a competitive advantage	
R&D involvement with assemblers is a source of competitive advantage	

- | |
|---|
| <ol style="list-style-type: none"> 1. Company size 2. Industry structure 3. Strengths and Weaknesses 4. Relationships with customer 5. Uniqueness & competitive advantage 6. Access to resources 7. Managing resources 8. Combining resources |
|---|

	Category
The relationship between resources and competitive advantage can be clearly understood	
Some organisations are better able to identify and acquire useful resources than others	
The differences between companies' resources account for differences in competitive advantage	
Resources which are difficult or impossible to acquire lead to competitive advantage	
Intangible resources such as skills, patents, and processes influence competitive advantage	
The ability to develop/supply a product platform requires superior coordination & management skills	
Product platforms/technologies reflect a company's competitive advantage	
Senior managers differ in their view of which resources are important	
Product management is an important senior management role	
A SWOT analysis enables managers to effectively analyse rivals' strengths and weaknesses	
Process management is an important senior management role	
A company has enough information about rivals to enable comparisons of strengths and weaknesses	
Product platforms, modules or new technologies reduce the threat of imitation	
Superior logistics and delivery are a source of competitive advantage	
Resource management is an important senior management role	
An important senior management role is to look for new opportunities for current platforms and technologies	

1. Company size
2. Industry structure
3. Strengths and Weaknesses
4. Relationships with customer
5. Uniqueness & competitive advantage
6. Access to resources
7. Managing resources
8. Combining resources

Work experience:	_____ (Years)
Operating Areas:	
Production:	___
Sales:	___
Marketing/sales:	___
R&D:	___
Purchasing:	___
Finance:	___
Legal:	___
Administration:	___
IT:	___
Other:	___
Industry Sector:	
Manufacturing:	___
Service:	___
Public:	___



APPENDIX 7: SECOND PROTOTYPE QUESTIONNAIRE

Competitive Advantage in the Automotive Components Industry Survey of Senior Managers' Views

Part 1: About your company

1. Company name: _____

2. Division or business unit (if appropriate):

3. Turnover per year: £ _____

4. Number of employees:

Please tick		✓
a	1-50	<input type="checkbox"/>
b	51-250	<input type="checkbox"/>
c	250+	<input type="checkbox"/>

5. Products.

Please indicate the components manufactured by your company:

Please tick as appropriate		✓	Please tick as appropriate		✓
a	Braking systems	<input type="checkbox"/>	m	Interior trim	<input type="checkbox"/>
b	Engine - internal components	<input type="checkbox"/>	n	Lighting	<input type="checkbox"/>
c	Engine cooling	<input type="checkbox"/>	o	Seating	<input type="checkbox"/>
d	Exterior trim	<input type="checkbox"/>	p	Stampings/pressing	<input type="checkbox"/>
e	Fuel supply	<input type="checkbox"/>	q	Starting systems	<input type="checkbox"/>
f	Gearbox/clutch components	<input type="checkbox"/>	r	Steering systems	<input type="checkbox"/>
g	Glazing products	<input type="checkbox"/>	s	Suspension	<input type="checkbox"/>
h	Heating and ventilation	<input type="checkbox"/>	t	Vehicle body parts	<input type="checkbox"/>
i	Hydraulics	<input type="checkbox"/>	u	Wheels/tyres	<input type="checkbox"/>
j	Ignition/engine management	<input type="checkbox"/>	v	Other _____	<input type="checkbox"/>
k	Instrumentation	<input type="checkbox"/>	w	Other _____	<input type="checkbox"/>
l	Intake air/exhaust systems	<input type="checkbox"/>	x	Other _____	<input type="checkbox"/>

6. Tier in the supply chain.

Which tier in the supply chain does your company occupy for the majority of its supply relationships?

Please tick one only

Tier 1 - we supply modules/subassemblies directly to the assembler.

Tier 2 - we supply to a tier 1 component manufacturer.

Tier 3 - we supply to a tier 2 component manufacturer.

7. Who are your immediate or indirect customers at present?

Please tick as appropriate		✓	Please tick as appropriate		✓	Please tick as appropriate		✓
a	BMW		g	Jaguar		m	Toyota	
b	Daimler-Chrysler		h	Mazda		n	Vauxhall	
c	PSA Group		i	Nissan		o	Volkswagen	
d	Ford		j	Rover		p	Volvo	
e	Fiat		k	Renault		q	Other:	
f	Honda		l	Saab		r	Other:	

8. What is the geographical origin of your company?

Please tick one only		✓
a	British	
b	European Union	
c	North America	
d	Pacific Rim	
e	Other (please state) _____	

9. Is your company involved in alliances or partnerships with other component suppliers?

Please tick one only

Yes

No

10. Which of the following statements best describes your company's responsibility for Research and Development?

Please tick one only

- We "build to print" / "work to customers' drawings".
- We are involved in joint R&D with customers.
- Components are generally our own designs.

Part 2: About you

11. What is your main background in terms of training and experience?

Please tick one only		✓	Please tick one only		✓
a	Production		f	Finance	
b	Sales		g	Legal	
c	Marketing/sales		h	IT	
d	R&D		i	Other _____	
e	Purchasing		j	Other _____	

12. How long have you worked in the automotive industry? _____ Years

13. How long have you occupied your present position? _____ Years

13a. What is the formal title of your present position?

Part 3: Terms that you use

14. Please indicate the degree to which you use the following terms to describe the source of competitive advantage:

	Please circle				
	Little/ Never				Very often
a) "Strength"	1	2	3	4	5
b) "Capability"	1	2	3	4	5
c) "Competence"	1	2	3	4	5
d) "Core competence"	1	2	3	4	5

Part 4: The importance of resources

15. How important are the following criteria when you are evaluating a resource?

		Please circle				
		Not Important			Very Important	
a) The ability to generate value.	1	2	3	4	5	
b) The rarity of the resource.	1	2	3	4	5	
c) The inimitability of the resource.	1	2	3	4	5	
d) The potential to use the resource elsewhere in the company.	1	2	3	4	5	

Part 5: Your views on competitive advantage

Please indicate the extent to which you agree or disagree with the following statements:

		Please circle one only				
		Strongly Disagree				Strongly Agree
16	High production volume generates a competitive advantage.	1	2	3	4	5
17	Process improvements (due to long production runs) lead to competitive advantage.	1	2	3	4	5
18	A low number of direct rivals is an indication of the competitive advantage of a company.	1	2	3	4	5
19	Organisations with high market shares have a competitive advantage.	1	2	3	4	5
20	Geographical proximity to customers (assemblers) is a source of competitive advantage.	1	2	3	4	5
21	Organisations are 'bundles' of resources which influence competitive advantage.	1	2	3	4	5
22	A company's power over its suppliers (due to its size) is a source of competitive advantage.	1	2	3	4	5
23	Position (tier 1,2,3) within the supply chain reflects a company's competitive advantage.	1	2	3	4	5


24	A rival's strengths and weaknesses can be evaluated objectively.	1	2	3	4	5
25	Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage.	1	2	3	4	5
26	New entrants to an industry always face a competitive disadvantage.	1	2	3	4	5
27	The acquisition of important resources is often due of luck.	1	2	3	4	5
28	The combination of resources through product platforms/new technologies increases value added.	1	2	3	4	5
29	The ability to change quickly due to the demands of assemblers is a source of competitive advantage.	1	2	3	4	5
30	Companies with strengths compared with their competitors have a competitive advantage.	1	2	3	4	5
31	R&D involvement with assemblers is a source of competitive advantage.	1	2	3	4	5
32	The relationship between resources and competitive advantage can be clearly understood.	1	2	3	4	5
33	Some organisations are better able to identify and acquire useful resources than others.	1	2	3	4	5
34	The differences between companies' resources account for differences in competitive advantage.	1	2	3	4	5
35	Companies with resources which are difficult or impossible to acquire have a competitive advantage.	1	2	3	4	5
36	Intangible resources such as skills, patents, and processes influence competitive advantage.	1	2	3	4	5
37	The ability to develop/supply a product platform requires superior coordination & management skills.	1	2	3	4	5
38	Product platforms/technologies reflect a company's competitive advantage.	1	2	3	4	5
39	Senior managers differ in their view of which resources are important.	1	2	3	4	5
40	Product management is an important senior management role.	1	2	3	4	5

41	A SWOT analysis enables managers to effectively analyse rivals' strengths and weaknesses.	1	2	3	4	5
42	Process management is an important senior management role.	1	2	3	4	5
43	A company has enough information about rivals to enable comparisons of strengths and weaknesses	1	2	3	4	5
44	The combination of resources in product platforms/new technologies reduces the threat of imitation.	1	2	3	4	5
45	Superior logistics and delivery are a source of competitive advantage.	1	2	3	4	5
46	Resource management is an important senior management role.	1	2	3	4	5
47	An important senior management role is to look for new opportunities for current platforms and technologies	1	2	3	4	5

Thank you for your cooperation in the completion of this questionnaire.

If you have any queries, please contact Brahim Herbane on (0116) 2577263.

Contact and address details to which summary findings should be sent:



APPENDIX 8: FINAL QUESTIONNAIRE

Overleaf is a copy of the final questionnaire distributed to senior managers in the supplier database, the development of which was discussed in Chapter 5. The questionnaire was printed as a single A3 folded sheet to improve the presentation.

Competitive Advantage in the Automotive Components Industry: Survey of Senior Managers' Views

Part 1: About your company

1. Number of employees (UK Operations):

PLEASE TICK ONE ONLY ✓	
a	0-9
b	10-49
c	50-249
d	More than 250

2. What is your approximate automotive (OEM) turnover per annum?
£ _____

3. Please indicate the components manufactured by your company:

PLEASE TICK AS MANY AS APPROPRIATE ✓					
a	Braking systems		i	Hydraulics	
b	Engine – internal components		j	Ignition/engine management	
c	Engine cooling		k	Instrumentation	
d	Exterior trim		l	Intake air/exhaust systems	
e	Fuel supply		m	Interior trim	
f	Gearbox/clutch components		n	Lighting	
g	Glazing products		o	Seating	
h	Heating and ventilation		p	Stampings/pressing	
			q	Starting systems	
			r	Steering systems	
			s	Suspension	
			t	Vehicle body parts	
			u	Wheels/tyres	
			v	Other: (specify)	
			w	Other: (specify)	
			x	Other: (specify)	

4. Which tier in the supply chain does your company occupy for the majority of its supply relationships?

PLEASE TICK ONE ONLY

- Tier 1 - we supply modules/subassemblies directly to the assembler.
- Tier 2 - we supply to a tier 1 component manufacturer.
- Tier 3 - we supply to a tier 2 component manufacturer.

5. Who are your immediate or indirect customers at present?

PLEASE TICK AS MANY AS APPROPRIATE ✓					
a	BMW		g	Jaguar	
b	Daimler-Chrysler		h	Mazda	
c	PSA Group		i	Nissan	
d	Ford		j	Rover	
e	Fiat		k	Renault	
f	Honda		l	Saab	
			m	Toyota	
			n	Vauxhall	
			o	Volkswagen	
			p	Volvo	
			q	Other: (specify)	
			r	Other: (specify)	

6. Where is your company headquarters based?

PLEASE TICK ONE ONLY ✓			
a	United Kingdom		d Pacific Rim
b	Europe		e Other: (specify)
c	North America		f Other: (specify)

7. Is your company involved in alliances or partnerships with other component suppliers?

PLEASE TICK ONE ONLY

Yes No Don't Know

8. Which of the following statements best describes your company's responsibility for Research and Development?

PLEASE TICK ONE ONLY

- We only "build to print" / "work to customers' drawings".
 We are involved in joint R&D with customers.
 Components are generally our own designs.

Part 2: About you

9. What is your main background in terms of training and experience?

PLEASE TICK ONE ONLY ✓

a	Production		g	R&D		m	Legal	
b	Sales		h	Purchasing		n	IT	
c	Marketing		i	Finance		o	Other: (specify)	

10. How long have you worked in the automotive industry? _____ Years

11. How long have you occupied your present position? _____ Years

12. What is the formal title of your present position? _____

Part 3: Terms that you use

13. Please indicate the frequency with which you use each of the following terms to describe the source of competitive advantage in your company. (PLEASE CIRCLE ONE NUMBER FOR EACH TERM ONLY)

Terms:	Infrequently					Frequently	Don't know
a) "Strength"	1	2	3	4	5	<input type="checkbox"/>	
b) "Capability"	1	2	3	4	5	<input type="checkbox"/>	
c) "Competence"	1	2	3	4	5	<input type="checkbox"/>	
d) "Core competence"	1	2	3	4	5	<input type="checkbox"/>	

Part 4: The importance of resources

14. How important or unimportant are each of the following criteria when you are evaluating a resource? (PLEASE CIRCLE ONE NUMBER ONLY FOR EACH CRITERIA)

Criteria:	Unimportant					Important	Don't know
a) The ability to generate value	1	2	3	4	5	<input type="checkbox"/>	
b) The rarity of the resource	1	2	3	4	5	<input type="checkbox"/>	
c) The low imitability of the resource	1	2	3	4	5	<input type="checkbox"/>	
d) The potential to use the resource elsewhere in the company	1	2	3	4	5	<input type="checkbox"/>	

Part 5: Your views on competitive advantage

Using just one of the terms shown, please indicate the extent to which you agree or disagree with each of the following statements:

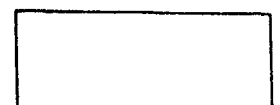
Statements		Terms				
		PLEASE CIRCLE ONE NUMBER ONLY PER STATEMENT				
		Very strongly disagree	Fairly strongly disagree	Neutral	Fairly strongly agree	Very strongly agree
15	High production volume generates a competitive advantage.	1	2	3	4	5
16	Process improvements (due to long production runs) lead to competitive advantage.	1	2	3	4	5
17	A low number of direct rivals is an indication of a company's competitive advantage .	1	2	3	4	5
18	Organisations with high market shares have a competitive advantage.	1	2	3	4	5
19	Geographical proximity to customers (assemblers) is a source of competitive advantage.	1	2	3	4	5
20	Organisations are 'bundles' of resources which influence competitive advantage.	1	2	3	4	5
21	A company's power over its suppliers (due to its size) is a source of competitive advantage.	1	2	3	4	5
22	Position (tier 1,2,3) within the supply chain is an indication of a company's competitive advantage.	1	2	3	4	5
23	A rival's strengths and weaknesses can be evaluated objectively.	1	2	3	4	5
24	Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage.	1	2	3	4	5
25	New entrants to an industry face a competitive disadvantage.	1	2	3	4	5
26	The acquisition of important resources is often due to luck.	1	2	3	4	5
27	The combination of resources through product platforms/new technologies increases value added.	1	2	3	4	5
28	The ability to change quickly due to the demands of assemblers is a source of competitive advantage.	1	2	3	4	5
29	Companies always fully exploit their strengths to gain a competitive advantage.	1	2	3	4	5
30	R&D involvement with assemblers is a source of competitive advantage.	1	2	3	4	5

Please turn over.....

Statements		PLEASE CIRCLE ONE NUMBER ONLY PER STATEMENT				
Terms		Very strongly disagree	Fairly strongly disagree	Neutral	Fairly strongly agree	Very strongly agree
31	The relationship between resources and competitive advantage can be clearly understood.	1	2	3	4	5
32	Some organisations are better able to identify and acquire useful resources than others.	1	2	3	4	5
33	The differences between companies' resources account for differences in competitive advantage.	1	2	3	4	5
34	Resources which are difficult or impossible to acquire lead to competitive advantage.	1	2	3	4	5
35	Intangible resources such as skills, patents, and processes influence competitive advantage.	1	2	3	4	5
36	The ability to develop/supply a product platform requires superior coordination & management skills.	1	2	3	4	5
37	Product platforms/technologies reflect a company's competitive advantage.	1	2	3	4	5
38	Senior managers differ in their view of which resources are important.	1	2	3	4	5
39	Product management is an important senior management role.	1	2	3	4	5
40	A SWOT analysis enables managers to effectively analyse rivals' strengths and weaknesses.	1	2	3	4	5
41	Process management is an important senior management role.	1	2	3	4	5
42	A company can collect enough information about rivals to enable comparisons of strengths and weaknesses.	1	2	3	4	5
43	Product platforms, modules or new technologies reduce the threat of imitation.	1	2	3	4	5
44	Superior logistics and delivery are a source of competitive advantage.	1	2	3	4	5
45	Resource management is an important senior management role.	1	2	3	4	5
46	An important senior management role is to look for new opportunities for current platforms and technologies	1	2	3	4	5

Thank you for your cooperation in the completion of this questionnaire.

If you have any queries, please contact Brahim Herbane on (0116) 2577263 or at Leicester Business School, De Montfort University, The Gateway, Leicester LE1 9BH.



APPENDIX 9: COVERING LETTER

«Senior_Manager»
 «ID_Company_Name»
 «Address_1»
 «Address_2»
 «Address_3»
 «Address_4»
 «Postal_Code»

«Date»

Dear Sir,

Excellence in manufacturing and supply chain management are well understood in the automotive industry but the competitive *priorities* of suppliers less so. I am carrying out a *unique* industry-wide research study about the ways in which competitive advantage is created in the automotive components industry. The study is central to the completion of my Doctoral degree.

As the strategic decision maker within your company, you are in a position to provide the study with an insight into current competitive priorities. Clearly, the study has consequences for policy decisions at company, industry and government levels. As such, all major component producers in the UK have been included in this study.

Enclosed is a questionnaire which should take about ten minutes to complete. It asks about your company in general terms, your background and your views on competitive advantage. None of the questions should be of a commercially sensitive or controversial nature and your responses will be kept strictly confidential. Individual responses will remain anonymous and only aggregate and anonymous results will be produced. This study follows the Market Research Society Code of Conduct (www.mrs.org.uk).

As a gesture of appreciation for your participation, I will be pleased to send a copy of the *exclusive* research report to you in due course. It will report the differences among automotive component suppliers in relation to their competitive advantage priorities.

Please return the questionnaire using the enclosed stamped, addressed envelope. If you have any questions you wish to ask or there is anything you would like to discuss, please do not hesitate to contact me at the University on 0116 2577263 or by e-mail (bhcor@dmu.ac.uk).

Thank you in advance of your participation.

Yours sincerely,

Brahim Herbane
 Senior Lecturer
 Department of Corporate Strategy

APPENDIX 10: ANOVA – VRIO AND TERMINOLOGY

		Sum of Squares	df	Mean Square	F	Sig.
Value	Between Groups	0.085	2	0.042	0.142	0.868
	Within Groups	84.112	281	0.299		
	Total	84.197	283			
Rarity	Between Groups	2.471	2	1.235	1.124	0.326
	Within Groups	308.895	281	1.099		
	Total	311.366	283			
Inimitability	Between Groups	0.988	2	0.494	0.516	0.598
	Within Groups	269.192	281	0.958		
	Total	270.180	283			
Organisation	Between Groups	3.448	2	1.724	1.676	0.189
	Within Groups	289.045	281	1.029		
	Total	292.493	283			
Strength	Between Groups	4.939	2	2.470	1.994	0.138
	Within Groups	348.004	281	1.238		
	Total	352.944	283			
Capability	Between Groups	1.926	2	0.963	1.198	0.303
	Within Groups	225.849	281	0.804		
	Total	227.775	283			
Competence	Between Groups	3.007	2	1.503	1.439	0.239
	Within Groups	293.680	281	1.045		
	Total	296.687	283			
Core competence	Between Groups	14.351	2	7.175	4.482	0.012
	Within Groups	449.846	281	1.601		
	Total	464.197	283			

APPENDIX 11: RELIABILITY OF SCALES

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
Q15	113.2148	72.5509	.1126	.7411
Q16	112.8099	72.5503	.1368	.7384
Q17	113.6408	71.2557	.1995	.7347
Q18	113.2535	71.7235	.1972	.7344
Q19	112.9824	72.0456	.2024	.7338
Q20	113.1197	71.0174	.2955	.7285
Q21	113.0352	70.3026	.2911	.7284
Q22	113.9577	71.3268	.1944	.7351
Q23	113.1937	70.9412	.2658	.7301
Q24	112.4859	71.7136	.2532	.7309
Q25	113.1197	73.1517	.0964	.7410
Q26	114.1514	74.1431	.0336	.7450
Q27	112.8204	71.6744	.3188	.7283
Q28	112.2465	71.5857	.3357	.7277
Q29	113.9683	70.4972	.2036	.7355
Q30	112.4859	71.8620	.2659	.7304
Q31	113.4014	70.9973	.3132	.7277
Q32	112.6655	73.6792	.1782	.7347
Q33	113.1796	71.4341	.2496	.7310
Q34	113.1514	70.3198	.2947	.7282
Q35	112.5423	72.1855	.2770	.7303
Q36	112.6690	71.0279	.3418	.7267
Q37	113.0387	70.3200	.3797	.7244
Q38	112.9190	74.6259	.0166	.7444
Q39	112.5986	71.5698	.3109	.7284
Q40	113.0810	70.6259	.3031	.7279
Q41	112.6127	71.1922	.3346	.7272
Q42	113.2535	69.2500	.3773	.7231
Q43	113.4120	70.0382	.3354	.7259
Q44	112.5669	70.8188	.3279	.7269
Q45	112.5810	71.3185	.3429	.7271
Q46	112.3627	71.0588	.3773	.7257

Reliability Coefficients

N of Cases = 284.0

N of Items = 32

Alpha = .7376

APPENDIX 12: OBLIQUE ROTATED SOLUTION

Structure Matrix

	Component								
	1	2	3	4	5	6	7	8	9
Q41	.723								
Q39	.653							.310	
Q45	.540			.358					
Q46	.506								.358
Q19	.503								
Q26		-.722							
Q38		-.625							
Q15			.799						
Q16			.695						
Q25				-.530					
Q44		-.318		.470					
Q17					-.688				
Q18					-.657				
Q21	.328		.304		-.396				
Q23						.750			
Q42						.749			
Q31				.301		.604		.326	
Q40				-.310		.559			
Q33						.407			
Q32								-.734	
Q29			.346					.629	
Q22						.322		.527	
Q37								.776	
Q36	.398							.679	
Q43								.569	.316
Q24									.639
Q30								.427	.572
Q28		-.399							.570
Q35					-.318				.495
Q27				.322					.437
Q34		-.341	.351		-.333				.414
Q20				-.307	-.393				.409

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.

List of Competitive Advantage Statements for Reference in Chapter 7

- 15 High production volume generates a competitive advantage.
- 16 Process improvements (due to long production runs) lead to competitive advantage.
- 17 A low number of direct rivals is an indication of a company's competitive advantage.
- 18 Organisations with high market shares have a competitive advantage.
- 19 Geographical proximity to customers (assemblers) is a source of competitive advantage.
- 20 Organisations are 'bundles' of resources which influence competitive advantage.
- 21 A company's power over its suppliers (due to its size) is a source of competitive advantage.
- 22 Position (tier 1,2,3) within the supply chain is an indication of a company's competitive advantage
- 23 A rival's strengths and weaknesses can be evaluated objectively.
- 24 Long-term (i.e. vehicle life or longer) relationships with customers are a source of advantage.
- 25 New entrants to an industry face a competitive disadvantage.
- 26 The acquisition of important resources is often due to luck.
- 27 The combination of resources through product platforms/new technologies increases value added.
- 28 The ability to change quickly due to the demands of assemblers is a source of competitive advantage.
- 29 Companies always fully exploit their strengths to gain a competitive advantage.
- 30 R&D involvement with assemblers is a source of competitive advantage.
- 31 The relationship between resources and competitive advantage can be clearly understood.
- 32 Some organisations are better able to identify and acquire useful resources than others.
- 33 The differences between companies' resources account for differences in competitive advantage.
- 34 Resources which are difficult or impossible to acquire lead to competitive advantage.
- 35 Intangible resources such as skills, patents, and processes influence competitive advantage.
- 36 The ability to develop/supply a product platform requires superior coordination & management skills.
- 37 Product platforms/technologies reflect a company's competitive advantage.
- 38 Senior managers differ in their view of which resources are important.
- 39 Product management is an important senior management role.
- 40 A SWOT analysis enables managers to effectively analyse rivals' strengths and weaknesses.
- 41 Process management is an important senior management role.
- 42 A company can collect enough information about rivals to enable comparisons of strengths and weaknesses.
- 43 Product platforms, modules or new technologies reduce the threat of imitation.
- 44 Superior logistics and delivery are a source of competitive advantage.
- 45 Resource management is an important senior management role.
- 46 An important senior management role is to look for new opportunities for current platforms and technologies