from strategies to action which he edited does exemplify the interdisciplinary character of information management; however, it also marked by a thin research base. The works of Cronin, Gillman and Vickers share a common emphasis on the need for different approaches and responses to information management in different organizations. Vickers (1985a) identified this area of differences in organizational information requirements as a 'sadly under-researched' area.

Marchand (1983, 1985) attempted to map the information management function with the articulation of stages in its transition or evolution, in a similar way to that which Nolan (1974, 1979) used for depicting stages of the utilization of computer technology in organizations. In the third stage, information resources management, in addition to the recognition of information management as a important resource, there had also been a movement to integrate concerns over the 'effective management of information resources and technology in the strategic business planning function of the organization' (Marchand, 1985:32). This is the area referred to in Section 3.4 above, and, to a lesser extent, Section 3.5. Marchand saw most business in 1985 as being in the process of making the transition from stage 2 to the IRM stage 3.

Marchand's summary comments on the fourth stage are similar to some of the literature reviewed in 3.4 above, except that Marchand placed more emphasis on information use. He saw that strategic planning would need to incorporate both technology planning and information-use planning in organizations, and that organizational productivity and information productivity would become integrally linked.

Marchand's four stages were later adapted into five stages in the development of strategic information management (Marchand and Horton, 1986). These stages were seen as cumulative and not sequential. Each of the disciplines and approaches represented in the five stages were aimed at improving the overall business performance of an enterprise. Apart from the first stage (Paperwork Management), the other four stages are again similar to thrusts identified in the literature review for this study: management of automated technology (stage 2); management of corporate information resources (stage 3); business competitor analysis and intelligence (stage 4); and strategic information management (stage 5).

Two particular features of what Marchand termed the 'evolution of information management' were emphasized: the movement of information management from a
predominantly support function to a business management function; and, secondly a shift in the objectives of the information management function from administrative or technical efficiency to a concern with organizational effectiveness such as competitive advantage or overall business performance. Thus, there was a clear trend towards making information management more management-intensive. At the same time, the later stages required that business management be more information intensive.

While Marchand's conceptual work in identifying stages of information management might appear to provide a neat evolutionary framework for the development of information management in organizations, he does not elucidate the research base from which the stages could be identified, and this detracts from its utility as a framework or conceptual base.

In more recent work, Marchand (1987) has developed a theoretical framework for what he has termed 'information resources strategy'. This had three dimensions: organizational capability (including people and information technology), information needs as evident in stable to dynamic information use environments, and, finally, the information policy orientation (reactive versus proactive) and drivers of organizations. Each of these dimensions also had a time perspective. Implicit in this work was the (untested) hypothesis that successful information resources strategy was evident when policy and capability are periodically adjusted to the organization's needs. This work presented a more complex analysis of information management functions in organizations and identified a key role for information policy and strategy in organizations.

In restating the basic concepts and principles of information resources management, Horton (1985b) included integrating information resource needs with fundamental organizational management processes, integrating information technologies, shifting attention from technology to information content, acknowledging that information was a resource that has a life cycle, and using information to rethink the company's business. Horton's writings have evidenced a shift in orientation and emphasis from an earlier concern with public sector management to a greater focus on the 'competitive advantage' area. In this they are merging with the 'strategic uses of information and information technology' area reviewed in Section 3.4. With Infotrends: profiting from your information resources, Marchand and Horton (1986) brought together in a discursive fashion extensive examples of
organizations entering the 'information management business' by utilizing information resources for competitive advantage.

Taylor (R. Taylor, 1986) saw information resources management as a structured way of looking at information processes in an organization which was built around five questions: who acquires, organizes, and transmits what information, by what means, at what cost, to whom and to what effect? Traditionally only the first three questions had been included in discussions of the management of information resources. Taylor saw the ultimate goal of the IRM as putting in place 'mechanisms to enable the organization to acquire or produce, and transfer, at minimum cost, data and information of sufficient quality, accuracy, and timeliness, necessary to support organizational goals' (R. Taylor, 1986:175). The IRM planning process involved asking some fundamental questions about organizational objectives and direction, investment in expensive information resources, people, and systems, accountability for information resources, access to information, and centralization and autonomy. However, Taylor expressed concern that the IRM function might be going, by default, into the hands of 'computer literates' whom he believed often had a limited conception of information problems.

Information resources management was recently described as being evident where there was an organizational function or unit which had responsibility for the information systems, the information production process and the supply or utilization of knowledge (Finke, 1988). IRM comprised activities which were necessary for the management of information systems, information production, knowledge acquisition and information utilization. However, in the writer's view, this all-embracing concept, giving one particular organizational unit responsibility for the 'supply and utilization of knowledge', is neither practical nor realistic, especially in large organizations. It does not acknowledge the complexity of information services and the informing process, especially in large organizations. Such sweeping and all-encompassing definitions are at the heart of some justifiable criticisms of the IRM approach.

In an action-research style interview-based survey of sixteen 'Fortune 500' companies undertaken in 1984, Haughan and Levin (1984) examined the IRM programs in the private sector. The companies selected were those thought to already have developing IRM programs, though they might not have carried that name. The reality of IRM in the surveyed companies was that some organizational changes had occurred in acknowledgment of the need for consolidation of the
'information resource' responsibility. However, middle and operating management were seen as slow to accept the concept of IRM and information as a vital corporate resource without constant pressure from 'the top'. IRM was seen by Haughan and Levin as a function which was evolving but which was currently constrained by the lack of a solid body of knowledge and experience.

Impetus for IRM usually came from the Chief Executive Officer or equivalent individual in the organization, where the purpose of the organization's information activities was seen as helping in the implementation of strategic and business plans. The importance of top management involvement in implementing IRM approaches was a major and consistent theme mentioned in each company, including involvement in task forces and steering committees in the early stages. Organizations which had IRM functional consolidations in place were finding some difficulties at the Divisional level, where managers did not generally have the same vision as more senior management. Tangible reasons for supporting the establishment of an IRM program were seen by the companies as including cost reduction and avoidance, increased efficiency and productivity, increased revenues, market share and ROI, product and customer service improvements.

Haughan and Levin selected the 16 companies for inclusion in their survey on the basis of perceived orientation towards an information management approach based on IRM principles: information viewed as a vital corporate resource, with articulated programs serving as the focal point for the effective management of those information resources. Yet they reported only embryonic progress in the restructuring of internal company operations and beginning acknowledgement of the increased efficiency and productivity through exploiting commonality of technologies.

While this private sector report gives only minimal information concerning the conduct of the survey, uses ill-defined terminology and lacks a conceptual base, its almost negative findings reinforce the view that the area of information resources management is a difficult concept to apply and has a very scant research base.

Two studies have updated the recent progress of information resources management in US Federal government departments and agencies. Levitan and Dineen (1986) surveyed representatives from eight federal agencies to identify the type of IRM integration issues that were being addressed by agencies in 1985. They reported two general approaches to the problem of integrating information
resources within federal agencies: organizationally housing them in a single unit; and, secondly, the establishment of formal coordinating mechanisms between component parts. Techniques for integrating IRM with particular program areas were found to be widely different, with no particular pattern of integration prevailing.

Levitan and Dineen drew two conclusions from what they term their 'state-of-the-art study of federal IRM integration': firstly, that while federal agencies no longer regarded IRM and automatic data processing (ADP) as synonymous, ADP still dominates much IRM activity; and, secondly, that IRM was a broader concept had not been pursued as aggressively as originally predicted, following on from the passing of the Paperwork Reduction Act in 1980. Interviewees were also asked to speculate on why IRM had 'not moved faster' and the researchers grouped their answers in five categories: IRM had no automatic constituency; the benefits of IRM were long term; implementation of IRM was hard work, involving overcoming many firmly entrenched ways of doing business; while IRM focused on integration and cooperation, other government systems (for example personnel and budgeting) were designed to segregate and isolate; and finally, implementing IRM required resources which might not be available to the agency or group concerned.

In a more extensive and later study, Caudle (1987; 1988) examined how federal cabinet-level executive department IRM managers and bureau managers perceived IRM and looked at the management problems and promises of IRM. The study found that IRM was relatively invisible as a management concept outside IRM offices and that the sole practical definition of IRM in most bureau offices is information technology management. Managers believed that information technology was easier to deal with than the less tangible 'information'. Caudle suggested that 'IRM actualization' would bring together information management and information technology management.

Following her rather broad and vague recommendation 'research is needed in information management', Caudle commented that information management was viewed by managers as an almost impossible area to define, to put into operation and to explain to others (Caudle, 1987:165). Some respondents wondered if they were more involved in managing information policy than in managing information. Like Levitan and Dineen, Caudle concluded that the federal IRM model espoused in the founding documents had yet to be installed in most departments and bureaus, though a number of managers had made considerable progress in putting the
principles into practice. These findings served to emphasise the difficulties of implementing what was seen as an approach to more effective and efficient management of information resources, though it was suggested that such changes were much more difficult to effect in a government setting than in a private setting (Farkas-Conn, 1986).

While quality journals such as Information management review and the International journal of information management carry articles which report the application of IRM principles and practices in government and business organizations and the integration of information functions in organizations (see for example Farkas-Conn, 1986; Gunner and Gulden, 1986; Henderson, 1986), the three studies reviewed above appear to be the only reported research studies of a systematic nature which look at IRM developments in more than one organization. According to a recent study of 35 MIS managers (selected through their participation in a seminar), many remained confused about the meaning of IRM and did not practice its tenets (Guimaraes, 1988). Guimaraes claimed that this was because MIS managers are in a difficult political environment and are trapped between growing user expectations and rapidly changing technology.

These conclusions are confirmed in Lytle's state-of-the-art literature review of information management resources (Lytle, 1986). Lytle saw IRM as an integrative management technique. The maturity of IRM could be measured by the degree to which it achieved integration of information assets or resources in support of an organization's mission (Lytle, 1988). While IRM had made some progress towards managing information content as well as information technologies, more emphasis was needed on information- and people-related issues.

In a strongly argued literature-based evaluation, King and Kraemer (1987) seriously questioned the efficacy of the concept of IRM and its progress and acceptance to date. They identified three propositions on which IRM was based: that organizations are systems and thus are amenable to systematic controls; that information is a resource and should be treated as such; and that the management of information as a resource within the organizational system would enhance organizational efficiency and effectiveness. These assumptions are judged as inadequate for a cluster of reasons: they do not account for the demonstrated deficiencies in the application of rational systems views or organizations; there is confusion and inconsistency in the concept of information as a resource; and IRM proponents appeared not have a sound grasp of the possible unintended
consequences of IRM as it was likely to be implemented and practiced, particularly in relation to the implicit overemphasis on centralisation and control. King and Kraemer acknowledged that the 'verdict' on IRM was not yet in. However, experience to date 'does not reveal IRM's value as an organizing rubric for dealing with information' (King and Kraemer, 1987: 17).

The management of information resources remains ill-defined and an established theory has not yet emerged because of the 'novel' approach of IRM and the small amount of research devoted to the field (Finke, 1988). IRM may be seen as an 'umbrella' concept, which encourages the interplay between different types of information specialists and gives 'equal weight' to the 'information' and 'systems' elements in organizations (Wiggins, 1988).

Information management, as identified in the IRM literature, is clearly a young field which has yet to prove itself conceptually and to build a research base. Its initial claims appear to be over ambitious, but its development has coincided with a greater recognition of the business and organizational importance of information and information technology in other fields. IRM clearly intersects with other fields reviewed in previous sections and writers in this area were earlier identifiers of the importance of an organization-wide perspective on the management of information resources and technology. The research base lends support to the difficulty of more holistic approaches to the management of organizational information resources. A key factor for success in 'strategic information management' is seen as business manager involvement and the high level championing of information-related decisions.
3.7 Strategy and Strategy Formation Processes

The alignment of information with business strategy assumes that there is at least some form of realized strategy identifiable in an organization. It may be implicitly or explicitly articulated and exhibit differently weighted combinations of intended and emergent strategies. While strategy development and levels of strategy were outlined in Chapter One, this section elaborates those areas and examines key works on the strategy formation process.

Strategy is an organization's long-term goals and the means to achieve these, and comprises the actions taken to match an organization with its environment (Segev, 1988). Strategy is 'formulated and implemented by a process and an organizational design in which various 'strategic actors', usually board members and senior staff, take part (Segev, 1988:48). The concept of strategy should be separated from the concept of the process of forming strategy (Hax and Majluf, 1988), which in this study is referred to as 'strategic planning'. Strategic management is a continuous, iterative process aimed at keeping an organization as a whole appropriately matched to its environment (Certo and Peter, 1988). Thus, strategic planning, or the strategy formation process, is part of strategic management.

Porter (1980) developed the notion of three generic strategies of cost leadership, differentiation and focus. These represented three broad types of strategies and Porter claimed that firms which adopted one of these strategies would outperform those whose strategies were spread across these strategic groups and were thus 'stuck in the middle'. Failure to develop a clear strategy was seen by Porter as linked to lower profitability. Some support for this view was found by Dess and Davis in their study of strategic group membership and organizational performance (Dess and Davis, 1984). However, they emphasised that the highest performing group in their study, while being primarily oriented towards one generic strategy (cost leadership), lacked the singularity in strategic orientation implicit in Porter's typology. An interesting and untested assumption of the Dess and Davis study was that 'all members of the top management team had knowledge of the strategy of their firm' (Dess and Davis, 1984:470) and that there was, thus, implicit agreement on this strategy.

In the strategic information systems area, Wiseman (1985) developed the 'theory of strategic thrusts', using some of Porter's categories and developing others to take account of what he saw as the 'multiplicity of strategic actions' in firms, of
particular relevance to information technology. These five thrusts - differentiation, cost, innovation, growth and alliances - were seen as adequate to account for the major moves organizations make in search of advantage.

In identifying a strategy formation process, certain situational characteristics need to be identified. These include the role of the CEO, the openness with which strategy is communicated to all 'relevant constituencies', the 'degree to which different organizational levels participate' and 'the amount of consensus built around intended courses of action' (after Hax and Majluf, 1988:106). There may also be differences between strategic plans and intentions and what the organization actually does. In his evolutionary approach, Zammuto claimed that evaluation of a firm's position, decision making and strategic planning were part of a continuum. They were complementary aspects of making judgements about performance from different temporal dimensions (Zammuto, 1982).

The process of strategy formation should be seen as a complex activity which required strong participation by key managers, and if 'properly conducted', would generate a wealth of commitment and act as a 'rich communication device' (Hax and Majluf, 1984:49). The importance of participation in the process was also referred to by Ansoff (1988). In the strategy formation process, divisional forms may be more effective than functional forms because the 'strategic work-load' is shared by the CEO and divisional managers (Ansoff, 1988:180). However, Ansoff noted that both functional and divisional forms retained shortcomings as managers had to manage the conflict between strategic and operating demands.

Firms differ in the level and nature of their strategic planning competence, and this might affect the level of satisfaction with the outcome of the process. A firm has an appropriate planning system in place when 'its degree of planning competence matches the degree of complexity of the firm (Hax and Majluf, 1984:60). Thus, large and highly complex firms would be expected to require a high level of planning competence in order to develop adequate planning systems.

Intrinsic to the notion of sound strategy formulation is the expectation that agreement is reached concerning what constitutes the environment in which a firm operates and the subsequent actions to cope with that environment. The performance-consensus dimension was examined by Bourgeois in a study of top management consensus on what he termed the 'corporate objectives' and 'competitive weapons' of 12 non-diversified 'single mission' public corporations.
(Bourgeois, 1980). 'Corporate objectives' were goals in the province of 'domain definition', while 'competitive weapons' were 'means' which constituted 'domain navigation'. Though advising caution on interpreting the results, Bourgeois' findings suggested that consensus on 'means' always yielded higher performance than disagreement on 'means'. The worst scenario was for firms to agree on goals but disagree on the 'means', as this was likely to lead to 'paralysis of action' (Bourgeois, 1980:243).

The ambivalent findings of previous studies on the relationship between consensus on either goals or means and organizational performance was the rationale for Dess' study of the relationship between consensus on strategy formulation and organizational performance in the US paint industry (Dess, 1987). The results of this study indicated that agreement on either goals or means was important, but not necessarily both.

While the importance of senior management to the development of strategy is implicit in strategy literature, Hambrick and Mason (1984) developed the notion of the 'upper echelon perspective'. They suggested that organizational outcomes, by way of strategic choices and performance levels, might be partially predicted by the background and characteristics of the top management team. They suggested that there was much scope for investigating senior management teams, rather than focusing simply on the CEO.

Senior manager agreement has been acknowledged as a source of both positive and negative effects on organizational performance. Hrebiniak and Snow (1982) summarized the extremes of both positions: agreement on organizational strengths was translated into strategies or plans to 'accomplish desired ends, with the consequences including a reduction of uncertainty, clarification of instrumental relationships and general agreement on what can and should be done'. On the other hand, such agreement might not always be beneficial to the organization: top-level decision-makers might 'agree and be wrong' and the 'implied homogeneity may be problematic, especially when external conditions are heterogeneous and unstable' (Hrebiniak and Snow, 1982:1142).

These researchers sought to address this issue empirically by relating senior management agreement on organizational strengths and weaknesses to measures of organizational performance in a cross-industry study. 'Managerial agreement' on organizational strengths and weaknesses was represented by the standard deviation
around the mean of a given item. Hrebiniaik and Snow found that managerial agreement was positively related to firm performance, and that it was the agreement itself which was significant, not whether a given function was seen as an organizational strength or weakness. The effects of agreement were also observable in the short term and they suggested that an important aspect of senior management responsibility was making regular adjustments to longer-term, strategic plans to take into account continuing changes in the environment.

As indicated in the information technology strategy literature reviewed in Section 3.4, the formality and rigidity of the strategy formation processes has been seen as a hindrance to the evolution of strategic uses of information technology (Runge, 1985; Earl and Runge, 1987; Earl, 1988; Earl and others, 1988). The strategic planning literature, however, has consistently seen planning formality as related to planning sophistication and then to firm performance (Pearce, Robbins and Robinson, 1987). In an empirical study of 97 small manufacturing firms (a response rate of 16%), Pearce, Robbins and Robinson found that the degree of planning formality was strongly and positively related to firm performance. However, the measures used by these researchers would not result in the degree of discrimination required between large firms operating in areas of high uncertainty and equivocality, where a higher level of planning formality is expected (Christodoulou, 1988).

Perhaps the key to the formality argument, especially in relation to information intense firms in the late 1980s, is to be found in McGinnis' proposition that effective strategic planning requires the better integration of analytic and intuitive processes (McGinnis, 1984). The need to collect intelligence, develop a balance between centralised policy making and decentralized operating authority and the evaluation of problems and development of responses are essentially analytical, rational and systematically oriented activities. These need to be balanced and integrated with a willingness to innovate and take risks with subjective decisions and a proactive approach to shaping the environment. Where analytical and intuitive approaches are polarized, strategic planning may be dominated by one or the other, resulting in a process which was discontinuous and lacking the coordination needed to develop appropriate strategies and create opportunities.

This review of literature from the area of strategy has indicated that there remains ambivalence concerning several aspects of the strategic choice and strategy formation process. While Porter's work suggest that a firm should pursue only
one of the generic strategies he identified, other research has shown that the situation is not quite so clearcut. Findings on the importance of consensus amongst senior managers remain somewhat muddied, with the clearest signal being that it is more important for managers to agree on means rather than ends. However, there was some support for a positive relationship between firm performance and senior manager agreement on their organization's strengths and weaknesses. There is a need to examine strategic planning processes of firms to assess the extent to which analytical and intuitive processes are integrated.

Further investigations could have, as a major purpose, the identification of the strategic processes and organizational design factors in selected information intensive firms, with inputs from strategic actors being a key source of data.

Section 3.8 following seeks to bring together, from the various literatures reviewed, a range of organizational factors which might have some bearing on the alignment of business and information strategy.
3.8 Identification of Organizational Factors

3.8.1 Introduction

Since the early 1970s, the information literature has been elucidating the importance of managing the 'data resource' and managing 'information technology' in organizations. The progression through 'management information systems' and 'decision support systems' to 'information resources management' and 'strategic information systems' is now being matched in the general management literature by identification of information as a 'strategic weapon' and the notion of 'information' and 'information technology' for 'competitive advantage'.

The literature analysis has been purposely extensive so that an informed framework for the alignment of business and information strategies can be developed. The literature analysis has covered relevant elements of seven literatures, which have varying degrees of interdependence. These include:

1. selected works on information services from the Organizational Design literature (Section 3.2)

2. wide coverage of the Management of Information Systems literature, particularly those works with a focus on management information systems (MIS) and organization-wide information requirements (Section 3.3)

3. significant contributions to the Strategic Uses of Information Technology area, which identifies particular purposes for information systems (Section 3.4)

4. key works from Information for Strategic Management and Planning, focusing on one level of requirement (Section 3.5)

5. consideration of the development and current state of Information Resources Management, a field which has sought to identify concepts integrating the management of information and information technology across organizations (Section 3.6)
6. relevant works from the literature of Strategic Planning processes as these might impact on business and information strategy alignment considerations (Section 3.7)

The general, conceptual and research works reviewed revealed a similar thrust towards the integration of information strategies with organizational and business strategies, and a growing acknowledgement that effective information services management involved more than technological considerations. At the same time, to mid-1988, in most areas, the research base was marked by a limited and non-cumulative range of systematic empirical investigations which examined a small number of variables, or took a limited perspective on the topic.

The outcomes from the literature analysis are grouped into clusters of organizational factors which have been identified as being potentially related to the level of alignment of business and information strategy. These factors have been referred to either in well argued and informed conceptual works or in research studies which have at least a minimal level of systematic enquiry.

The clusters each form a sub-section in this chapter:

1. Organizationally contingent requirements
2. Changing information perspectives
3. Differential information requirements
4. Management and business support
5. Appropriate information infrastructures
6. Information systems planning approaches
7. Identifying strategic information systems
8. Strategic planning processes

Each cluster of factors is discussed in turn and then Section 3.9 combines these into a tentative framework of factors impinging on the appropriate alignment of business and information strategies. Elements of this framework form the basis for the areas investigated in the empirical case studies.
3.8.2 Organizationally Contingent Requirements

Theories of organizational design reviewed in Chapter Two have indicated that organizational variables are in complex interrelationship with one another and with conditions in the environment. The need for, and ability of, organizations, in different environments or with different internal needs, to process information accounts for variations in the organizing modes of organizations. Organizations are open social systems, dealing with both resource and information uncertainty and equivocality in order to meet goals, but in situations which are not necessarily rational.

These organizationally contingent perspectives are reinforced in the 'management of information systems' literature which has emphasised the need for some form of 'fit' between the organization and its information systems. Organizations are pluralistic and develop different organizational structures and forms; information systems and services need to mesh with underlying organizational forms (Ein-Dor and Segev, 1978; Keen, 1981; Davis, 1982; Markus and Robey, 1983) as organizational structures and management styles are interdependent with information systems (Tricker, 1977). Information systems which are well suited to one organization might not be effective in another (Ein-Dor and Segev, 1978), as they need to take into account the structural characteristics of the organizations, users' cognitive styles and the distribution of power within the organization (Markus and Robey, 1983). Information systems had to have 'organizational validity', which is a qualitative concept of the match or fit between systems and the organization of which they were a part (Markus and Robey, 1983). The literature on organizational information requirements emanating from organizational theorists emphasised different types of requirements for information service provision between different organizations.

In differentiating between organizations, a major factor is the industry base or business of organizations. Developments in information and communications technologies have had a differential effect on industries and would continue to do so. Information intensive industries, where the use of information and information technology is more critical, are more likely to have had greater experience using technologies and thus their interactive effect within organizations should be more observable.
Contingent perspectives operate at a number of different intersecting planes: amongst countries, amongst industries and sub-sets of industries, and amongst organizations within industry sub-sets. These are intersecting planes as the business of many firms is not bounded by the confines of one country, or even one industry. Thus in examining organizational factors which might impinge on business and information strategy alignment it would seem sensible to control for some of these major variables.

3.8.3 Changing Information Perspectives

Information and communications technology developments were bringing about fundamental changes within and between organizations (Parsons, 1983; Porter and Millar, 1985). 'Information' could now be owned, operated and managed by all of an organization's work units (Zmud, 1984), and information based-activities were now present throughout businesses (Zmud, Boynton and Jacobs, 1986). These changes required organizations to develop more sophisticated approaches to the management of information and information technology, including the examination of links between different organizational responsibilities for information resources management (McKenney and McFarlan, 1982; McFarlan, McKenney and Pyburn, 1983; Marchand, 1983, 1985). The shifting of attention from technology to information content should assist organizations to use information perspectives to rethink their business (Horton, 1985b).

Advantages have been claimed for organizations with more holistic approaches to the management of information resources (Horton and Marchand, 1982; Marchand and Horton, 1986). However, there appeared to be little evidence for the penetration of IRM approaches in organizations (Haughan and Levin, 1984; Levitan and Dineen, 1986; Caudle, 1987, 1988).

As part of the expanded information perspectives which were developing, writers in the mid-1980s started to articulate the need to align business and information technology strategies (For example, King, 1985; Porter and Millar, 1985). The extent to which competitive considerations were part of organization-wide strategic concerns was a matter of some debate up to at least 1987, with King (1987) suggesting it was only just beginning to achieve a degree of reality in organizations, while Butler Cox (1987) found the use of information systems as a competitive resource was becoming an accepted fact.
Organizations with more effective business and information strategy alignment would be expected to have a more overt consideration, in their organizational processes, of the links between information systems and services and a procedure for considering the relationship between information technology and business strategies.

3.8.4 Differential Information Requirements

Situational differences between organizations were matched by the need to differentiate different types of information requirements within organizations. Corporate needs for and uses of information are varied and complex (Beaumont, 1988).

Three level typologies, often drawing on Anthony's work in the mid 1960s (Anthony, 1965), have been used as the basis of many analytical, conceptual works on information requirements (Koenig, 1986; Goodyear, 1986). However, some empirical work has suggested that requirements are not defined by the stratification of functional level (White, 1986). The levels of systems within organizations should relate to the scope of requirements, such as the 'organizational, operational and technical' groupings of Tricker (1977). The information requirements of complex organizations can rarely be described in the terms of Anthony's 'heat configuration' and a more suitable model is that based on a 'barrel of resources' controlled under policy guidelines of corporate strategy (Tricker and Boland, 1982).

Planning approaches for information systems in the early 1970s resulted in a heavy concentration on the requirements of operational control with insufficient consideration being given to the requirements of senior managers (Gorry and Scott Morton, 1971; Simon, 1973). Effective information provision for senior managers required a more synthesised product which acknowledged that level's 'attentional resources' (Simon, 1973). The building of effective information systems and the provision of information services in line with business strategy required acknowledgement of the different informational demands of strategic management (Keen and Stabell, 1978; Davis and Olson, 1985). Senior managers required information based on strategic success factors and key performance indicators (Millar, 1984). There was a need for organizations to identify an appropriate level of integration between information systems and services groups and those handling internal and external information (Hohn, 1986). Readily available external
information was much underutilised in the development of business strategies and as input to satisfy the information needs of management (Wilson, 1988; Cronin, 1989).

Thus, there is support in the literature for the concept that organizational information systems and services should cater for the differential requirements of the various levels and purposes of organizational members. However, these levels and purposes are more complex than the often quoted three level typologies.

3.8.5 Management and Business Support

As indicated in Sections 3.3, 3.4 and 3.6, there is extensive support, and much of it research-based, for the proposition that the role of executive management in supporting and championing information systems developments is a key factor in the effective management of information resources and technology. 'Top management support' has recently been identified by Weill (1988) as one of the four factors which moderate effective investments in information technology and lack of 'top management commitment' was a major factor in the failure of attempts to implement 'strategic information systems planning' (Lederer and Sethi, 1988). The Australian Macquarie studies have indicated that senior managers have lacked an appreciation of the potential of information technology in the planning and development of strategy.

The recent case study based work of the Oxford group has suggested that firms with a high level of integration between 'IS and the business' have business managers who perceived the exploitation of information technology as of being potentially strategic importance; a second factor identified was the ongoing education of business managers in information technology capabilities (Feeny, Edwards and Earl, 1987).

3.8.6 Appropriate Information Infrastructure

Appropriate organizational arrangements for information services are seen as crucial to effecting informational support and stimulation for business objectives. However, there is no 'one correct way' to structure information systems and success depends on the extent to which the IS structure meshes with its organizational environment (Ein-Dor and Segev, 1982; Boyton and Zmud, 1987). There has been an increase in the dispersal of responsibility for information systems
development and management, which needs to be matched by the effective management of interdependence across units within firms (Rockart, 1988: Rockart and Short, 1989).

The degree of information systems integration with organizational requirements was higher in less centralised organizations as was the propensity to pioneer systems developments (Ein-Dor and Segev, 1982). For complex organizations, the most stable organizational form for information systems was a federal or mixed structure which balanced devolution with control, and could accommodate structural change without excessive disruption (Feeny, Edwards and Earl, 1987).

The design of information systems and services required an understanding of decision making processes in organizations (Keen and Scott Morton, 1978) and should be based on an organization's 'IS heritage and experience' (Feeny, Edwards and Earl, 1987). In order adequately to comprehend an organization's requirements, information personnel need to be part of the decision-making processes (Parker, 1982, 1985; Morden, 1985). The participation of Information Systems and Technology Managers in the strategy formulation processes assisted their understanding of top management objectives (Lederer and Mendelow, 1987; Lederer and Sethi, 1988).

The reporting level of the IS/T Manager has consistently been seen as a key variable in effective organizational information systems efforts; however, many of the polemical and empirical works which suggest this, do not allow for the moderating effects of industry types (Brumm, 1988; Broadbent and others, 1989).

3.8.7 Information Systems Planning Approaches

In the early 1980s, Lucas and Turner (1982) claimed that most firms had developed information systems which were basically independent of their firm's strategy. Studies across different countries and across industries from the mid-1980s have indicated varying levels of integration between information systems and business plans, ranging from 13% to 75% depending on the definitions used (Levinson and Holley, 1987; Galliers, 1988b; Wilson, 1988). These results have generally been gleaned from self-reporting by Information Systems and Technology Managers in questionnaire-based studies. Wilson's study found that financial services firms were well represented amongst those which had an information systems strategy.
Positive factors in the implementation of information systems strategies and plans were strong 'Board level' involvement and 'top management commitment' (Wilson, 1988; Lederer and Sethi, 1988) and the availability of resources to implement the plan (Lederer and Sethi, 1988).

Further factors which might be related to problem areas in information systems planning were suggested, though not tested, by Lederer and Sethi (1988). Some of these have been mentioned in other studies, such as the participation of the 'IS department in business planning' and reporting arrangements for the IS/T Manager. Others to which they referred were the extent of sophistication of business planning, the organizational scope of the information systems planning, and the time horizon of the plans.

3.8.8 Identifying Strategic Information Systems

Strategic applications of information technology were more likely to emerge in organizations which were 'issues' or business driven, rather than 'technology-driven' (Huff and Munro, 1984; Munro and Huff, 1985). Line managers appear to play an important role in the initiation and promotion of such applications (Earl, 1988a). The existence of a competitive industry situation, together with appropriate resources, appear to be the strongest facilitators for the emergence of strategic uses of information and information technology (King and others, 1986).

The emergence of competitive applications of technology was enhanced by avoidance of a firm's usual information systems planning processes (Runge, 1985), while the efficacy of formalised planning in creating competitive and strategic systems has been questioned (Earl and Runge, 1987). Ward suggested (Ward, 1987) that more effective integration of information systems and business strategies were more likely to result from employing the techniques of business strategy formulation in the IS area, than by extending IS-based techniques to encompass business analysis.

Line management leadership, and the interaction of line and IS management, were posited by Johnston and Carrico (1988) as factors which were important in the integration of information technology with business strategy.

There has been limited recognition of the importance of 'information' as opposed to 'information technology' in the development of information strategies (Wilson,
1988), though the content aspects of information provide firms with different types of advantages to those of information technology (King, Grover and Hufnagel, 1988). Planning for strategic information management should be based on broad notions of information management and not be limited by the usual boundaries of information systems (Marchand and Horton, 1986).

3.8.9 Strategic Management and Planning Practices

The importance of the firm's strategic planning processes has recently come into focus as an important factor in the integration of information systems strategy with business strategy (Feeny, Edwards and Earl, 1987; Lederer and Burky, 1988; Lederer and Sethi, 1988). The nature and specificity of business strategies could themselves be a factor in the lack of coordination with information strategies. Organizations which had a 'top down' planning processes were in Feeny's 'high integration' group of firms (Feeny, Edwards and Earl, 1987).

The process of strategy formation is a complex activity which, if well done, provided firms with an excellent opportunity to create commitment (Hax and Majluf, 1984). Though the strategic planning literature does not make the connection, it is worth noting here that aspects of the process of strategy formation may be likened to Daft and Lengel's notion of 'information richness' discussed in Section 2.2 (Daft and Lengel, 1984, 1986). According to Daft and Lengel, 'organizational success' was based on the ability of the organization to process information of appropriate richness in order to reduce uncertainty and clarify ambiguity. Different information purposes required the use of different types of organizational information channels. This study sought to examine the strategic planning processes of organizations as these might provide a 'rich' information channel to reduce uncertainty and clarify ambiguity, at least amongst senior managers and between senior business and information managers.

Organizational structures and procedures which lend themselves to participation in strategy formation are likely to be more effective than other types of structures (Ansoff, 1988). This is echoed in the information systems literature in relation to the participation of the IS/T Manager and IS departments (Lederer and Mendelow, 1987; Lederer and Sethi, 1988).

Firms differed in their planning competence and experience and this was likely to be a factor in effective planning processes (Hax and Majluf, 1984). The gathering and
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use of future-oriented, external and environmental information was found to be strongly correlated to planning sophistication (Rhyne, 1985). While the strategic planning literature consistently links planning formality with planning sophistication, McGinnis suggested that effective strategic planning required the better integration of analytic and intuitive processes (McGinnis, 1984).

Findings on the importance of consensus amongst senior managers remain ambivalent, though it appeared to be more important for managers to agree on 'means' rather than 'ends' (Bourgeois, 1980) or to agree on either 'means' or 'ends' (Dess, 1987). Senior manager agreement on their organization's strengths and weaknesses is positively related to firm performance (Hrebiniak and Snow, 1982).

3.8.10 Summary

The purpose of this section was to summarise and synthesise organizational factors which might be related to the alignment of business and information strategy based on the review of the literature. These are drawn from a number of literatures which have overlapping, though different, orientations towards the management of information services. These factors are now drawn into a framework for potential alignment which will be examined in the empirical component of the study.
3.9 Preliminary Framework for Alignment

The factors which might impact on business and information strategy alignment which have emerged from the literature analysis can be separated into two broad groupings over which a firm has varying levels of control: firstly, external or environmental factors over which a firm has a lower control. These may be clustered into industry-specific sets of factor. The second grouping are internal or firm-specific factors, ranging from those which are partially to those which are completely in the firm's control.

Straddling these two groupings is the factor of the size of firms and the effect of the activities of other firms in an industry. Size has a moderating impact on the structure of firms and on the extensiveness of different levels and types of information requirements. Size is affected by nature of the industry and government regulations (which might be region, state or country specific).

Different industries have different sets of external factors, based on the following variables, some of which are interrelated:

1. The information intensity of the industry
2. The nature of the industry's products and services
3. The strategic importance of information technology to the industry
4. The level of competitiveness of the industry
5. Change factors in the industry

These are represented diagrammatically in Figure 3.2:

Firm-level variables which might be related to business and information strategy alignment can be grouped into three main clusters, and, like the industry variables, are interrelated:

1. Strategy Context
2. Organizational Context
3. Information Services Context
Strategic Context factors include:

1. Strategic planning processes: their level of sophistication, formality; the extent of participation in the process; and the strategic planning competence of the firm.

2. Strategic planning outcomes, and the nature and extent of implementation of the strategic plans.

3. Strategic thrust and its appropriateness to industry and firm conditions.

4. Information technology considerations in firm-wide strategic planning.
Organizational Context factors include:

1. Complementarity of organizational structure to strategic thrust.

2. The locus of control of decision processes, particularly in relation to information systems and services: distribution of decision-making and implementation responsibilities.

3. Communication processes, particularly as they relate to the communication of strategic planning outcomes.

4. Managerial agreement on the strengths and weaknesses of the organization.

Information Services Context factors include:

1. Information systems and services which meet differential requirements within the organization.

2. Organizational scope of information systems planning and its relationship to organization-wide strategic planning processes.

3. Scope of responsibility and reporting level of the IS/T Manager.

4. Interaction of business and information managers and the involvement of business managers in information systems developments.

These three sets of factors are in complex interaction in firms and combine in different ways to affect business and information strategy alignment. The relationship between these factors, when controlling for external factors, is depicted in a preliminary alignment model in Figure 3.3. It should be stressed that these factors are in a state of constant interaction with the wider environment, and are affected by the practices of other firms in their industry area, and evolving industry boundaries.
Figure 3.3 Preliminary Alignment Model

The elements of this model have been drawn from an extensive analysis of a number of related, though separate, literatures. While some soundly based research studies were reviewed, a considerable portion of the literature, though well informed, was either conceptual or polemical in approach. Thus, the preliminary model provided a basis for further investigation of organizational factors which might be related to the alignment of business and information strategy. Such a study should examine major elements in the Strategy, Organizational and Information Services Contexts. These elements can be seen to constitute different organizational configurations.

Because of the moderating effect of external and industry related factors, the investigation should focus on one industry area. That industry area should be one
in which the industry factors listed above are most acute: an information intensive industry area, undergoing considerable change and with a high level of competitiveness, where information technology is of critical importance and where the products and services are information-based. In this way, the investigation will maximise the opportunities for observation of important factors in business and information strategy alignment.

The research-based studies reviewed have examined only limited aspects of the above framework, and usually in cross-industry studies. They have generally sought perspectives from IS/T Managers only and consideration of the 'information' component of information technology is rare. This study seeks to enhance the limited research base of the field of business and information strategy alignment. Section 3.10 summarises views about possible research approaches in this area from the literature examined in Sections 3.3 to 3.7.
3.10 Suggested Research Approaches

Mainstream management and business literatures as well as information systems literatures have seen enormous growth of, and interest in, the strategic uses of information technology. However, interest in this area has not been yet been matched by the development of a sound research base, though its substance has increased considerably in the past four years. The whole area is still at a pre-theoretical stage because the phenomenon under study is new and changing (Treacy, 1985). 'Contextualist research' was seen by White (1986) as the most appropriate methodology at present to advance the study and practice of information system design.

In reviewing the intellectual development of management information systems, Culnan's (1986) conclusions reinforced those of Ein-Dor and Segev that research efforts in the MIS area lack a common theoretical framework. The lack of such a framework hinders the 'orderly and cumulative acquisition of knowledge in the area' (Ein-Dor and Segev, 1981:227).

In identifying a research agenda for information systems strategy formulation, Earl emphasised the need for research strategies which included 'interpretive casework, longitudinal investigations and change process studies' (Earl, 1987b). Strategic management research needed to identify new questions as much as to seek immediate answers. One form of research which would assist would be organizational level studies to plot or enquire how strategies actually evolve, and how strategic initiatives were identified and pursued. In the information systems area, projects aimed at better understanding of how to carry out effective planning processes were likely to be of more significance that those which identify additional issues to add to the planning agenda (Boynton and Zmud, 1987).

Recent research studies have provided a considerable thrust concerning the extent to which information systems are embedded in corporate and strategic processes. However, these studies focus on the information technology side of I and IT and do not encompass the wider view of information services taken in this study. Wilson's consideration of 'information', as well as 'technology' and the delimitation between 'information resources' and 'information technology' by King and his colleagues are welcome recent exceptions (Wilson, 1988; King, Grover, Hufnagel, 1988).
Most of the relevant reported studies have taken as their point of reference the views of IS/T Managers, usually without acknowledging the perspectives of other personnel within organizations. They have generally been cross-sectoral with results focusing on the range of responses and variations between industries. These studies indicated a need to examine 'leading edge' or the more 'mature' information-based industry areas in depth in order to identify the organizational contexts which encourage successful planning, and its subsequent implementation, and the form that this takes. Contemporaneous work of Raghunathan and Raghunathan (1989) recommended that further research should examine the situation in particular industries. Lederer and Burky (1988) suggested that including senior business managers, in addition to information systems executives, in a study of the understanding of strategy would be a fruitful area for research.

The findings of the Johnston and Carrico (1988) study suggested that examination of a cluster of large firms in an area with increased competitive pressures and significant information content might support or further amplify the evidence for internal conditions, which lead to examples of business and information strategy alignment. The financial services area was seen as such an industry area, where firms would be expected to have better business and information strategy alignment through the necessity of industry developments and competition. However, Wilson acknowledged the unwillingness of firms who were successfully implementing information systems strategies to elaborate the reasons for their success, at least on a questionnaire form (Wilson, 1988).

Chapter Four considers the research strategy and approaches taken for the empirical investigation, while Chapter Five details the data collection procedures.
4. RESEARCH DESIGN

4.1 Research Strategy Considerations

The information systems and services areas are characterized by constant technological change and innovation and, thus, researchers usually learn by studying the innovations put in place by practitioners, capturing the knowledge of practitioners and developing theories from it (Benbasat, Goldstein and Mead, 1987). There has been a shift of interest from technological considerations in information services to examining managerial and organizational questions, the extent to which information systems and services are embedded in organizational processes and the different information service requirements in different types of organizations and industries (Boynton and Zmud, 1987; McFarlan, 1984a). Traditional information systems management frameworks are often inappropriate. More flexible, organizationally focused approaches are required, using research strategies such as interpretive case studies (Earl, 1987b; Galliers and Land, 1987; Weill and Olson, 1989).

This study is concerned with the multifaceted nature of information strategies in organizations and the extent to which they are aligned with business strategies: the uses of information for competitive advantage which exist in organizations and how these came about; the strategic orientation of these developments; and organizational factors which might have facilitated the development and evolution of such uses. It is, thus, concerned with complex 'how' and 'why' questions in real settings where research is in a pre-theoretic stage, and information services practices are in a dynamic state of change.

This area meets the criteria identified by Benbasat, Goldstein and Mead (1987) and Baroudi and Orlikowski (1989) for the use of case study research strategy for certain types of research problems in the information services area: few previous studies have been carried out from which well-grounded hypotheses can be drawn, and, thus, theory is at an early and formative stage; the research seeks to answer 'how' and 'why' questions in complex settings; and, both information-based competitive advantages and the responsibilities of senior information managers can only really be studied in their natural and dynamic settings, in the context of their organizational and industry environments. The research is exploratory in nature, spans multiple disciplinary areas and paradigms and is descriptive rather than prescriptive.
The distinguishing characteristic of case study research strategy is that it enables examination of contemporary phenomena within real-life contexts, especially when the boundaries between phenomenon and context are not clearly evident and multiple sources of evidence are required (Yin, 1981). This is the situation in the information services area which is at a 'pre-scientific' stage. Recent information theorists have focused their attentions on the importance of studying information activities or the 'praxis' of information as the basis for developing theories and models (Wersig and Windel, 1985; R. Taylor, 1986). Only when there has been a more rigorous analysis of 'what it is . . . systems do and how they do it' will it be appropriate to apply experimental and quantitative techniques (R. Taylor, 1986:2-3). This is consistent with a focus on 'realized strategy'.

Case study research strategy should not be confused with types of evidence or types of data. The unique strength of case-study research strategy is its ability to deal with multiple sources of evidence (Yin, 1984). The case study approach does not seek to make predictive statements or generalizations in the same way that statistically based research does, though findings reached by this approach can have predictive value. Its principal aim is to find and analyze intelligible, meaningful patterns (Duces, 1985).

While building on an extensive review of the literature of information systems and services, this investigation used case study research design to generate a series of well grounded hypotheses. Multiple sources of evidence were collected from a small number of organizations in a structured manner. These included both qualitative and quantitative data and both publicly available and confidential documentation. This permitted triangulation of data to strengthen findings (Denzin, 1970; Yin, 1981; Miles and Huberman, 1984).

Consideration was given to using a survey research strategy which would have enabled a larger number of organizations to be investigated. However, in order to gain a sufficiently large number of sites, considerable compromises would need to have been made in the quality of the data collected. The ability of survey research to deal with phenomena in context is extremely limited (Yin, 1981). Rigour in analysis does not necessarily imply large sample sizes. Considering the current stage of development of both information-based competitive advantage and information functions within organizations, quantification may tend to mask a lack of thorough analysis (R. Taylor, 1986). In summarizing the consensus of a
research colloquium in the area of linking information systems and corporate strategy, Ashenhurst (1984) commented that the field is 'too new, unstructured, and ill-defined at present to permit effective use of more formal data collection methods or refined applications of statistical methodologies' (Ashenhurst, 1984:327).

If the survey approach had been used, it would not have been possible to include the range of data sources which are available onsite, including interviews and other forms of evidence such as internal documents. These are difficult to collect and interpret without going 'inside' the organization.

Using other than field investigation methods would have hampered the validity of the data collected due to the inexactness of terminology, differing job titles and responsibilities and the general complexity and inter-organizational differences in the information services area. Brumm's comparison of the variability of findings of US surveys using mailed questionnaires to the position of 'Chief Information Officer' provides support for this view (Brumm, 1988). When the goal of the research is to study intensively the background, current status and environmental interactions of a particular unit or units, then case study research methodology is the most appropriate approach (Grosos and Sardy, 1985).

A multiple case study design is more appropriate and provides a stronger research design than single-case designs in this instance. Multiple case study design will allow for the outcomes to be related back to the situation of each case, thus providing some robustness for those findings and a form of replication logic (after Yin, 1984). An embedded case design is used as each case is seen as a separate site.

In order to gain the richness of data required in complex organizational settings in an emerging area, it was decided that the study would have more validity if a small number of organizations were investigated in some depth, using multiple sources of evidence. Without personal contact and assurances of confidentiality it is also difficult to envisage organizations being prepared to indicate and discuss what they see as the full range of the organization's uses of information for competitive advantage. A major part of the investigation involved interaction with executive managers including interviews which are an essential source of case study evidence (Yin, 1981).
This study, then, explored the uses of information for competitive advantage and selected organizational characteristics with the aim of generating grounded hypotheses in the area of business and information strategy alignment. The strength of the research design comes from the study’s in-depth focus on a small number of organizations which constituted four of the five major firms in the one industry area. The industry area is a 'leading edge' industry in the information and information technology area and the data collection process involved very senior managers and access to the highest level of strategic documentation in those firms.

4.2 Research Approach Overview

The research questions which provided the focus for this study related to the possible interaction between realized information strategy, as evidenced in uses of information for competitive advantage, and certain organizational characteristics.

The study involved an examination of recent information-based developments, and in particular, examples of outcomes in the form of information-based comparative advantage as perceived by clusters of senior managers. The organizational factors examined focus on strategic planning and decision-making processes, the perceptions of major information issues and problems, organizational arrangements for information services and the way in which areas of information-based advantage were initiated and implemented.

The study was undertaken in four phases, using both qualitative and quantitative data. The first phase was an industry analysis to identify the most appropriate industry area and organizations. After a trial phase in the petroleum industry, the five largest organizations in the financial services sector then became the focus for the in-depth investigation.

In the second phase, clusters of executive managers in each organization were involved in self-administered questionnaires and focused interviews to identify the business and information strategies of the organization, strategic planning and decision making processes, the major information issues or problems facing the firm, the comparative positioning of the firm vis-a-vis its competitors in relation to information-based advantage and specific uses of information for competitive advantage by the firm. One of the firms declined to participate at the level required by the study and only limited data from that firm is included in this study.
Documentation analysis formed the third phase of the study. Access to 1989 Board level strategic planning documentation was obtained in three of the four firms while the fourth firm provided its board level information systems planning documentation (which included organization-wide Board level material). This provided valuable insights into both the process and content of strategic planning in the firms, as well as further input to strategic orientation and decision making processes.

Five years of Annual Reports in all five firms were analyzed to identify the number and nature of information and information technology references. This documentation provided a temporal analysis in a way which was not possible with other forms of data collected.

The fourth phase involved the comparative analysis of the executive manager data, together with the strategic planning and annual report documentation. The outcome of this phase is the generation of grounded hypotheses on business and information strategy alignment.

This empirical research has taken an embedded multiple case study approach using multiple sources of data in a structured manner, in order to generate soundly based hypotheses. Related research and conceptual literature suggested that the areas examined in this study would be pertinent and productive. The information services field is lacking grounded studies which examine the complex interactions of information strategy, business strategy, strategic actors and aspects of the structure and functioning of the organization, particularly as these might relate to the development of information-based advantage. Thus, this study makes an important contribution to an emerging and significant area of enquiry.

4.3 Definitions of terms

The terminology used in this area is not uniform, is context dependant and, thus, open to varying interpretations. The terms used in this study are defined below, with the abbreviations used in the text in parenthesis. The sources used in compiling each of these definitions is indicated. Where they have been developed using previous terms, only the additional references pertinent to that item are listed.
Strategy

Patterns which can be detected in a series of actions which commit organizational resources (Mintzberg and Waters, 1982, 1984: Mintzberg, 1987; Henderson, 1984)

Business strategy

Patterns which can be detected in a series of actions which commit organizational resources and which are aimed at altering the strength of the organization relative to that of its competitors. (Ginsberg and Venkatraman, 1985; Ohmae, 1982)

Functional strategy

Patterns which can be detected in a series of actions aimed at strengthening the specific functional performance required to succeed in a given industry (Ohmae, 1982).

Information (I)

A symbol, or strings of symbols, which have potential for meaning and which have in some way been recorded for future use and are aimed at informing individuals (After Debons and others, 1981; Levitan, 1982)

Information technology (IT)

The application of computer and communications technology to the collection, storage, processing and dissemination of information (Australia. Department of Science and Technology, 1984)

Information systems (IS/T)

Formal sets of organized activities that add value to messages being processed and use information technology in doing so.

Information services

Formal sets of organized activities, involving information personnel, information resources, information technology and systems, which add value to messages being processed, by producing, enhancing or otherwise strengthening the potential utility of messages (R. Taylor, 1986)
Information strategy
Patterns which can be detected in a series of actions aimed at strengthening the performance of information resources, information technology and personnel in order for the organization to succeed in its industry

Organizational unit
A grouping designated or named on an organizational chart which includes at least five employees and has a designated head

Information services unit
An organizational unit whose major focus of activity is information services to other units within the organization (Debons and others, 1981)

Information services infrastructure:
Structural and functional arrangements for information managers, information workers, information specialists, information resources, information technology and information systems in an organization

Information managers
Those designated as head of an information services unit where the major focus of activity is information services to other units within the organization (Debons and others, 1981)

Information Systems and Technology Manager (IS/T Manager)
The highest ranking executive with primary responsibility for information systems and technology management (After Synnott's definition of the position of 'Chief Information Officer, [Synnott, 1987])

Information workers
Those who report to an information manager and whose work involves handling information resources for others within the organization
Information specialists

Those who do not report to an information manager and whose work involves handling information resources for others within the organization.

Executive managers

Those designated as heads of organizational units whose reporting line to the chief executive officer includes no more than one intervening manager (Hansell and others, 1985).

4.4 Selection of Industry Area

The first phase of the study was an analysis to identify the most appropriate industry area and organizations within that industry. Limiting the study to one industry area avoided the problem of cross-sectional studies by minimising the effect of moderating variables (Weill and Olson, 1989). Industries differ in their environments and the level and nature of their information intensity (Porter and Millar, 1985; Lindner and Ives, 1987; Jarvenpaa and Ives, 1990). It is no longer worthwhile to discuss the 'general notion of information for competitive advantage', as each technology, and the information transformations which that technology engenders, should be considered on an industry by industry basis (Jarvenpaa and Ives, 1990:21).

As examples of information-based competitive advantage were critical to this study, it was necessary to identify industry areas where such uses are already in place.

A set of criteria, developed from the literature reviewed in Section 3, together with research design and process considerations, enabled the selection of the most appropriate and critically important industry area (after Yin, 1984). The industry area to form the focus for the study had to have the following features:

1. 'information intensive' by way of intellectual efforts involved in developments of products (that is, information intensive in the value chain of production).

2. need a considerable amount of external and internal information.
3. relatively stable so that a study undertaken over a period of time has some validity (that is, not subject to sharp distortions, due to, for example, sudden government policy changes or extensive takeover and merger activity).

4. organizations large enough to employ a variety of different types of professional information workers

5. focused components or divisions which could provide a suitable information use environments for investigating strategic uses of information resources and information technology

6. a base of at least five firms which were headquartered in Australia and which had some similarity in business unit activities.

On preliminary indications, two industries had some or all of the above features. These were the petroleum and banking industries, both of which are represented in Australia by large firms. Large Australian firms were also more likely to have a higher level of planning sophistication than smaller firms (Christodoulou, 1988) and, thus, provide a good environment for identifying organizational factors of relevance to business and information strategy alignment.

A review of publicly available documentation was then undertaken. This included an initial scan of Annual Reports for the firms in each industry, business directories, such as Kompass, and the 1987 survey of Australia's 'Top 500' companies published by Australian Business (13 May, 1987). The sources consulted provided basic company profile information and sometimes included organizational charts. In addition to these sources, in some organizations, access to more detailed organization charts (such as that in Induction manuals) was available, together with documentation about roles and responsibilities of particular information services units.

These materials resulted in the compilation of factual information about basic macro-organizational design and activities of firms in the petroleum and banking industries. Some of these organizations appeared to use information resources and information technology in a manner which could be described as 'strategic' in the
terms of this study, particularly in the banking industry. One activity area shared by the major Australian banks is that of 'Retail Banking'.

The financial services area has been identified as 'information intensive' (Porter and Millar, 1985; Jarvenpaa and Ives, 1990) and it is highly dependent on information technology as its core technology. In both Australia and the United Kingdom firms in the financial services area have been found to be more mature in their information systems planning and development processes than those in other industry areas (Wilson, 1988; Broadbent and others, 1989). Financial institutions are in the 'Strategic IS' environment, being critically dependent on the smooth functioning of the IS activity for daily operations, with applications under development that are vital to their competitive success (McFarlan, McKenney and Pyburn, 1983). This is even more intensely the case for major banks, operating in a very competitive environment.

On the basis of the information analysed and matched against the criteria listed above, the five largest banks in Australia appeared to provide a rich environment for a study which required identification of the uses of information and information technology for comparative advantage. These five banks accounted for 82% of the total assets of consolidated banks operating in Australia and constituted the population of Australian financial institutions with over 10,000 employees (KPMG Peat, Marwick Hungerfords, 1988). Also, while the major banks were indigenous, several of the major petroleum firms were headquartered outside Australia. This would be expected to represent an unwanted 'moderating variable', with particular impact on strategic planning and decision making processes. (The trialling of data collection instruments was carried out in the petroleum industry).

Thus data collection for the study began with a base of the five major banks in Australia. It was anticipated that one or two of these firms might not be willing to participate fully in the study. Four of these banks operate nationally and internationally, while the fifth provides similar services and facilities, but its base is regional (that is, state based) to a greater extent than the other four. For the depth of analysis required, four organizations would provide a sufficient base for the study.

Senior management, IS management and professional planners in large financial firms formed the nucleus for written and interview data collection and analysis. In these firms, the senior information or technology managers were also more likely to
be similar in rank and organisational positioning thus removing the effect of the rank of the IS executive as a factor in the effectiveness of the organisational IS effort (Mcfarlan, McKenney and Pyburn, 1983).

4.5 Australian Banking Industry

The Australian financial services area provides a valuable context for examining alignment between business and information strategy. The past decade has been one of rapid change in the banking and finance sector. Since 1980, the industry has moved from a relatively high to a low level of regulation and includes some of Australia's largest firms.

Nationally operating retail financial institutions in Australia have to provide service to a population of 17 million dispersed over an area as large as the continental United States. Authorized banks participating in the Australian financial system are restricted in number. This has been largely due to the limited size of the Australian financial market, the position afforded by the Banking Act 1959 (as amended) to the banks operating within this market, and the perceived need to preserve stability and encourage security by controlling the number of authorities granted (Peat, Marwick, Mitchell and Co, 1985).

Since 1983, the Australian Commonwealth government has relaxed trading bank deposit-taking restrictions, has significantly deregulated the foreign exchange market and has approved the entry of foreign banks into the Australian market. In February 1985, the government invited 16 foreign banks, some with domestic joint venture partners, to apply for authorities to establish operations in Australia. The previous distinctions between savings, trading and merchant banks have also been diminished and the result is a much more competitive financial services sector.

The publicly available documentation analyzed in this study, including Annual Reports and financial data, cover the period 1985 to 1989. Those five years saw significant changes in the structure and composition of the banking and finance sector. The industry structure changed from an 'oligopoly of four major banks to a highly competitive one with 30 participants' (Sager, 1988).

At the time of selecting the industry and firms for participation, the banks in this study constituted the top five revenue earners and asset holders in the 'Banking and
finance' category of Australia's 'Top 500' companies (Australian Business, 13 May, 1987). In terms of assets, the banks occupied the top four and sixth places of the Top 500 companies. Four of the banks were listed in the top ten in the Top 500 in terms of revenue for 1986 while the fifth was ranked 52nd. These banks were the largest five consolidated banks according to total assets which accounted for 82% of the total assets of banks operating in Australia (KPMG Peat Marwick Hungerfords, 1988). Thus these firms were a very significant group of organizations, and constituted the total population of banks with over 10,000 employees at the time of case study selection.

Thus, these firms can all be classed as large organizations with the number of employees ranging from 10,000 to over 40,000 (1988 figures). All had either undergone, or were still undergoing, major organizational structural changes in either the year before or the year of data collection from the executive managers (1988-89). Each was either heading towards, or had achieved, a divisionalised structure with different products and/or geographical areas constituting the rationale for the creation of Business Units.

The changes in the regulatory environment of Australian banking in the period under study coincided with significant developments in information technology which have changed the face of banking. The period since deregulation in 1985 has seen 'a fierce computer race . . . . such that the bank with the best technology could well end up being the best bank' (James, D., 1989:27). Australian banking's adoption of technology reflects the differences between Australian banking and that of most other countries (Tellzen, 1988). Australia's geography and the vast size of the continent has meant that banks, which generally operate on a national basis, have a heavy reliance on telecommunications. At the same time, Australia has a banking system which is more centralised than that of most other countries.

The combined effects of deregulation and technology developments have resulted in a period of considerable change. In such an environment, strategy making is essential (Ansoff, 1988). Thus, the industry area which became the focus of this study, Australian banking, provided a very fertile area for the analysis of business and information strategy alignment.
4.6 Executive Manager Perspectives

As established in Chapter Three, the role of executive management in supporting and championing information services developments is seen consistently as a factor in the effective management of information resources and technology. However, pertinent studies generally limit their data collection to the views of information systems managers and do not seek to gain the perspective of other senior managers or Chief Executive Officers (CEOs).

In a study aimed at exploring the alignment of business and information strategy, an empirical investigation involving the perspectives of senior managers was considered an essential and key component. Executive managers are 'strategic actors' and provide major and significant input at strategic planning and organization-wide decision making levels.

According to the 'upper echelon' perspective of organizations, organizational outcomes largely reflect the values and selective perspectives of top executives (Hambrick and Mason, 1984). Senior managers can and do substantively affect the content and character of an organization's activities (Romanelli and Tushman, 1988). While this study does not take this view to extreme conclusions, it is logical to accept that the perspectives of senior managers are a source of important variation between firms (Thomas, 1988). As information technology begins to pervade the products and services of a firm, as is the case in banking, executive managers' views about investment in I and IT and their support for developments, become more instrumental in shaping the information and information technology strategy and usage in a firm (Parsons, 1983; Bakos and Treacy, 1986; Clemons and Row, 1988).

Developing feasible data collection procedures which take into account these perspectives involves overcoming genuine constraints: firstly, the understandable reluctance of senior managers to permit researchers to 'get too close' to the formulation and communication of strategy; and secondly, scheduling and availability constraints (Jarvenpaa and Ives, 1990). Both of these were overcome, to a significant degree in this study, by a two-stage process of data collection from clusters of executive managers and a guarantee of confidentiality concerning the specifics of strategic decisions.
The sources of data used in this study included a self-administered questionnaire and focused interviews with four or five executive managers in each of four organizations. The participants included the most senior managers responsible for Information Systems/Technology, Strategic Planning and the Executive Managers of two major Divisions. These were generally the executives who reported at Board level on Retail Banking and on Wholesale, Corporate and/or Commercial Banking. Almost all of the participants reported directly to the CEO, and were members of the 'Executive Committee' (or similarly named group). Thus, the participants constituted a very significant group of 'key actors' in the development and implementation of strategy in each of the firms.

4.7 Documentation Analysis

Several different approaches are possible in identifying both business and information strategy in a large and publicly listed firm. Possible data sources include the executives and planners involved (as outlined above), and the examination and analysis of confidential and also publicly available information resources. All three forms were used in this study in order to develop as rich a picture as possible of 'intended' and 'realized' strategy in each of the firms.

Analysis of Annual Reports provides a 'consistent set of windows from which an observer can watch as strategy evolves or comes unglued' (Jarvenpaa and Ives, 1990:1). Pfeffer (1981) and Jarvenpaa and Ives (1990) have called for greater use of the chairman's letter in Annual Reports as a source of 'objective' data and as a research window into the highest levels of publicly traded corporations. The Chairman's letter has been seen as providing evidence comparable to that of interviews, with a high level of objectivity (Bettman and Weitz, 1983). Though the point may be argued that the annual report is a public relations vehicle, it is subjected to considerable internal and public scrutiny and is a statement signed by the CEO who could not then disclaim its contents (Salanick and Meindl, 1984). Ginsberg believes that the content of these letters are important observation points for strategy research (Ginsberg, 1988).

In their study of the CEO's perspectives on strategic IT, Jarvenpaa and Ives (1990) studied the Chairman's letter to shareholders in 649 annual reports of 88 firms published between 1972 and 1987, with all reports from 1982 to 1987 being
examined. The letters were analyzed to evaluate the state of strategic information technology (IT) from the viewpoint of the firms CEOs. The methodology involved the counting and assessment of the nature of IT phrases in the letters. The number of IT-related phrases in the CEOs' letters to the stockholders was positively correlated with the firms' yearly net profits as a percentage of sales (and growth in assets for the banking sector).

This study indicated that the CEO's letter is a useful research tool for analyzing the relationship between 'strategy and information technology, and also perhaps the relationship between strategy, IT and organizational performance'. The researchers argue that the methodology is replicable and provides a means to identify the perspectives of executive-level management in a format that is 'readily available, longitudinal, and somewhat consistent across publicly held firms' (Jarvenpaa and Ives, 1990:20).

In this study, an adaptation of the Jarvenpaa and Ives methodology was used to examine the number and nature of information and information technology (I & IT) related phrases in Managing Directors' letters over five years of annual reports in each of the five banks. (Note: the researcher originally had access to an earlier version of the Jarvenpaa and Ives paper). The fifth is included on this occasion because the documentation is publicly available. In the Australian context, the Chairman and Managing Director (MD) are two different positions, occupied by different people, with the MD acting as CEO. It is the MD's letter which usually constitutes the more extensive and considered 'Review of Operations'. The position of Chairman of the Board of Directors is a part-time appointment and the Chairman's letter usually consists of no more than two pages of overview and highlights of the bank's financial position.

In this study, then, the MD's letter to shareholders provided a perspective from the CEO, which has the advantage of being readily available and providing longitudinal input across all the firms. Section 5.7 explores the methodology and its application in more depth.

While the annual report input provides a publicly accessible outline of 'realized strategy', current strategic planning documentation in the firms would be expected to provide a description of 'intended strategy' and be considerably more explicit and detailed. If access was available to such documentation, it would provide very valuable input to the identification both of the content of firm business strategy and
of the way in which the strategic planning process functioned in the different organizations. Such documentation would be examined to assess the extent and nature of information and information technology considerations at the highest level in the firms' planning and decision making processes. Again, both the content of references to I & IT and the format of such references would provide further indications of the way in which firms intended to link business and information strategies.

During the process of data collection in the firms it was anticipated that other documentation of relevance to the focus of the study would be made available or requested. Such documentation might include information systems or technology plans, organization charts (in addition to the lists and minimal charts sometimes appearing in annual reports), internal presentations on matters related to business and/or information strategy alignment, job descriptions and other statements of responsibility.

Thus, this study sought to bring together and analyze publicly available and confidential documentation in order to provide a substantive base of matters related to business and information strategy alignment in each of the firms. This documentation would provide further 'sources of evidence' to enable the examination of contemporary phenomena within real-life contexts (Yin, 1981).

4.8 Assumptions and Limitations

This study assumes that

1. the alignment of information strategy with business strategy is desirable

2. examples of information and information technology-based comparative advantage exist in some large organizations in the Australian banking industry

3. executive managers in the selected industry area are willing to participate in a study which examines these uses

4. access to strategic planning documentation will be available
The limitations of this study are

1. the small size of the population of organizations which were the subject of the empirical case study analysis

2. its limitation to one industry

3. the industry studied is essentially a highly competitive oligopoly

4. reliance, in some parts, on the memory and recall capacity of executive managers

4.9 Research Design Summary

This study involves an examination of business and information strategy with particular reference to the nature and extent of information-based comparative advantage, and organizational factors which might have fostered these developments. The research is hypothesis generating rather than hypothesis testing, aiming to develop grounded hypotheses.

An extensive range of conceptual and research-based literature was examined to provide theoretical frameworks for the exploration of the question: 'What organizational factors might contribute to the better alignment of business and information strategy?' This was followed by an empirical case study analysis of Australia's major banks. The financial services sector is very information intensive and is highly dependent on information technology as its core technology. This is even more so in the case of Australia for geographic and historical reasons related to the evolution of national savings and trading banks. The research design sought to gain multiple sources of evidence in a 'leading edge' industry area.

The research approach used in this study will make a significant contribution to the research-based literature of business and information strategy alignment through its use of a combination of empirically-based data collection methods in an indepth analysis of a leading edge information intensive industry area. These incorporate a senior manager perspective involving clusters of both executive and information
managers in the data gathering process, and the examination of high level strategic planning documentation.

Chapter Five outlines the procedures followed in the collection of the case study data: the development of instruments and the processes involved, access to case study sites, the analysis of annual reports for the firms and the examination of strategic planning and other confidential documentation.
5. EMPIRICAL DATA COLLECTION PROCEDURES

5.1 Information Required from Firms

The achievement of the aims of this study involved identifying, in each organization:

1. the strategic orientation of the organization
2. the strategic planning processes in place
3. the nature and extent of the uses of information for comparative advantage
4. the rationale, evolution and strategy orientation of those uses
5. the views of senior managers concerning major information issues, problems and areas for further investment
6. the organizational arrangements for information services
7. the extent and nature of the interrelationship between information services planning and business strategy planning

This information could not be gleaned from one source of evidence and, thus, several sources of evidence were sought and obtained.

This section will first describe the development of data collection instruments for the senior manager perspective (Sections 5.2 to 5.5). This is followed by the procedures for access to and examination of, the strategic planning documentation (Section 5.6), and an explanation of the methodology used to analyze the five years of annual report data in each of the five firms (Section 5.7).
5.2 Preliminary Interviews

As argued in Section Four, in the present 'pre-scientific' stage of development of research in the business and information strategy alignment area, the most appropriate methodology was one which involved gaining a richness of data in order to identify intelligible and meaningful patterns. Lack of precise, shared and uniform terminology, together with problems of confidentiality, indicated that the most valid and reliable form of gaining a senior management perspective was by direct personal contact with managers. This type of situation enabled terminology to be checked and explained where necessary, and sensitive matters related to strategic considerations could be clarified.

Two instruments, a Preliminary Response Form and an Interview Schedule, were evolved, trialled and amended over a six month period. The development of the two instruments, and their content and wording, needs to be viewed and evaluated concurrently, as, in conceptual terms, they form a sequential and integrated data collection process.

The industry analysis phase resulted in the decision to undertake the major part of the study in the banking industry area. Because of the limited population of large organizations (over 10,000 employees) which could become case study sites, it was decided to undertake the trialling of the data collection procedures in another industry area.

As the Petroleum industry met many of the criteria for inclusion in the study, the preliminary trialling was undertaken in the headquarters office of the Australian subsidiary of a multinational Oil Company (to be known as ABC Oil in this study). ABC Oil was chosen over two other possibilities because of known developments in the business and information strategy area, and the willingness of ABC Oil to be involved in a study of this type.

The trial data collection procedures began with one instrument only for executive managers, a Draft Interview Schedule. This Interview Schedule sought input from participants on the company environment and structure, perceptions of information and information policy, strategic uses of information technology and information resources and their background and rationale, successful information services and questions related to the information services infrastructure and systems development processes. This Schedule was developed and refined from the
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