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Mergers and Acquisitions in the Construction Industry: An Exploratory Study

Patricia Carrillo

A thesis submitted in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy of Loughborough University.

April 2001
Abstract

Mergers and Acquisitions (M&A) are major strategic initiatives undertaken by many organisations. Within the construction context, these have been used, amongst others, to accelerate growth, reduce the effects of the construction cycle, enter into new markets, and spread risk. During the last decade, M&A were recognised as the preferred vehicle for expansion into the global construction market. Major European and international construction organisations use mergers or acquisitions to increase their geographical coverage and business portfolio.

Mergers and Acquisitions impact on a number of organisational dimensions ranging from 'soft' issues such as organisational culture to 'hard' issues such as IT integration. Four specific aspects of mergers and acquisitions are investigated within this thesis. These are as follows:

- Strategy, Business Portfolio and Performance Measurement of construction organisations and the impact of M&A on subsequent performance;
- The Acquisition Strategy adopted for entering emerging markets such as Central and Eastern Europe;
- The Impact of Mergers and Acquisitions on construction companies' Information Systems and Information Technology (IS/IT); and
- An Investigation of Knowledge Management Strategies for organisations that have undergone mergers and acquisitions.

The thesis adopts a qualitative research methodology. An extensive literature review was conducted on mergers and acquisitions with particular emphasis on its use within the construction sector. The literature review provided a sound basis for theory development and identified areas in which further understanding was required. A multiple case study approach was selected for each of the four aspects studied and the data was obtained using semi-structured interviews. Based on the case study data, analysis and discussion were conducted resulting in conclusions for each of the four aspects investigated.

The research concluded that Mergers and Acquisitions were an important vehicle for construction organisations to achieve growth, and expand geographically into new markets and new sectors. However, the implications of mergers and acquisitions need to be understood and the processes before, during and after the merger or acquisition is finalised need to be carefully planned and communicated to the relevant parties. Mergers and Acquisitions can offer tremendous advantage to an organisation and several recommendations are made regarding how the process may be improved within the construction context.

Keywords:
Mergers, acquisitions, strategy, construction organisations, information systems, knowledge management.
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Chapter 1 Introduction

This chapter describes the work undertaken for this research within the field of mergers and acquisitions in the construction industry context. It provides a background as to why construction mergers and acquisitions are an important area of study, identifies the aim of the research and the objectives used to achieve this aim. The chapter also provides a summary of the research methodology adopted and the structure of the thesis.

1.1 Background

Mergers and Acquisitions (M&A) have been a major strategy adopted by many organisations and have therefore attracted the interest of academic researchers and business analysts. There is disagreement on the definition of the terms 'Mergers' and 'Acquisitions'. Reuters (1992) *Glossary of International Economic and Financial Terms* described a merger as 'the fusion of two companies or, sometimes, an acquisition of one company by another'. Stewart *et al.* (1963) described a merger as 'an acquisition that takes place with the agreement of the board of the acquired company'. Jones (1982) described a merger as 'a marriage of two companies, usually of roughly the same size with an inherent willingness to co-operate'. Bengtsson (1992) adopted a realistic approach and stated that most companies use the terms loosely and interchangeably, and are most likely to settle on a term which is likely to be best received by the business world, confuse competitors, and protect their products. The terminology 'Mergers and Acquisitions' is used jointly to indicate a change in company ownership without alluding to the conditions of the transaction i.e. it could be either a merger or an
acquisition. In this thesis, the composite term ‘Mergers and Acquisitions’ will be used to denote the friendly amalgamation of two or more companies.

The global construction market is a rapidly changing, increasingly competitive environment. Construction companies are continuously entering new geographical markets and offering a wide range of multi-disciplinary services, of which the actual construction process may only form a small part. This inherently means that the size of construction organisations is continuously changing. Some authors have predicted the polarisation of the global construction market into large, international organisations and small specialist companies. This is already happening to a certain extent in Europe, particularly in France and Germany. Additionally, within the UK, financial investors discontent with the very poor profit margins of construction companies have been encouraging such companies to undertake M&A in an attempt to reduce capacity. Additionally, company size is important for companies intending to compete on a global basis and for capital intensive Private Finance Initiative (PFI) or Public Private Partnership (PPP) work. During the last decade, M&A was recognised as the preferred vehicle for expansion into the global construction market.

Very few construction management researchers have investigated the field of mergers and acquisitions. When the terminology is mentioned, M&A is described as a useful strategy to accelerate company growth, to enter into other markets, and to spread risk. To date, no evidence has been found of authors investigating the M&A process and its organisational impact within the construction context. Within the business sector much attention has been focused on mergers and acquisitions. However, the focus has primarily been on the short-term financial performance of the merged or acquired companies. Construction companies are becoming much more strategy-
oriented and, increasingly, they are investigating a number of strategic options in an
effort to remain competitive.

M&A is a key strategy option for companies to increase their size and diversify
their range of services. However, decisions on M&A are not to be taken lightly because
(a) it has a high reported rate of failure and (2) it impacts on a wide range of the
organisation’s activities. A number of researchers refer to an M&A failure rate of
approximately 50%. This is failure in terms of financial performance where the
resulting company fails to perform as anticipated. This has led to an anomaly since,
despite these widely publicised negative findings, a large number of companies continue
to participate in M&A. A possible explanation for this is offered in Section 2.6.2.
Additionally, M&A impact on a number of issues that need to be considered early in the
negotiation phase to facilitate the implementation of change management processes.
These issues range from ‘hard’ issues such as rationalisation of financial and personnel
systems to ‘soft’ issues such as changing company culture. M&A decisions should
therefore be based on a clear understanding of the organisation’s long-term strategy and
the culture of the target organisation. It is therefore timely to investigate construction
mergers and acquisitions from a strategic perspective and to analyse the impact on key
parts of the organisation.

1.2 Aim and Objectives

Research into mergers and acquisitions in any given business sector can cover a
multitude of subjects. The aim of this research is to investigate the impact of mergers
and acquisitions on specific areas within the construction industry context. An
extensive literature review was conducted to identify key issues upon which to focus. These issues constitute the specific objectives of the study:

1. To investigate the importance of mergers and acquisitions to the construction industry;
2. To investigate how construction companies undertaking mergers, acquisitions and divestments devised corporate strategy, developed their business portfolio and judged their subsequent performance;
3. To investigate UK construction contractors’ acquisition strategy for emerging markets. The Central and Eastern European Countries (CEEC) was selected as such an emerging market to provide a focus for the study;
4. To investigate the strategy for implementing changes to a company’s Information Systems and Information Technology (IS/IT) post merger/acquisition;
5. To investigate the Knowledge Management strategies adopted by construction companies following a merger/acquisition; and
6. To draw conclusions from the above studies and to make recommendations for how the mergers and acquisitions process can be enhanced for construction organisations.

1.3 Research Methodology

The research project investigates different contemporary research methodologies. A qualitative research methodology is adopted and justifications are provided for this approach. A descriptive, multiple case study approach is selected for each of the four aspects of mergers and acquisitions studied. The use of the case-study approach is widely investigated. Its advantages and disadvantages are explored and steps are taken
to minimise any negative impact on the findings. The data were obtained using semi-structured interviews with key personnel within each case study company. Based on the case study data, analysis and discussion are conducted resulting in conclusions for each of the four aspects of study. A more detailed description of the research methodology is provided in Chapter 3.

1.4 Structure of the Thesis

This research covers a number of related issues. Consequently, the thesis is subdivided into a number of chapters, each covering a specific topic as follows:

This chapter provides a background to the work conducted in the area of mergers and acquisitions within the construction industry context. It states the aim of the research and the objectives used to achieve the stated aim. The chapter also provides an overview of the research methodology adopted and the structure of the thesis.

Chapter 2 presents a literature review on the contextual issues for mergers and acquisitions. The chapter identifies the drivers for change within the construction industry that have resulted in the increase in occurrences of mergers and acquisitions. It places this within the context of strategic management and the historic and current view of mergers and acquisitions within construction organisations.

Chapter 3 describes the research methodology adopted. It first reviews the different types of methodologies available and provides the justification for the adoption of a particular approach. This involves highlighting the approach's advantages and disadvantages. The steps taken to minimise the impact of the disadvantages are stated. The chapter then describes the research model used and provides a detailed account of the various steps taken to implement this model.
Chapter 4 covers the first of four aspects of mergers and acquisitions identified for further investigation. An organisation will have to decide whether it should pursue diversification through mergers and acquisitions or concentrate on niche markets and divest of non core-activities. The chapter investigates the acquisition and divestment strategy adopted by three major British contractors. An analysis is made of their business portfolio, based on acquisitions and divestments made during 1996/1997, and how they judged their subsequent performance.

Chapter 5 covers the second issue, that of UK contractors' acquisition strategy for emerging markets. Should an organisation decide to diversify through acquisitions, it must then decide on the markets on which to focus. The chapter justifies why a certain region was targeted and provides details of five top UK contractors' approach to acquiring companies in a new market. It also identifies the perceived barriers to making acquisitions in the new market.

Chapter 6 covers the third issue identified by the literature review. Once an acquisition is made, the company will need to modify some of its systems to correspond with the degree of integration between the acquiring and acquired organisations. This chapter investigates the impact of mergers and acquisitions on construction companies' Information Systems and Information Technology (IS/IT). It examines the role of IS/IT within a construction organisation and the drivers for rationalising or integrating the company's Information Systems post-merger/acquisition. It also provides guidelines and presents a model for implementing IS/IT changes within construction organisations.

Chapter 7 covers the final issue, that of Knowledge Management. It investigates Knowledge Management (KM) Strategies within the context of construction organisations undertaking mergers and acquisitions. The CLEVER Framework (developed at Loughborough University) is used as a mechanism for studying four
aspects of Knowledge Management within the case study companies. The chapter investigates how organisations can collate and deploy the bodies of knowledge held in the two separate organisations for maximum competitive advantage.

Finally, Chapter 8 reviews the aim and objectives of the research project and discusses the extent to which they have been achieved. It also reviews the findings of each of the issues investigated and collates these into a number of conclusions concerned with how construction companies can improve their performance when undertaking mergers and acquisitions. Recommendations are then made regarding possible areas for improvement within the construction industry and for future research in mergers and acquisitions.
Chapter 2  Contextual Issues for Mergers and Acquisitions

This chapter introduces the importance of mergers and acquisitions to the construction industry as well as its advantages and disadvantages. The chapter then investigates strategic management within the construction industry with emphasis on the strategy for growth through mergers and acquisitions. A review of historical and current views on mergers and acquisitions within the construction sector is then provided.

2.1 Introduction

As part of a company's expansion plans, one option for growth is the use of mergers and acquisitions. It may form part of an internationalisation strategy that offers many advantages. However, it is also a high-risk option with about 50 percent of acquisitions considered failures by some measure (Kitching, 1967; Bleeke and Ernst, 1991). Rockwell (1968) stated that there is only one valid all-encompassing objective for making an acquisition: to produce increased earnings for the stockholders of both companies. Howes (1986) identified the main reasons for mergers and acquisitions as growth, market entry, diversification, improved operating efficiency and profitability. Cooke (1986) explained that the motives for M&A are complex and change over time. These may include creating synergy between firms, reduction of capacity, generating growth and increasing market share. Schriener and Angelo (1995) identified the main objectives of an acquisition as follows:
• growth
• organisation development
• customer demands
• customer base
• vertical integration

Fellows et al. (1983), Friedman (1984) and Ball (1988) have documented the reasons for M&A occurring within the construction sector. These are as follows:

• Speed up growth;
• Reduce effects of construction cycles in a single area;
• Stabilise a market position;
• Avert a threatened decline in turnover or profit;
• Spread risk by developing a broad portfolio;
• Save time to develop local knowledge and contacts in new geographical areas and project markets; and
• Afford opportunities for people in parent company.

Fellows et al. (1983) argued that M&A was a conservative policy since acquiring a going concern avoided start-up problems and costly mistakes. Within construction there has been a constant stream of acquisitions, mainly targeted at small and medium-sized firms. However, within the last decade there have been a number of high-profile M&A involving large UK organisations to diversify their activities and become integrated architectural, engineering and construction (AEC) firms (Betts and Ofori, 1992).
2.1.1 Advantages of Mergers and Acquisitions

Howes (1986) found that the main advantages of mergers were the speed in which growth could be achieved with immediate access to new customers and the access to a new company. For construction organisations, Hasagawa and the Shimizu Group (1988) summarised the advantages as follows:

1. the organisations supplemented each other by combining their respective marketing areas, potential clientele, technological capabilities and office networks;

2. the total office administration costs, research and development costs and purchasing and leasing costs may be reduced; and

3. the new company’s customers and the business community may perceive the larger company as more reliable.

Mergers and acquisitions offer a solution to cope with the changes within the global construction environment. These changes have encouraged the growth of organisations to undertake a wide range of construction services as will be shown in a later section (Section 2.3).

2.1.2 Disadvantages of Mergers and Acquisitions

Although many articles propose mergers and acquisition as a mechanism for growth, there is equally a large body of literature that suggests that the financial performance of firms post merger/acquisition fall below expectation of the financial market and shareholders. This subject of Performance Evaluation is discussed in greater detail in a later section (Section 2.6).
Other key considerations in M&A may be divided into the three categories of Process, People and Technology. The related Process disadvantages include the need to modify existing work processes e.g. organisational arrangements to fit the new organisation. The disadvantages under the People category consist of issues such as the threat of redundancy due to the duplication of posts, the associated difficulties in moving from a smaller to a larger organisation and differences in organisational culture. This may be particularly relevant when cross-border M&A is involved and national culture comes into play. The disadvantages falling under the Technology category include the time and cost incurred for the modification the organisation’s systems (e.g. financial, human resources, information, etc.), to provide one coherent system acceptable to all parties.

Irrespective of the above advantages and disadvantages, the construction sector is a dynamic environment. At present, there are several drivers for change that are forcing organisations to consider mergers and acquisitions as a strategy to position themselves, in terms of organisational size and portfolio of work. These are justified in the next section.

2.2 Drivers for Change

A number of economic and structural changes took place during the 1990s that have had a profound impact on the UK construction sector. The recession in the early 1990s led to over-capacity within the industry. Too many firms were chasing too few contracts. This led to practices such as bidding below costs and transferring risks to sub-contractors in an effort to stay in business. The publication of reports such as Latham (1994) and Egan (1998) caused a critical examination of the state of the industry. Based on these two reports, a number of initiatives, supported by the UK
government, were set up to improve the image and performance of the construction industry. Latham's report *Constructing the Team* highlighted the ills of traditional tendering and promoted new forms of procurement such as the New Engineering Contract (NEC) and partnering with long-term strategic alliances to bring benefit to all stakeholders. Partnering encouraged organisations to eliminate adversarial relationships between stakeholders through the use of open, transparent relationships. It also required construction organisations to commit to continuous improvement in an effort to improve performance (Reading Construction Forum, 1995). Simultaneously, the government's promotion of Private Finance Initiative (PFI) projects to lessen the tax burden ensured that even the top contractors had to adopt long-term strategic planning and create alliances with other funding organisations.

Another driver for change is the Egan Report (1998) *Rethinking Construction*, which highlighted further problems within the industry. Egan adopted a customer perspective and focused on the industry's underachievement in terms of low profitability, low investment in capital, research and development, training, and the dissatisfaction of clients. He promoted drivers for change, ways of improving the project process and targets for improvement, now known as the 5-4-7 principle. These are the 5 Drivers for Change, the 4 Project Process Improvements, and the 7 Targets for Improvement as shown in Figure 2.1.
Despite the construction industry’s initial scepticism (Anon, 1998a), the industry has embraced the need for change and the initiatives undertaken by the Construction Best Practice Programme (CBPP) and the Movement for Innovation (M4I) are seen as success stories. Other outcomes such as the formation of the Construction Industry Board (CIB) as an umbrella organisation for all construction stakeholders attempt to lessen the degree of fragmentation within industry, and implement both the Latham and Egan reports’ recommendations.

Egan’s Report highlighted the sophistication of some major clients both in terms of their knowledge of the industry and their expectations of the end product. The clear message from Egan and from the industry’s influential clients was that construction organisations have to operate strategically and modify their operations to survive in the changing environment (Anon, 1998b). With this in mind, many of the more pro-active organisations are formulating strategies to maintain their competitiveness.
2.3 Strategic Management

Ansoff’s (1965) seminal work stated that a firm needs a well-defined scope and growth direction. Several authors recognise the shortcomings of strategic planning in the construction industry. Male (1991a) and Chinowsky and Meredith (2000) acknowledged that a lot of work has been done on project management but little has been done on the wider scope of the management of the firm. However, Veshosky (1994) expected the long-term relationships formed between AEC firms are likely to reduce the short-term project focus. Muspratt (1984) described the lack of sophistication in strategic planning and Schleifer (1990) documented the industry’s lack of formal long-terms plans. Betts and Ofori (1992) recognised strategic planning as still being a low-profile activity within construction and described its main hindrances such as little opportunity to differentiate the construction product, the occurrence of many small construction enterprises, the disregard for ‘previous experience’ because each construction project is considered unique and the management-intensive nature of construction activity.

Hillebrandt and Cannon (1990) found most managers in contracting firms were unaware of the important role that economics, management science and sociology can play in improving management. This is not surprising since Brewer (1997) pointed out that most of the senior managers and directors in the construction sector are generally not trained ‘career’ business managers but were trade and professional people who were elevated to management as a result of success in quite unconnected skills and experience. Hillebrandt and Cannon also found many contractors have been encouraged by management consultants and other advisors to undertake strategic planning. Gradually some organisations are recognising the need for long-term strategic planning and subsequently training their middle and senior management in business management.
Betts and Ofori (1992) argued that the highly dynamic construction sector with changing operating environment, industry sectors and product requirements required more sophisticated and systematic corporate planning. They also observed a significant and dominant structural shift in the emphasis of business planning from the tactical to the strategic and a shift away from internal concerns with narrow performance criteria (e.g. Return On Investment) to external concerns (e.g. value and competition in global markets).

2.3.1 Definition of Strategy

Andrews (1987) defined Corporate Strategy as the pattern of decisions in a company that determines and reveals its objectives, purposes, or goals and produces the principal policies and plans for achieving those goals. Corporate Strategy addresses three basic questions:

- What set of businesses are we in?
- What set of businesses should we be in? and
- How should the businesses be managed in order to fully enhance the organisation’s ability to achieve its strategic objectives?

Johnson and Scholes’s (1997) definition of strategy highlighted a number of factors that need to be considered in devising a strategy:

*Strategy is the direction and scope of an organisation over the long term: which achieves advantage for the organisation through its configuration of resources within the changing environment, to meet the needs of markets and to fulfil stakeholders expectations.*

Langford and Male (1991) defined strategy as a set of rules for guiding decisions about organisational behaviour. Chinowsky and Meredith (2000) defined strategy as
the underlying concept that responds to, or anticipated, industry conditions for the purpose of developing long term plans'. Strategic Management provides the environment that encourages the development of strategic concepts. Chinowsky and Meredith (2000) identified three issues that form the need for a strategic management perspective in construction organisations:

- knowledge workers;
- new markets; and
- information technology.

Firstly, the construction industry is witnessing the emergence of knowledge-based tasks as a central focus in organisational operations. The construction environment is changing from one which relied on professionals skilled in one specific area to an environment in which employees are expected to develop new skills with the emerging focus on technology, automation, economics and market development. The industry is increasingly reliant upon knowledge workers because the ability to access information from a wide variety of sources has become critical. Secondly, traditional organisational boundaries no longer apply and thus the entire life cycle of a construction project presents opportunities to provide professional service. Thirdly, the information revolution impacts on all aspects of construction by allowing individuals to communicate electronically regardless of profession, rank or geographical location. It impacts on interoffice communications, client relations and site management. Thus there is compelling reason to address strategy within construction organisations.

Having a strategy does not guarantee success, but, if a business is run efficiently and competently, having a strategy should enhance and improve its resilience to a hostile environment (Lansley, 1987; Fellows et al., 1983). The formulation of strategy is the responsibility of senior management. Boseman and Phatak (1989) suggested
there are no set rules for selecting a strategy but judgement and experience are a vital consideration. A number of factors should be considered in strategy selection. They are divided into internal considerations (resources, strengths and weakness, etc.) and external considerations (competition, socio-political interaction, etc.). Houlden (1996) also suggested the formulation of a strategy depended on the type and size of a business, its structure and its style of leadership. Andrews (1987) advised strategy should be approached rationally. Before an organisation's choice of strategy can be made, its strengths and weaknesses should be appraised together with the resources available. In deciding on the formulation of strategy four components should be considered as follows:

- Identification of opportunity and risk;
- Determining the organisation's material, technical, financial, and human resources;
- Personal values and aspirations; and
- Acknowledgement of non-economic responsibility to society.

Male (1991a) proposed strategy for a contracting firm involved issues such as the type of client - both existing and potential, the range of projects, the impact of the economy, relationships with suppliers, new competitors and new services the firm could offer. He also pointed out that a lot of strategic management theories have originated from the manufacturing industry and these economic and organisational theories do not easily apply to construction without adaptation. Ramsey (1989) offered support by saying that many strategies have been turned upside down and some may have little relevance. Betts and Ofori (1992) recognised a structural shift away from tactical considerations towards more strategic planning. One way of observing this can be seen in Edum-Fotwe's (1995) content analysis of the strategic focus of twelve major contractors' Mission Statements during the late 1980s and early 1990s. At the time.
Edum-Fotwe found that contractors strategic focus concentrated on 1) service and markets, 2) location and geographical spread, 3) economic survival and profitability, 4) philosophy and values, and 5) strengths and weaknesses.

### 2.3.2 Strategy Models

A number of strategic planning models have been developed to provide specific instructions on approaching, executing, evaluating and developing strategic concepts (Mintzberg, 1994). The following provides an overview of these in relation to the construction context.

#### 2.3.2.1 Competitive Strategy

Porter’s (1980) seminal work on competitive strategy is widely quoted in literature. His Five Competitive Forces diagram identified the drivers within an industry that determine competitiveness, and hence profitability as illustrated in Figure 2.2.

Langford and Male (1991) translated these forces into terms relevant to the construction sector. *Buyers* (i.e. Clients) are powerful in their ability to influence profit margins and the choice of procurement as seen by major clients such as BAA and the Ministry of Defence (Knutt, 1998a). The industry’s *Material Suppliers* are a powerful lobby that depends on the input from other industry. *Potential Entrants* are the new competitors entering the industry, whether through the acquisitions of UK firms or new UK offices, both of which have been experienced recently. *Substitutes* are the new forms of procurement, such as partnering, design and build, and PFI. *Industry*
Competitors are an on-going threat with the documented over-capacity within the industry with too many firms pursuing too few jobs.

Figure 2.2: Porter's Five Forces
(Porter, 1980)

Porter (1985) identified three generic strategies based on competition:

- Cost leadership – the organisation sets out to become the low-cost producer in its industry. This is difficult to effect in construction given the peculiarities of different forms of procurement;

- Differentiation - the organisation seeks to be unique in its industry along some dimensions that are valued by buyers. This is occurring in construction with some organisations developing niche markets; and

- Focus - the organisation selects a part of the industry and tailors its strategy to serving them to the exclusion of others. Some
organisations (e.g. Wimpey) have done this but it is considered high risk to focus exclusively on one market segment.

Langford and Male (1991) argue that the Focus strategy employs either Cost or Differentiation and thus there are only two major generic strategies. Based on these generic strategies there are a number of strategic directions an organisation may take (Langford and Male (1991):

- Opt for operational changes;
- Consolidate or stabilise;
- Retrench;
- Penetrate existing markets; and
- Diversify.

2.3.2.2 Deliberate vs. Emergent Strategies

Mintzberg (1994) distinguished between two types of strategies - *deliberate* and *emergent*. Deliberate strategies are those which have been realised from an intended strategy. Emergent strategies are those which are due to action taken, one by one, which converged in time to some sort of consistency or pattern. Mintzberg stated few strategies could be purely deliberate or purely emergent. He used the term *umbrella* strategies whereby broad outlines are deliberate while the details are allowed to emerge within them. There is growing evidence that construction companies adopt emergent strategies on a regular basis because of market shifts and to protect their profitability.
2.3.2.3 Short-Term vs. Long-Term Strategies

Harvey and Ashworth (1997) distinguish between the strategies adopted by UK and continental European contractors. In the UK, all the large contractors are owned by shareholders who use dividend growth (i.e. earnings per share) as a measure of their support. Shareholders normally take a short-term view with regard to company performance. Companies that do not achieve adequate growth are therefore vulnerable to take-over. In contrast, in most continental countries, with the exception of the Netherlands, long-term investors own most of the companies. This long-term view means that continental companies are not as pressured to provide short-term strategies and profits for their shareholders as the UK companies. Their sheer size and diversity means that they weather the economic cycles.

Organisations are now adopting a number of these directions. For many organisations globalisation is a threat and growth is a key strategy to maintain sustainable competitive advantage.

2.3.3 Strategic Objectives

Warszawski (1996) recommended that construction organisations’ strategic planning should consider the company within the context of the business environment, namely the construction market and the general economy. He also suggested that company’s objectives should have specific economic goals such as:

1. Increased profitability:
2. Increased growth; and
Chinowsky and Meredith (2000) proposed that strategic management in the context of construction organisations comprised seven areas as shown in Figure 2.3:

- Vision, Mission and Goals – to determine direction in which to go;
- Core Competencies – the business boundaries for an organisation, to establish what the organisation does best and where its strengths resides;
- Knowledge Resources – the combination of human and technology resources required for projects;
- Education – information and lifelong learning to understand the evolving business condition;
- Finance – a broad focus on monetary concerns;
- Markets – expanded business opportunities that are related to core competencies; and
- Competition – a focused analysis and understanding of existing, emerging and future competitors in both existing and potential market segments.

![Figure 2.3: Seven Areas of Strategic Management](image)

(Chinowsky and Meredith, 2000)
2.3.4 Strategic Strengths and Weaknesses

Chinowsky and Meredith (2000) conducted a study of the US's Top 400 Contractors' strategic management practices. They identified a number of areas that industry was addressing in a positive manner and strategic areas that needed greater emphasis. They found positive indicators in technology and market awareness, and that companies were aware of the need to integrate technology to support knowledge workers. Companies were also aware of the need for market expansion and that a company that continued to focus on narrow markets may become vulnerable with market shifts. The study indicated that education and competitive position needed greater emphasis. The authors found that little attention was given to continuing the education of middle and upper-level employees. The survey indicated that whilst companies recognised the importance of new markets and opportunities, they had difficulty in identifying ways to protect existing market positions.

2.4 Growth in Construction Organisations

2.4.1 The Need for Growth

Howes (1986) argued that firms that do not grow do not merely stand still but stagnate and die. There is no doubt that growth is a key issue amongst construction companies. Friedman (1984) stated growth was important for financial survival. Hillebrandt and Cannon (1990) listed reasons for growth such as increased cash flow and a global operation. Lavender (1996) identified reasons such as maximising profits, reducing competition, ability to undertake very large projects, ability to operate in a number of locations and to achieve economies of scale.

Lavender (1996) noted the reason for the emergence of large firms as follows:
• the trend towards very large projects requiring the managerial and technical abilities of large firms;

• the locational nature of construction has enabled the emergence of regional monopolies; and

• the production of materials and components often benefit from economies of scale.

Ball (1988) disputed the economies of scale achieved stating it is more relevant to the manufacturing sector. He emphasised continuous runs are necessary for economies of scale but this is difficult to achieve in construction because the production process come to an end when the project is completed. However, Ball (1988) did acknowledge the substantial economies achieved in marketing and finance in terms of the bargaining power with suppliers, clients and access to funds.

Organisational size is relevant particularly with the advent of Private Finance Initiative (PFI) contracts. These are gaining in popularity with a number of governments as PFI contracts allow public infrastructure to be built using the expertise and the funds from private enterprise. The minimal initial financial output from the government is attractive, particularly for those trying to limit Public Sector Borrowing to qualify for European Monetary Union membership (Construction Europe, 1997). For contractors to be able to take part in PFI contracts, they must be large enough to provide finance for such multimillion-pound projects. Therefore, contracts of this size and complexity can only be undertaken as joint ventures, or by very large companies who have a large technical and financial base.

2.4.2 Methods for Achieving Growth

Schliefer (1990) advocated a carefully planned growth with incremental stages as the best way to control risks. Authors on construction strategy agree that internal

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growth and external growth are two means of increasing in size (Hillebrandt and Cannon, 1990 and 1991; Langford and Male, 1991; Lavender, 1996). Internal growth means a firm invests its own capital and grows incrementally. External growth is a much speedier route to growth using mergers and acquisitions. Hillebrandt and Cannon (1991) discovered that internal growth tended to be planned and external growth more opportunistic. Howes (1986) identified three different types of expansion as follows:

1. horizontal expansion;
2. vertical integration; and
3. diversification.

Horizontal expansion means a firm increased its existing output. In construction terms this would mean winning more contracts within the same portfolio of work. Vertical integration may be backward or forward whereby the construction organisation is involved in other parts of the supply chain e.g. as material suppliers or, alternatively, as post-construction service providers e.g. facility management. Diversification allows a firm to remove the constraints of the market and customers by entering new markets (e.g. one-stop shops for design and build). Any of these forms of expansion may take place either by internal development or by acquisition (Cannon and Hillebrant, 1990; Junnonen, 1998). However, Howes (1986) warned that diversification into totally unrelated markets seem to have a particularly poor record of profitability or survival.

2.4.3 Measurement of Growth

Hillebrandt and Cannon (1990) recommended ways of measuring growth in terms of number of assets, turnover, profits and number of employees. However they pointed out that the key indicator for organisations remained profit, not turnover. Figure 2.4 below shows the growth in terms of profit of the UK’s top five contractors for 1999.
Figure 2.4 shows the companies’ profit margins have remained vertically stagnant throughout the 1990s. Table 2.1 below shows the percentage change in turnover during the same period. Kvaerner and Carillion warrant special attention due to change of ownership and re-structuring. The Norwegian conglomerate Kvaerner acquired Trafalgar House Construction in 1996 and was again acquired by Skanska in 2000. Carillion was previously part of the Tarmac Group but in 1998 became a separate organisation.

![Company Annual Profit (%)](image)

**Figure 2.4: Profit for 1999 UK’s Top 5 Contractors (NCE 1990-1999)**

<table>
<thead>
<tr>
<th>Company</th>
<th>% change in Annual Turnover 1990-1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balfour Beatty</td>
<td>+60.1</td>
</tr>
<tr>
<td>AMEC</td>
<td>+12.7</td>
</tr>
<tr>
<td>Carillion</td>
<td>-0.5</td>
</tr>
<tr>
<td>Kvaerner (now Skanska)</td>
<td>-53.2</td>
</tr>
<tr>
<td>John Mowlem</td>
<td>+5.6</td>
</tr>
</tbody>
</table>
2.5 Performance Evaluation

The performance of mergers and acquisitions is a contentious issue. There is a plethora of academic papers indicating unsatisfactory financial results post merger. Howes (1986) stated there is little doubt that mergers have resulted in significant reductions in the business efficiency of firms in terms of profitability and wealth of the acquiring firm shareholders. Schoenberg (1997) showed that 54% of companies admitted that their acquisition performance was 'neutral to very poor'. Hunt (1990) demonstrated a failure rate of 50% amongst acquisitions. Authors point to a number of areas that may affect the success of mergers and acquisitions e.g. synergy, post-acquisition integration, lack of organisation fit, etc (De Noble et al., 1988). Hitt et al. (1998) described the continued popularity of M&A as a growth strategy in spite of increasing evidence that they often do not enhance the financial performance of the acquiring firm. This led Hitt et al. (1998) to suggest that there was an inadequate theoretical and practical understanding of mergers and acquisitions.

2.5.1 Flaws in Performance Evaluation

Two main flaws have been identified with reference to the evaluation of merger and acquisition's performance. These are:

1. the performance indicators adopted; and
2. the timing of the performance evaluation.

2.5.1.1 Performance Indicators

The focus of many previous studies has been on the financial returns post-merger with little regard to other performance indicators. Hitt et al. (1998) and Côté et al.
(1999) provide comprehensive summaries of the research conducted on merger performance from the 1960s to the 1990s that support the statement that financially, mergers and acquisitions do not perform as anticipated. Even amongst researchers there is debate on the validity of the methodologies and samples used (Hitt et al., 1998). This is even more apparent in light of current thinking where performance measurement needs to be more holistic and include factors other than financial performance such as customers’ views, innovation and learning and internal business processes (Kaplan and Norton, 1996a).

Brouthers et al. (1998) adopted an alternative view to performance evaluation. They criticised the use of single financial indicators (commonly profitability or shareholder value) since these fail to measure the achievement of other goals. They believe that merger performance should be measured against the goals and objectives set by management, not necessarily financial results. This led Brouthers et al. (1998) to identify key success factors in terms of three generally accepted categories for merger motives as shown in Table 2.2 below:

Table 2.2: Categories for Merger Motives
(Brouthers et al., 1998)

<table>
<thead>
<tr>
<th>Economic Motives</th>
<th>Personal Motives</th>
<th>Strategic Motives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing economies of scale</td>
<td>Increase sales</td>
<td>Pursuit of market power</td>
</tr>
<tr>
<td>Increase profitability</td>
<td>Managerial challenge</td>
<td>Acquisition of a competitor</td>
</tr>
<tr>
<td>Risk-spreading</td>
<td>Enhance managerial prestige</td>
<td>Acquisition of raw materials</td>
</tr>
<tr>
<td>Cost reduction</td>
<td>Acquisition of inefficient management</td>
<td>Creation of barriers to entry</td>
</tr>
<tr>
<td>Technical economies of scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential valuation of target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defence mechanism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respond to market failures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creates shareholder value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In a survey of Dutch mergers, Brouthers et al. (1998) found that the priority of motives were firstly Economic, secondly Strategic and finally Personal. Of the total of 17 motives, they found managers indicated a high degree of achievement for 12 of the motives, significant performance was achieved for a further 3 motives and 2 motives achieved no performance gains. Thus they found statistically significant support for the proposition that the merger success was a success if measured against key success factors. Unfortunately, many organisations, particularly those in the UK, believe that the main performance indicator should be financial results and all others are of much lesser importance (Butler et al., 1997).

2.5.1.2 Timing Performance Evaluation

Many studies concentrate on the period immediately after the merger or acquisition and few studies have been conducted on long-term performance. Agrawal et al. (1992) conducted one of the few long-term studies and showed that stockholders of acquiring firms suffer a loss of about 10% over the five-year period post-merger. They also cited previous articles that supported their findings that significantly negative return was obtained up to three years post-merger. M&A are meant to be long-term strategic manoeuvres, therefore examining performance for a short period, post-merger/acquisition appears to be anomalous. Further research is therefore required using a broad range of financial and non-financial indicators over a longer period of time to deduce the actual performance of mergers and acquisitions.
2.5.2 Best Practice

Clarke (1987) recommended that companies should have a strategic fit for acquisitions. Cannon and Hillebrandt (1989) showed that contractors tend to acquire businesses with which they are already familiar and found synergy was quite strong, particularly within operation and management. Friedman (1984) identified what makes a successful acquisition in construction:

1. the acquiring company must bring something to the acquired contractor (e.g. financial or management assistance);
2. marketing or technical expertise;
3. improved systems;
4. the acquisition must fit into the company’s long range plan;
5. compatibility or “fit” in management style;
6. similar capabilities and philosophy;
7. incentives for the management team and key employees to remain post-acquisition;
8. the provision of a top executive to oversee the acquired company; and
9. a sound business relationship between the two companies which includes timely solutions to problems and flexibility on both sides.

Bengtsson (1992) advised searching for a company which is in the core (or closely related) business area, reflects product goals regarding quality and style, is preferably willing to be acquired, has a compatible management structure and philosophy, and is operationally sound and solvent.

Ashkensas et al. (1998) recognised most mergers and acquisitions are one-off events for most organisations. Few companies go through the process often enough to develop best practice. However, they found that GE Capital Services made over 100
acquisitions between 1993 and 1998 resulting in a 30% increase in its workforce, rapid globalisation of its business and a doubling of its net income. GE Capital works to make acquisition integration a core capability and a competitive advantage. They have developed the Pathfinder Model with four key stages starting from pre-acquisition activities through to assimilation as shown in Figure 2.5.

![GE Capital Pathfinder Model for Acquisition Integration](image)

**Figure 2.5: GE Capital Pathfinder Model for Acquisition Integration**

*(Ashkensas et al., 1998)*

In its numerous acquisitions GE Capital has identified four key lessons:

1. Acquisition integration is not a discrete phase of the deal and does not end when the documents are signed:
2. Integration management is a full-time job and needs to be recognised a distinct business function;

3. Decision about management structure, key roles, reporting relationships, layoffs, restructuring, and other career-affecting aspects of the integration should be made, announced and implemented as soon as possible after the deal is signed; and

4. A successful integration melds not only the various technical aspects of the business but also the different cultures.

Thus there is a growing body of literature aimed at providing practical guidelines for ensuring mergers and acquisitions are a success. Yet an anomaly exists between the popularity of mergers and acquisitions as a strategy and its reported poor performance. This highlights the fact that there continues to be disagreement between senior executives, in a number of different industry sectors, and the conclusions of academic researchers. There were five merger waves in the twentieth century (Hitt et al, 1998). These merger waves would not have occurred for the duration and the intensity if they did not bring notable benefits to the organisations.

2.6 Mergers and Acquisitions within Construction

2.6.1 Historical Review (1975 to 1990)

To date the main areas of research on M&A have focused on specific industrial sectors (e.g. energy, manufacturing, banking and medicine). Other areas of research have focused on generic issues such as financial performance, shareholder value, cultural fit, impact of globalisation, and synergy. Little research has focused on mergers and acquisitions within the construction sector, although it was a frequent occurrence
during the latter half of the twentieth century. Ball (1988) described the history of mergers and acquisitions from the 1960s to the 1980s. Figure 2.6 shows construction merger and acquisition activity between 1975 to 1990 (Business Monitor, 1980-1990).

![Merger and Acquisition Activity](image_url)

**Figure 2.6: Construction Mergers and Acquisitions (1975 – 1990)**

The statistics are unavailable after 1990 due to cessation of official figures to show merger and acquisition activity by industrial sector. Ball considers the waves of mergers and acquisitions to be linked to specific changes within the construction industry and to economic pressures on individual sectors within the industry. The merger peak in the late 1970s/early 1980s was an attempt to find new markets in a period of shortage of demand (Ball, 1988). The merger peak in the late 1980s was a demonstration of greed and an attempt remove spare capacity (Van de Vliet, 1997 and...
Bolton, 1999). Now merger thinking is focused on becoming a strong, high margin global player to compete in the emerging world markets for long-term partnering work and privately financed infrastructure (Bolton, 1999).

Harvey and Ashworth (1997) confirmed that over the last 20 years there have been many amalgamations and mergers resulting in firms of conglomerates who now dominate the construction business in the UK. Many of the larger firms are part of parent companies who have multi-interests across a wide, diverse section of different industries.

2.6.2 Current View

Knutt (1998a) stated that mergers and acquisition also received a boost following the last economic recession. Kevin Cammack, construction analyst at Merrill Lynch, has stated that the recession caused a diminution of companies' asset base, thus making many well-known names ripe for mergers and acquisitions (Leitch 1997a). During the last recession even the top contractors realised they were ill equipped to compete in an increasingly global environment and increasingly long-term, privately financed market dictated by the expectation of major clients. The last decade has therefore seen many strategic changes to the contracting industry. Many large and medium-sized contractors have been linked with M&A activity, both actual and speculative, and there has been a major drive by construction business analysts to encourage companies to enter mergers (Cooper et al. 1994, Ridout, 1994; Knutt, 1998; Doyle, 1995). Table 2.3 shows recent Mergers and Acquisition activity within the construction sector.
Table 2.3: Recent UK Construction Mergers and Acquisitions

<table>
<thead>
<tr>
<th>Company</th>
<th>Date</th>
<th>Acquired By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higgs &amp; Hill</td>
<td>1996</td>
<td>HBG (NL)</td>
</tr>
<tr>
<td>Wiltshire Construction</td>
<td>1996</td>
<td>Ballast Nedam (NL)</td>
</tr>
<tr>
<td>Trafalgar House</td>
<td>1996</td>
<td>Kvaerner (N)</td>
</tr>
<tr>
<td>Raine</td>
<td>1997</td>
<td>Alfred McAlpine (UK)</td>
</tr>
<tr>
<td>Allot &amp; Lomax</td>
<td>1999</td>
<td>Babtie Group (UK)</td>
</tr>
<tr>
<td>Bovis</td>
<td>1999</td>
<td>Lend Lease (Australia)</td>
</tr>
<tr>
<td>Try</td>
<td>2000</td>
<td>Galliford (UK)</td>
</tr>
<tr>
<td>AGRA (Canada)</td>
<td>2000</td>
<td>AMEC (UK)</td>
</tr>
<tr>
<td>Flack Kurtz Group (US)</td>
<td>2000</td>
<td>WSP (UK)</td>
</tr>
<tr>
<td>Kvaerner</td>
<td>2000</td>
<td>Skanska (Sweden)</td>
</tr>
<tr>
<td>Birch</td>
<td>2000</td>
<td>Miller Group (UK)</td>
</tr>
<tr>
<td>Morrison Construction</td>
<td>2000</td>
<td>Anglian Water Group (UK)</td>
</tr>
</tbody>
</table>

In mid 1990s, a number of M&As occurred within the US architectural, engineering and construction (AEC) market. M&A is the preferred vehicle for AEC expansion to cope with the globalisation of the construction market (Schriener and Angelo 1995). Many authors have described the scenario whereby the construction market will be dominated by large international firms and small specialist organisations (Ball, 1986; Schriener and Angelo, 1995; Carrillo, 1998; Knutt, 1998a; Pirrie, 2000). This two-tiered market implied medium-sized contractors will be squeezed and forced to either merge or become specialised (Birbeck, 1995a). At the time of Higgs & Hill’s take-over by Hollandsche Beton Groep (HBG), the chairman was quoted as saying that he saw little future for medium-sized regional contractors (King, 1997). However, medium sized-companies are being pro-active in their efforts to remain competitive and highlight the advantages they offer to a client over a large, multi-national firm (Leitch, 2000). A similar occurrence is happening within UK consulting organisations with the large firms expanding their practices and the smaller firms providing specialised services (Ridout, 1994).
In the UK and the rest of Europe, the largest construction companies are striving towards becoming global players. McLellan (1996) predicted that half of the UK's top 30 contractors and house builders were likely to be involved in mergers, take-overs or asset swaps in 1996. The chairman of AMEY stated that a super-league of large contractors had already been developed, with the top 20 UK contractors falling into six or seven groups through 'quasi-mergers' to undertake PFI contracts (Leitch, 1997a). Other European contractors are also attracted to the UK’s PFI projects and are looking for UK acquisitions principally for that purpose. This polarisation of the market happened some time ago in parts of continental Europe. In 1996, 8 of the top 10 contractors in Europe originated from France and Germany (Construction Europe, 1997). In 1999, 7 of the top 10 European contractors were from France and Germany with the other three from Sweden, the UK and the Netherlands (Construction Europe, 2000). The president of HBG explained his company's decision to purchase UK and German companies as a strategic one in which to enter the European market as a major player (King 1997).

The acquisition market is not confined to the UK with continental European companies buying into UK companies. Throughout Europe, there have been similar activities amongst the largest contractors. In Spain, Cubiertas and Entrecanales merged to become Acciona (Construction Europe 1997b), Ferovial and Agroman merged to become Spain’s third largest contractor (Anon, 2000c). Dutch HBG bought US’s Interbeton and a 74% stake in Germany's Wayss & Freytag (King 1997). The UK's AMEC bought a 41.6% share in France's Spie Batignolles (Leitch 1997). Sweden’s Skanska bought Selmer, Norway’s largest contractor (Anon, 2000b), and majority shares in Karl Steiner and SADE, Switzerland’s leading construction services and Argentina’s second largest contractor respectively (Anon. 2000b). Norway’s NCC
bought Superfoss Construction, Denmark's largest contractor. Growth through acquisition allows construction organisations to increase in size and develop a wide portfolio of projects that in turn facilitate more opportunities in terms of international presence, new markets and clients that enhance turnover and profit.

Mergers and Acquisitions therefore continue to be a major strategy for many construction organisations. M&A also have an impact on a number of organisational dimensions. Four specific aspects of mergers and acquisitions will be considered in detail in subsequent chapters. These aspects are as follows:

- Strategies, Business Portfolio and how Performance is measured after the merger or acquisition (Chapter 4);
- Acquisitions Strategies for emerging markets such as Central and Eastern Europe (Chapter 5);
- The Impact of Information Systems and Information Technology on the changed organisation (Chapter 6); and
- An Investigation of Knowledge Management Strategies to cope with the new organisation (Chapter 7).

The following chapter reviews a number of different research methodologies and justifies why a particular approach was adopted.
Chapter 3  Research Methodology

This chapter explains the research methodology that was adopted throughout the research project. It reviews a range of research methodologies and specifies the approach adopted – the case study methodology. It also justifies the use of this methodology and explains the activities undertaken to provide valid and reliable conclusions.

3.1  Types of Research Methodology

A research methodology sets out and justifies the techniques adopted for collecting, analysing and interpreting data. Its choice depends on a number of variables such as what kind of information is being sought, from whom and under what circumstances (Bernard, 2000). There are a number of research methods to choose from, these may include interviews, questionnaires, direct observation, experiments, etc. (Robson, 1996). In selecting a research methodology, the researcher must also consider the practicalities, since the methodology selected should be within the constraints of available time and resources.

Hakin (2000) stated that research design cannot be organised into a hierarchy since no single type of study is inherently inferior or superior to others. Each type of study does a particular job and should be selected according to the nature of the issues or questions to be addressed; the extent of existing knowledge and previous research, the resources and time available; and the availability of suitably experienced staff to implement the design. Denscombe (1998) also recommended that the choice of a
research method should be based on the *most appropriate method in practice* and not because one data collection method is superior to all others.

The terms ‘qualitative research’ and ‘quantitative research’ are used widely to classify different approaches to research strategy. However, research methodologies do not fall neatly into these two categorisations. This is because the approaches are not mutually exclusive, the distinction is too simplistic and the terminology refers to the treatment of the data rather than the research method itself (Denscombe, 1998). Denscombe provided the following distinction between the two types of research as shown in Table 3.1.

**Table 3.1: Comparisons of Quantitative and Qualitative Research**

<table>
<thead>
<tr>
<th><strong>Quantitative Research</strong></th>
<th><strong>Qualitative Research</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers as the unit of analysis</td>
<td>Words as unit of analysis</td>
</tr>
<tr>
<td>Associated with analysis</td>
<td>Associated with description</td>
</tr>
<tr>
<td>Associated with large-scale studies</td>
<td>Associated with small-scale studies</td>
</tr>
<tr>
<td>Specific focus</td>
<td>Holistic perspective</td>
</tr>
<tr>
<td>Researcher detachment</td>
<td>Research involvement</td>
</tr>
<tr>
<td>Predetermined research design</td>
<td>Emergent research design</td>
</tr>
</tbody>
</table>

A description of these two approaches follows.

### 3.1.1 Quantitative Research Methods

Quantitative data may be collected via a number of means such as surveys, interviews, experiments, etc. After the data have been collected, it has to be displayed.
analysed, and interpreted. Quantitative data analysis offers a number of established techniques for each these tasks.

The data may be displayed in the forms of tables and charts (e.g. bar charts, histograms, scatter plots, line graphs, pie charts, etc.). The data may be statistically analysed using mathematical techniques. The analysis may involve finding measures of central tendency and measures of variability (Robson, 1996). Measures of central tendency involve calculating averages such as mean, median, and mode. Measures of variability indicate the degree of spread or dispersion of the data. This involves using methods such as ranges, fractiles, and standard deviation.

A number of tests are available for assessing the significance of the relationships between data sets. The most common is the chi-square ($\chi^2$) test. This is used to investigate whether two variables are associated to a significant level. Other statistical tests widely used for analysing quantitative data include:

- the $t$-test - tests whether two groups or categories are different to a significant level;
- ANOVA (analysis of variance) - tests the variation within and between groups of data;
- correlation - tests how closely two variables are connected; and
- regression analysis - investigates connection in terms cause and effect.

Denscombe (1998) identified a number of advantages and disadvantages of quantitative analysis as shown in Table 3.2.

Whilst quantitative research methods are well established, Hakin (2000) highlighted the growing recognition of the limitation of statistical analysis for dealing with the change processes that involve qualitative change, multiple causation or multiple outcomes. The author also identified the importance of guarding
against prejudice thinking that quantitative analysis may seem more 'scientific' because they involved 'hard' numbers. Likewise, qualitative methods can be wasted opportunities if they are not conducted and analysed with proper intellectual rigour.

Table 3.2: Advantages and Disadvantages of Quantitative Analysis

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific</strong> – lends itself to various forms of statistical techniques based on mathematics and probability</td>
<td><strong>Quality of data</strong> – this is only as good as the methods used for data collection and the questions that are asked</td>
</tr>
<tr>
<td><strong>Confidence</strong> – statistical tests lends credibility in terms of interpretation</td>
<td><strong>Techniques</strong> – danger of becoming obsessed with the techniques of analysis at the expense of broader issues</td>
</tr>
<tr>
<td><strong>Measurement</strong> – interpretation and findings are based on measured quantities rather than impressions</td>
<td><strong>Data overload</strong> – the analysis can become too complex with too many cases, too much data, too many variables, and too many factors</td>
</tr>
<tr>
<td><strong>Analysis</strong> – large volumes data can be analysed relatively quickly</td>
<td><strong>False promise</strong> – decisions made during analysis can have far reaching consequences because of the manner in which the data is manipulated</td>
</tr>
<tr>
<td><strong>Presentation</strong> – graphical means provide a succinct and effective way for organising and communicating the findings</td>
<td></td>
</tr>
</tbody>
</table>

3.1.2 Qualitative Research Methods

Creswell (1994) described qualitative research as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting. Qualitative research is thus used to discover concepts and relationships in raw data by organising them into a theoretical explanation, without the use of
statistical procedures or other means of quantification (Strauss and Corbin, 1998). This research report adopts a qualitative approach for investigating four different aspects of mergers and acquisitions within the context of construction organisations. A qualitative approach is used because the project seeks to understand specific events relating to construction organisations’ mergers and acquisitions, and their impact upon the organisations through the collection of textual data.

3.2 Types of Qualitative Research

Few writers agree on a precise procedure for data collection, analysis and reporting of qualitative research. Creswell (1994) identified four types of qualitative research as follows:

- **Ethnographic researcher studies** - the researcher studies an intact cultural group in a natural setting during a prolonged period of time by collecting, primarily, observational data.

- **Grounded theory** – the researcher attempts to derive a theory by using multiple stages of data collection and the refinement and interrelationships of categories of information (Strauss and Corbin, 1998).

- **Case Studies** – the researcher explores a single entity or phenomenon bounded by time and activity and collects detailed information using a variety of data collection procedures (Yin, 1984; Merriam, 1988).

- **Phenomenological studies** – human experiences are examined through extensive and prolonged engagements to develop patterns and relationships of meaning.
This study adopted the use of case studies of organisations because it afforded an opportunity to explain, describe, illustrate, and explore specific aspects of the merger and acquisitions phenomena. The other methods of qualitative study were considered inappropriate because the research did not involve the study of a specific cultural group (ethnographic studies) or human experiences (phenomenological studies). Also since each merger or acquisition is unique, the research did not seek to generate theory of the events (grounded theory). The case study approach will now be discussed in detail.

3.3 Case Study Approach

Case studies are used increasingly as a research tool (Yin, 1994; Hamel et al., 1993; May, 1984). Eisenhart (1989) stated that case studies could be used to accomplish various aims such as providing description, testing theory and generating theory. Within the context of this thesis, case studies are therefore used to provide a description (such as the post-acquisition changes made to IS Systems) and generating guidelines (such as how companies can develop a Knowledge Management Strategy).

3.3.1 Definition

Yin (1984, p. 13) described a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context. In the current context, mergers and acquisitions are contemporary phenomena occurring as a real-life business strategy, thereby forcing construction businesses to modify a number of their processes. Yin (1984) and Stake (1994) distinguished between different types of case studies based on the objectives they expect to achieve. Yin (1984) distinguished between three types of case study as follows:
• **Exploratory case studies** – aim to define questions and hypotheses of a later study;

• **Descriptive case studies** – present a complete description of a phenomenon within its context; and

• **Explanatory case studies** - present data bearing on a cause-effect relationship.

Thus using Yin’s (1984) categorisations, the studies can be described as descriptive case studies since each study seeks to understand the executive decisions underlying company actions.

Stake (1994) also distinguished between three main types of case studies:

• **Intrinsic case studies** – where the researcher wants a better understanding of a particular case;

• **Instrumental case studies** – where a particular case is examined to give insight into an issue, or to refine a theory; and

• **Collective case studies** – where the instrumental case study is extended to cover several cases to learn more about the phenomenon, population or general conditions.

Adopting Stake’s (1994) categorisation, the studies conducted in this thesis can therefore be categorised as collective case studies since each study covers several cases.

### 3.3.2 Justification

The use of case studies as a methodology within the qualitative research portfolio is well established. Case studies contribute uniquely to our knowledge of the organisation being investigated. Yin (1984) stated that case studies allow the retention
Chapter 3 Research Methodology

of holistic and meaningful characteristics of real-life events (such as mergers and acquisitions), within the context of organisational and managerial processes. Hamel et al. (1993) stated that case studies aim to reconstruct and analyse a case from a sociological perspective. Edwards and Talbot (1994) agreed case studies were useful for in-depth study of organisations and phenomena since it allowed past and present study for chronology to be established and for interaction with context to be observed. They also identified that case studies can be used in evaluation studies to allow an examination of the process of change, such as those resulting from mergers and acquisitions. Punch (1998) also testified to the valuable contribution case studies make, particularly where our knowledge of a subject is shallow, fragmented, incomplete or non-existent. These arguments support the use of case studies as a valid methodology for investigating and explaining how mergers and acquisitions impact on construction organisations. Mergers and acquisitions are major events within a company's life. Little has been written about this event within the construction sector, although it has been occurring with increasing frequency. Thus, case studies therefore provide a valuable methodology for providing a detailed understanding of the events and their impact within individual organisational contexts.

3.3.3 Advantages and Disadvantages

Edwards and Talbot (1994) identified a number of advantages of using a case study as follows:

- It allows an in-depth focus on a changing relationship, such as mergers and acquisitions:
It captures complexities (such as the effect of the merger or acquisition on the organisational systems);

- It allows a focus on the understanding of the company studied and the views of the informants;
- It allows a holistic analysis rather than the isolation of factors; and
- It provides readable data that bring research to life and are true to the concerns and meanings under scrutiny.

Merriam (1988) identified four characteristics that make case studies advantageous. Case studies are:

- Particularistic – they focus on a particular situation, event, or phenomenon;
- Descriptive – the end product of the case study is a rich, complete, literal description of the phenomenon studied;
- Heuristic – they illuminate the reader’s understanding of the phenomenon under study; and
- Inductive – they focus on the discovery of new relationships, concepts and understanding.

However, a number of questions have also been raised regarding the use of case study for research purposes (Yin, 1984; Hamel et al., 1993). The main criticisms are:

- The lack of rigour;
- The tendency for generalisation; and
- Validity.

These disadvantages are discussed in greater detail below while the measures taken to minimise their impact are presented in section 3.3.5.
3.3.3.1 Lack of Rigour

This is due to both the researcher and the informant. The researcher may have pre-conceived, or biased views which influence the findings and conclusion. Likewise the informant may have biased views or may misinterpret questions asked. This bias can be introduced at a number of stages throughout the study such as during the research design, data collection, population sampling, data analysis etc. (Miles and Huberman, 1984). Bias can never be completely eliminated but it is important that the researcher is aware of the sources of bias and tries to reduce it (Graham, 2000).

3.3.3.2 Tendency for Generalisation

Criticism is levelled at the use of case studies to provide conclusions based on a limited sample. Yin (1984, p. 9) argued that case studies can be generalised to a theoretical proposition but not to the population. Indeed, he summarised that cases were not 'sampling units' but used for analytical generalisation whereby the previously developed theory was used to compare the case study findings. This differs from statistical generalisation where, based on the case study, conclusions about the general population are made. Flick (1998) also stated that the problem with generalisation is that statements are often made for a certain context based on certain processes. However, these same context links have to be removed in order to find out whether the statements are valid independently, and outside of the specific context. For each of the aspects of mergers and acquisitions studied, multiple case studies were therefore used. Multiple case studies were used in order to investigate replication (i.e. similar results). The more the replications, the more robust the findings will be (Yin, 1993).
3.3.3.3 Validity

Kirk and Miller (1986) described validity as the extent to which the research gives the correct answer. In the research context, validity concerns the quality of the research. Yin (1983) defines four established tests for judging research quality. These are:

- Construct validity – the use of an appropriate research methodology;
- Internal validity – the selection of appropriate case studies;
- External validity – the extent to which the findings can be generalised; and
- Reliability – the use of case study protocols to ensure the same procedures are followed in multiple case studies.

The actions taken to address the questions raised about case studies (rigour, generalisation and validity of the findings) are explained in the following section.

3.3.4 Research Design

The research model created by Punch (1998) was adopted for the project (Figure 3.1). The main theme of the thesis is mergers and acquisitions within the construction context, with four specific aspects covered under separate chapters. Thus the Punch model is used for the entire thesis as well as for individual chapters.
Figure 3.1: Research Model adopted

(Punch, 1998)

The steps adopted to implement the model for the research were as follows:

- Conduct literature review within the context of mergers and acquisitions;
- Identify specific problems within mergers and acquisitions to study;
- Identify and develop case study questions;
- Identify case study companies;
- Collect data through the use of interviews;
- Analyse the data and discuss the findings; and
- Draw conclusions and make recommendations.

3.3.4.1 Literature Review

A thorough literature review was conducted on mergers and acquisitions, in other sectors as well as in construction. This highlighted the reasons why mergers and acquisitions are used as a strategic tool, and the advantages and disadvantages they offer to the construction industry.
Yin (1984) described the use of literature review to develop theory as an essential step prior to the collection of any case study data. It justifies why the case study is being conducted and serves a number of purposes (Creswell, 1994):

- It shares the results of other studies that are closely related to specific aspects of mergers and acquisitions;
- It relates the study to the larger, ongoing dialogue in the literature; and
- It provides a framework for establishing the importance of the study, as well as a benchmark for comparing the results of the study with other findings.

### 3.3.4.2 Specific problems

Mergers and acquisitions affect a wide range of issues within the construction sector. It would be impossible, within a single research project, to study the full range of issues. It was therefore important to focus on a subset of issues. The literature review helped to identify the specific aspects of mergers and acquisitions to study; these are covered in subsequent chapters of this thesis:

- Strategy, Business Portfolio and Performance Measurement;
- Acquisitions Strategies for Emerging Markets;
- The Impact of Mergers and Acquisitions on Information Systems and Information Technology; and
- An Investigation of Knowledge Management Strategies.

The literature highlighted the importance of mergers and acquisition as a strategy for growth but it also indicated that strategic management was not well developed amongst construction organisations (Muspratt, 1984; Hillebrandt and Cannon, 1990; Male, 1991a; Betts and Ofori, 1992). Thus, Chapter 4 investigates how companies
Chapter 3 Research Methodology

...develop their strategy and business portfolio through M&A and judged their subsequent performance. The 1990s saw a number of companies re-positioning themselves in the UK by offering new services and expanding into new markets. The future expansion of the European Union caused many organisations to consider business opportunities that were available in the emerging markets. Industry reports highlighted the long-term possibilities to UK construction companies with increasing expenditure on infrastructure and transport links for Central and Eastern European countries (WS Atkins, 1994; Davis Langdon Consultancy, 1998). Chapter 5 offered an opportunity to study the acquisitions strategies adopted by UK construction companies for expanding into emerging markets such as Central and Eastern Europe. Khosrowpour and Yaverbaum (1990) highlighted the strategic importance of an organisation’s Information Systems. Chapter 6 investigates how strategic Information Systems from two separate companies could be rationalised and perhaps integrated post-acquisition. Finally, Zack (1999) describes knowledge as the most strategically important resource within business organisations. Chapter 7 therefore investigates the development of a knowledge management strategy that will facilitate the post merger/acquisition exploitation of the knowledge and expertise that is held in separate organisations.

3.3.5 Case Study Design

The case study design comprised a number of elements to ensure rigour and validity. These elements are categorised according to the case study company selection, the questionnaire design, data collection, analysis and discussion, and conclusions.
3.3.5.1 Case Study Company Selection

For this study, the population consisted of UK companies that have undergone either a merger or an acquisition. For each aspect of this research, case study companies were selected according to:

- topical relevance - i.e. companies selected because they are known to have a particular interest in the subject area (Yin, 1993);
- feasibility and access - i.e. individuals were willing to let their companies act as case studies (Yin, 1993); or
- extreme cases - i.e. to demonstrate polar situations – (Eisenhart, 1989).

Table 3.3 shows the companies used for case studies and the reason for their selection.
### Table 3.3: Case Study Company Selection

<table>
<thead>
<tr>
<th>Subject</th>
<th>Case Study Companies</th>
<th>Reason for Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy, Business</td>
<td>George Wimpey plc</td>
<td>George Wimpey and Tarmac had the largest asset swap in the history of UK construction. Wimpey divested its construction business and Tarmac acquired this business. AMEC divested of a number of its businesses and acquired new businesses.</td>
</tr>
<tr>
<td>Portfolio and Performance</td>
<td>Tarmac plc</td>
<td></td>
</tr>
<tr>
<td>Measurement</td>
<td>AMEC plc</td>
<td></td>
</tr>
<tr>
<td>Acquisitions Strategies</td>
<td>AMEC plc</td>
<td>The companies were selected because they were the top five companies in terms of overseas turnover.</td>
</tr>
<tr>
<td>for Emerging Markets</td>
<td>Tarmac plc</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kvaerner Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Balfour Beatty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bovis Construction</td>
<td></td>
</tr>
<tr>
<td>The Impact on Information</td>
<td>HBG Construction</td>
<td>Extreme case scenario. HBG requested the integration of all IS/IT whilst Kvaerner did fully not appreciate the importance of IS/IT within the construction process.</td>
</tr>
<tr>
<td>Systems and Information</td>
<td>Kvaerner Construction</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An Investigation of Knowledge</td>
<td>AMEC plc</td>
<td>AMEC and WSP are large companies known to have Knowledge Management strategies as part of their mission. Galliford Try is a medium-sized company with less emphasis on knowledge management.</td>
</tr>
<tr>
<td>Strategies</td>
<td>WSP Consulting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Galliford Try</td>
<td></td>
</tr>
</tbody>
</table>

#### 3.3.5.2 Questionnaire Design

The case study questions were developed based on the literature findings, existing research and contemporary issues affecting construction organisations. For example, an acquisition management cycle developed by McKiernan and Merali
(1995) was used as a framework for the case study questions on the impact of mergers and acquisitions on Information Systems (Chapter 6). Similarly, the validated framework produced by a UK government-funded research project on Knowledge Management was used to frame the questions on developing a Knowledge Management Strategy (Chapter 7).

Strauss and Corbin (1998) identified four types of questions. All four types were adopted as shown in Table 3.4.

<table>
<thead>
<tr>
<th>Type of Question</th>
<th>Explanation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitising questions</td>
<td>Gives an indication of what the data may be indicating</td>
<td>Which business portfolio techniques were used by the organisation?</td>
</tr>
<tr>
<td>Theoretical questions</td>
<td>Helps to demonstrate process, variation to make connections among concepts</td>
<td>How do you win market share in Central and Eastern Europe?</td>
</tr>
<tr>
<td>Practical and structural questions</td>
<td>Provides direction for sampling and helps with the development of evolving theory</td>
<td>Was a post-acquisition review conducted of the company’s Information Systems?</td>
</tr>
<tr>
<td>Guiding questions</td>
<td>Guide the interview and its analysis</td>
<td>Which KM processes are of most immediate relevance to the organisation?</td>
</tr>
</tbody>
</table>

Hartman (1993) highlighted the need to word questions correctly and to structure the questions in a manner that does not bias the result. For the case studies used, the questions were a combination of open-ended questions (such as ‘what is the company integration policy post merger/acquisition?’) as well as closed questions with specific options (such as ‘which of these classifications of knowledge is the company most
interested in?’). The questions were also structured into clear themes such as company background, mergers and acquisition policy, knowledge management policies, etc.

3.3.5.3 Data Collection

Case study data come from a number of sources such as documents, archival records, interviews, direct observation, participant observation, and physical artefacts (Yin, 1984; Hamel et al., 1993). For this thesis, the data is primarily obtained through interviews, one of the most important sources (Punch, 1998). Table 3.5 shows the strengths and weaknesses of interviews.

Table 3.5: Strengths and Weaknesses of Interviews

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Possible Weaknesses</th>
<th>Mechanisms used for overcoming weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Targeted and focuses directly on aspects of mergers and acquisitions</td>
<td>• Bias due to poorly constructed questions&lt;br&gt;• Inaccuracies due to poor recall&lt;br&gt;• The interviewee gives what the interviewer wants to hear&lt;br&gt;• Response bias</td>
<td>• Prototype questionnaires developed and tested&lt;br&gt;• Interview transcript approved by interviewee&lt;br&gt;• Use of probing questions to demonstrate the validity of the answers provided.&lt;br&gt;• Obtaining views from multiple sources in each firm</td>
</tr>
<tr>
<td>• Insightful as it provides the causal inferences for why certain actions were or were not taken</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Several authors distinguish between types of interviews. The main dimensions to categorise an interview are (Punch, 1998):

- Degree of structure in the interview;
- How deep the interview tries to delve; and
Degree to which the interview is standardised across different informants.

In this particular study, all the interviews were of a semi-structured nature with questions structured into main themes. This allowed the same key questions to be asked of each group of case studies whilst using different supplementary questions to obtain a more thorough understanding of the context and actions taken.

In an attempt to reduce bias in the response, additional data was obtained through other published material such as company Web-sites, journals, newspapers, magazines, etc.

3.3.5.4 Analysis and Discussion

A number of authors have proposed various methods for coding and categorising data to facilitate analysis of case study data (Yin, 1984; Miles and Huberman, 1984; Flick, 1998; Punch, 1998). In this study content analysis was adopted to categorise the interview data into main headings. This then allowed detailed discussion on the responses of each company highlighting similarities (replication) as well as opposing views.

Each subject area (chapter) provides a separate discussion that focuses on the key issues extracted from the interview data. This allows the main interview findings to be placed within the context of existing literature.

3.3.5.5 Conclusions

The thesis is structured such that each chapter contains a conclusion based on the case study analysis and discussion. Chapter 8 also provides a summary of the thesis
findings as it pertains to the individual chapters and also within the general mergers and acquisitions context. The conclusions are of a qualitative nature, based on what Yin (1984) described as analytic generalisation; i.e. the use of existing theory is compared to the case study findings.

### 3.4 Summary

A qualitative methodology was considered the most appropriate method for the project. An extensive literature review identified four aspects of mergers and acquisitions for further investigation. Descriptive, multiple-case studies were used to provide in-depth, unique knowledge of the merger or acquisition phenomenon within each of the organisation studied. Semi-structured interviews were used to collect data for each of the aspects investigated. The data was analysed using content analysis and, as far as was possible, steps were taken to ensure the analysis was conducted with intellectual rigour.

The following chapter investigates the first aspect of mergers and acquisitions, that of the need to develop a strategy and business portfolio through acquisitions and divestment and measure subsequent performance.
This chapter investigates the acquisition and divestment strategy adopted by three major British contractors. An analysis is made of their business portfolio, based on acquisitions and divestments made in 1996, and how they judged their subsequent performance. Following an introduction, several case studies are presented; these form the basis for a number of conclusions and recommendations.

4.1 Introduction

Within the last decade the nature of contracting activities in the UK has changed dramatically. Instead of construction services being offered, contractors now get involved in the entire project life cycle which may include providing finance, design, construction, operation and maintenance. The construction business is one of high risks and low profitability and contractors are being forced to adopt strategic management techniques to maintain competitiveness and profitability.

To maintain their competitive status and profitability for their shareholders, construction contractors are being forced to review their business portfolio on a regular basis. The last decade saw several cases of companies revising their business strategy. In March 1996 the largest asset swap in the history of the British construction industry took place. Tarmac divested its Housing Division whilst Wimpey took the decision to concentrate on Housing and Land Development and divest its Minerals and Construction businesses (Atkinson. 1996a). Thus. in 1996. the country’s largest and...
fourth largest contractors made completely different strategic decisions with regard to their Housing Divisions. A review of trade literature shows the frequency with which other large construction companies have modified their strategies and restructured their businesses to cope with the changing environment. In the mid 1990s there were numerous changes in companies such as Laing (Nunn, 1995a), AMEC (Anon, 1996) and Costain (Clifford, 1996a) to restructure their business units. Some companies, such as AMEC (Millett, 1995) and Mowlem (Clifford, 1996b), diversified into new business areas, whilst other companies, such as Lovell (Nunn, 1995b), Balfour Beatty (Gurdon, 1995), AMEC, Raine and Trafalgar House (McLellan, 1996), divested of their housing businesses. The end of the 1990s recession and the changing structure of the industry, most notably with Private Finance Initiative (PFI) contracts and Partnering, saw many organisations revising their corporate strategy with a subsequent need to restructure their organisations and focus on particular types of work. The trend towards revising business portfolio continues at the same pace. Laing has withdrawn from the construction business (Rogers, 2000) to focus on its housing, property and investments businesses; Taylor Woodrow abandoned speculative work (Anon, 1999a); Tarmac demerged its aggregates and construction businesses (Morby, 1999); and Amey is now listed as a services company (Anon, 1999b). These evolving strategies are aimed at maintaining profitable companies to cope with clients' demands and shareholders' needs. The following section discusses how construction companies' strategies are developing to cope with the changing business environment.
4.2 Corporate and Business Strategies

Ansoff’s (1965) seminal work stated that a firm needs a well-defined scope and growth direction. The modern business environment is too competitive to allow company strategy to be decided on the basis of whims and gut feeling only. Within construction, Langford and Male (1991) defined strategy as a set of rules for guiding decisions about organisational behaviour. Several authors describe different types of strategy required for an organisation. Boseman and Phatak (1989) defined four different levels of organisational strategy: Societal; Corporate; Business and Functional. Houlden (1996) distinguished between Business, Divisional, Group and Corporate Strategies. This chapter shall address the Corporate and Business strategies only. Andrews (1987) defined Corporate Strategy as the pattern of decisions in a company that determined and revealed its objectives, purposes, or goals and produced the principal policies and plans for achieving those goals. Corporate Strategy addresses three basic questions:

- What set of businesses are we in?
- What set of businesses should we be in? and
- How should the businesses be managed in order to fully enhance the organisation’s ability to achieve its strategic objectives?

Business strategy, on the other hand, focuses on how a company can most effectively compete in a particular business or industry (Boseman and Phatak, 1989). For example, what range of services a construction organisation should offer. When an organisation has only one type of business, its Corporate Strategy becomes its Business Strategy (Houlden, 1996). The purpose of Corporate Strategy is to position an organisation in an industry in a way that gives it a competitive advantage in the marketplace.
Having a strategy does not guarantee success but, if a business is run efficiently and competently, having a strategy should enhance and improve its resilience to a hostile environment (Lansley, 1987; Fellows et al., 1983). The formulation of strategy is the responsibility of senior management. Boseman and Phatak (1989) suggested there are no set rules for selecting a strategy but judgement and experience are vital considerations. A number of factors should be considered in strategy selection. These are divided into internal considerations (resources, strengths and weakness, etc.) and external considerations (competition, socio-political interaction, etc.). Houlden (1996) also suggested that strategy selection depended on the type and size of a business, its structure and its style of leadership. Andrews (1987) advised that strategy should be approached rationally. Before an organisation’s choice of strategy can be made, its strengths and weaknesses should be appraised together with the resources available. In deciding on the formulation of strategy four components should be considered as follows:

- Identification of opportunity and risk;
- Determining the organisation’s material, technical, financial, and human resources;
- Personal values and aspirations; and
- Acknowledgement of non-economic responsibility to society.

In formulating strategy, the type of activities organisations could be involved successfully can be determined.
4.3 Business Portfolio

An organisation’s Business Portfolio describes its range of activities. An analysis of corporate strategy may lead to a change of focus or emphasis on a particular type of work. There are many recognised techniques for analysing business portfolio. The main portfolio analysis techniques usually take the form of matrices such as the Boston Consulting Group (BCG) growth-share matrix (Hedley, 1977) as shown in Figure 4.1 and the Directional Policy Matrix (Robinson et al., 1978) shown in Figure 4.2. These can be used to obtain a tentative plot of the corporate portfolio because they are simple, easily quantifiable and require little data (Aaker, 1984).

![The Boston Consulting Group (BCG) Matrix](Hedley, 1977)

**Figure 4.1: The Boston Consulting Group (BCG) Matrix**

(Hedley, 1977)
When it comes to analysing an individual business, the SWOT (TOWS) matrix is one of the simplest tools as shown in Figure 4.3 (Weihrich, 1982). It looks at the Strength and Weaknesses of the company's internal environment and also the Opportunities and Threats within the external environment. For construction organisations this may translate to their expertise in certain areas (Strength), inability to recruit and hold onto quality staff (Weakness), new type of work such as PFI (Opportunity) and new environmental legislation (Threat).
Andrews (1987) promoted the idea that good strategy means a good fit between the external situation a firm faces (threats and opportunities) and its own internal qualities or characteristics (strengths and weakness). Recently however, there have been those who point out the misinterpretation of the SWOT analysis. Hill and Westbrook (1997 p. 50) in a survey of 50 companies found the SWOT analysis was "ineffective as a means of analysis or as part of a corporate strategy review". Their main criticism was directed towards expensive management consultants who used the technique simply for familiarisation with company issues without going into sufficient detail or questioning conflicting results. They argued that SWOT was developed in an era of stability and does not cope well with today's markets. Although they recognised SWOT analyses can still be valuable, they need to be undertaken with rigour and challenge assumptions, with subsequent validation and investigation.

Houlden (1996) suggested a poor strategy is usually the result of inadequate awareness of the environment and recommended that as many environmental factors as possible needed to be considered as shown in Figure 4.4 below.
Figure 4.4: Environmental Factors affecting Business Strategy

(Houlden, 1996)

Translated into the construction industry, the above environmental factors are all directly applicable but Langford and Male (1991) also suggested the addition of other members of the supply chain such as sub-contractors and consultants. Warszawski (1996) recommended that a contractor’s business environment should consider, not only the immediate construction market, but also the regional and national economy and should include:

- indicators of economic activity;
- national and local government investment programmes;
- general demand for building work in both the private and public sector;
- specific potential clients such as retail chains;
- potential competitors.
main production factors such as labour and materials supply, subcontractors market; and

- special local issues e.g. legislation that affect construction.

### 4.4 Contractors’ Portfolio Analysis

Ramsey (1989) recognised that few of the UK’s top contractors were building and civil engineering contractors only. They may be part of conglomerates where contracting may only be a part of the business portfolio. For contractors however, the balance of their portfolio is important. Ball (1988) and Punwani (1997) described the benefits of contractors having a balanced project portfolio as:

- access to new clients and tender lists;
- facilitating differential profit rates between market sectors;
- minimising risk by spreading it over a number of projects;
- easier market withdrawal; and
- an opportunity to divert surplus funds.

Lansley (1987) found that many organisations reviewed their business portfolios but did not make use of techniques such as the BCG matrix. Hillebrandt and Cannon (1990) also found that, although most contractors offer a number of different services, very few analyse their positions in the market using any of the well-known matrices. Langford and Male (1991) cautioned about the use of a manufacturing industry-oriented portfolio analysis for the construction industry, particularly in large, diversified construction-related firms. This is because an organisation-wide portfolio analysis would not work successfully for all the business units that may be involved in very different markets.
During the economic boom of the 1970s, several construction companies took the opportunity to engage in acquisitions. This was through horizontal integration (the acquisition and subsequent integration of companies with the same type of work), such as Wimpey’s property development, and vertical integration (the acquisition and subsequent integration of companies either further up or down the supply chain) such as Tarmac’s Building Materials Division (Lansley, 1987). Companies were encouraged to diversify into other areas of work to increase their business portfolio. The 1990s economic recession weakened many of the major contractors and led to speculation that mergers will have to occur for continued survival (Leitch, 1997).

Within the contracting business, acquisition and divestment complement each other. What one company divests, another company acquires. Acquisitions were a major feature in the last economic boom and may also feature in the post-recession period (Millett, 1995). Clarke (1987) recommended that companies should have a strategic fit for acquisitions. Cannon and Hillebrandt (1989) showed that contractors tend to acquire businesses in which they are already familiar and found synergy was quite strong, particularly within operation and management. De Noble et al. (1988) questioned the synergy achieved and stated that managers failed to give adequate attention to post-acquisition activities.

Portfolio analysis may lead to divestment that in turn could lead to a focus on core activities. UK companies are striving to find their niche markets to improve their profit margins. In the 1980s the smart contractors were seen as those who had conglomerates consisting of a wide range of business interests e.g. Trafalgar House. Bovis and Balfour Beatty. Now, analysts are advising contractors to be ‘lean’ and to focus their business areas to get better value from their key resources – people and money (Barrie, 1999). This has led to a major change in the structure of the UK construction contractors
market with many leaving traditional, competitive construction and focusing on other areas such as PFI, Facilities Management and the service sector (Fishlock, 2000). Table 4.1 shows the changed status of the top 10 UK contractors between 1989 and 1999.

**Table 4.1: The changing face of contracting**  
(Cook, 1999)

<table>
<thead>
<tr>
<th>Position 1989</th>
<th>Position 1999</th>
<th>Company</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Tarmac</td>
<td>No longer a contractor following a demerger to form Carillion</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>Trafalgar House</td>
<td>No longer exists. Acquired by Kvaerner in 1996 and again in 2000 by Skanska</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>Wimpey</td>
<td>No longer a contractor. Focus on house building.</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Balfour Beatty</td>
<td>Moved away from competitive contracts to PFI, rail maintenance and other service sector work</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Laing</td>
<td>No longer a contractor; focusing on house building, property and investments</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>Beazer</td>
<td>Now a house builder only</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>AMEC</td>
<td>Now the UK’s largest construction company but focus on service sector work and PFI</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Taylor Woodrow</td>
<td>Now concentrating on facilities management, property deals and housing</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>Costain</td>
<td>Backed by Skanska but interest sold in 2000</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>Bovis</td>
<td>Now owned by Lend Lease with focus on construction management</td>
</tr>
</tbody>
</table>

Divestment of a company business has advantages and disadvantages. It can be seen as an admission of failure whilst it may be seen as positive action and therefore good strategy (Clarke and Gall, 1987). Markides (1995) showed how refocusing of firms through divestment was associated with profitability improvements. Clarke and Gall (1987) recommended a systematic approach to divestment in order to realise the
true value of the divestment. Otherwise, the divestment could destroy rather than enhance the company’s value (Markides and Berg, 1992). Hamilton and Chow (1993) ranked the motives and factors for divesting. The main motives respectively were:

- to discard undesired/unprofitable businesses e.g. Laing’s withdrawal from construction contracting (Rogers, 2000);
- to focus on core activities e.g. the break up of conglomerates such as Tarmac to focus on aggregates (Barrie, 1999); and
- to meet corporate liquidity requirements e.g. Lovell, Balfour Beatty, and AMEC selling their capital intensive house building concerns (Nunn, 1995b; Anon, 1995; Gurdon, 1995).

Coyne and Wright (1986) described six different types of divestment:

- Franchising – involves a competition for the exclusive right to produce a firm’s product or service in particular area for a given period;
- Contracting-out – involves tendering for the production of a service to the parent company;
- Sell-off – a permanent arrangement involving selling an identifiable business unit;
- Management/leverage buy-out – a part of a large company is sold to its management or a consortium of institutions to become an independent entity;
- Spin-off/demerger – part of the parent company becomes a separate legal entity but remains substantially owned by the same shareholders as the parent company; and
- Asset swap/strategic trade - exchanging some of the assets of one firm for another.

The construction sector has seen many examples of these types of divestment in recent years. The mid 1990s saw many major contractors selling off their housing divisions. Management buy-outs have been used by consultants to create separate
companies, typically with specialist expertise such as providing environmental solutions, Tarmac's demerger to create Carillion and the Tarmac-Wimpey asset swap as described in Section 4.6.

4.5 Performance Measurement

The effects of strategic decisions need to be examined to determine their success. The traditional way of judging a company's performance was based on its financial performance. In 1992 Kaplan and Norton introduced the Balanced Scorecard (BSC). They and a number of senior executives considered financial performance measures as becoming obsolete and hindering an organisation's ability to create future economic value (Kaplan and Norton, 1992a). The financial measures were considered to tell of past events whereas the BSC provided a balance between short and long-term objectives, financial and non-financial measures, lagging and leading indicators, and external and internal perspectives. Whilst financial measures are important, an over-emphasis on achieving and maintaining short-term financial results was causing companies to over-invest in short-term fixes and under-invest in long-term value creation. This is particularly true for construction companies where there is a focus on short-term financial returns. The other factors considered in the BSC were customer satisfaction, internal business processes and organisational learning and growth as shown in Figure 4.5.
Kaplan and Norton suggested that organisations should translate their general mission statements on customer service into specific measures that concerned the customers. These fall into four categories: time, quality, performance and service, and cost. Organisations should also decide on what processes and competencies they excel at and how these impact on customer satisfaction e.g. quality, in-house expertise and productivity. Similarly, an organisation’s ability to innovate, improve, learn and grow directly affects the organisation’s value. Kaplan and Norton’s (1992, 1996a and 1996b) work on linking the Balanced Scorecard to company strategy, has gained wide acceptance from many different sectors of the US economy, including construction (Harvard Business Review, 1996). However, Butler et al. (1997) cautioned that the Balanced Scorecard might overlook the importance of the corporate mission. They suggested that British companies would find it hard to accept that financial results are of secondary or even equal importance to other criteria. They also recommended that,
while it is not a template, it needs to be adapted to suit a firm's special operating conditions.

Lansley (1987) stated that the diversification of the construction industry in the 1970s encouraged the constituent businesses to justify their existence in commercial terms. Hillebrandt and Cannon (1990) found that most construction companies continue to look at primarily the financial aspects and the interests of their shareholders. Betts and Ofori (1992) reinforced this view by stating that emphasis on a firm's return on investment (ROI) was too narrow a performance criterion. In recent years, the use of emerging techniques such as Total Quality Management (TQM) and Business Process Re-engineering (BPR) in construction indicates a broadening of the criteria used to judge performance based on Kaplan and Norton's Customer Perspective (Reed et al., 1996; Butler et al., 1997; and Kagioglou et al., 2001). Also, the continuous improvement advocated as part of Partnering Frameworks, and other Egan (1998) initiatives such as Movement for Innovation (M4I) and the Construction Best Practice Programme (CBPP) and the growing interest in 'Organisational Learning' can be argued to fall within the Learning and Growth Perspective criteria. Similarly, the divestment of some firms' business units to concentrate on core businesses may be interpreted as having a greater awareness of its Internal Business Perspective.

Rethinking Construction (Egan, 1998) highlighted the need for companies to judge their performance. Since its publication, the report has paved the way for a number of companies to adopt Key Performance Indicators (KPIs) that address issues other than financial performance, albeit project-based and not organisation-based. Also, the growing trend of networks within construction means that companies are increasingly adopting the use of holistic performance indicators such as the Balanced Scorecard and, more recently, the European Foundation for Quality Management
(EFQM) Excellence Model. The Excellence Model allows a company, regardless of its industrial sector, to assess its performance in nine categories and, if required, benchmark its performance against other organisations. The nine categories are as shown in Figure 4.6 below.

![Figure 4.6: The Excellence Model](EFQM, 2001)

The following section describes how three UK companies formulated corporate strategy, developed their business portfolio and measured performance after the acquisition or divestment.

### 4.6 Case Studies

In March 1996 the largest asset swap in the history of UK construction was finalised between the country’s largest and fourth largest contractors. George Wimpey plc exchanged assets in its Minerals and Construction Divisions, approximately 55% of its business, for Tarmac’s Housing Division - McLean Homes. Later that year, AMEC announced its purchase of 41.6% shares in the French company Spie Batignolles. The
following case studies are used to demonstrate how Wimpey, Tarmac and AMEC developed a corporate strategy for modifying their business portfolio and how they judged the performance of the changed portfolio of businesses. The initial case study interviews were conducted in 1997 and 1998. A follow-up study was conducted on the organisations in 2001 to investigate any changes to statements made in the earlier interviews.

4.6.1 George Wimpey plc

Wimpey had been involved in civil engineering construction and housing since 1915. In the 1970s and 1980s the company diversified into Minerals and Property Development. Prior to the asset swap, it had four divisions in Housing, Construction, Minerals, and Property. In 1995, the company had an annual turnover of £1569.3M with an operating profit of £33.6M (2.1%) (George Wimpey plc, 1996). In 2000, the annual turnover was £694M with an operating profit of £58.6M (8.4%) (George Wimpey plc, 2000). The following case study data were obtained from an interview with Joe Dwyer, then Chief Executive, George Wimpey plc.

4.6.1.1 Corporate Strategy

Prior to 1996, the corporate strategy adopted was to make all four businesses successful based on financial return only. Little consideration was given to non-financial indicators at the time. Each business had its own strategy to suit the nature of its work ranging from the Construction Division's negative assets to the Minerals Division 20-year long-term assets. Group Strategy meetings were held bi-annually over a 2-3 day period for the main Board of Directors. During this period, based on their
judgement and experience, they planned for the next five-year period with short-term plans of approximately 18-month duration.

4.6.1.2 Business Portfolio

In 1994 Wimpey's Chief Executive - Joe Dwyer started questioning the nature of the contracting business. The structure of the construction industry had changed tremendously over the years, particularly with the advent of Private Finance Initiative (PFI) contracts and the use of sub-contractors and hired plant to lower entry level barriers for construction businesses. The risks involved were very great with little profit to be made.

The 1995 Group Strategy Meeting decided Wimpey should divest its Construction Division. An earlier decision had been made to divest the Property Division. The Board then looked at the synergy between the remaining businesses: the Minerals Division and the Housing Division. These were two very different businesses with completely opposing strategies and no synergy. Minerals had long-term assets and Housing had short-term assets. The Minerals Division was seen as a potential divestment particularly with increasing environmental costs. Also, Minerals was heavily dependent on public spending and with the lack of government spending in the mid 1990s, the future appeared bleak. Housing had always provided 70-80% of the Group's profits. The decision was therefore made to focus on Housing and Land Development because of its higher profitability, cash generation and flexibility. Having a single business focus in Housing was seen as important in adding value at the corporate level. The decision was made to divest, by a sell-off, both the Construction and Minerals Divisions.
Tarmac had offered its Housing Division (McLean Homes) for sale before Wimpey decided to divest itself of its Construction Division. McLean Homes would have been a useful addition to the Wimpey Homes' portfolio, however the cash for its purchase was not available. Wimpey approached Tarmac with the intention of obtaining McLean Homes on 'hire purchase'. Wimpey suggested an asset swap cognisant that Wimpey Minerals and McLean Homes were both worth around £350M. Negotiations faltered because of the difference in annual profits: Wimpey Minerals had an annual profit of approximately £24M whereas McLean's was around £40M. Wimpey convinced Tarmac that Minerals was a long-term asset (+20 years) whereas McLean was a short-term asset (2 years). Later Wimpey's Construction business was added to the asset swap as an enticement. This would boost Tarmac's future profits, and would cost a nominal £1.

After the asset swap, Wimpey restructured into four divisions: Wimpey Homes, McLean Homes, Morrison Homes (US based) and Ardel (land development in Australia). The two UK Housing Divisions were maintained as different brands operating in different sectors. However, in 2000 the two UK divisions merged and again restructured to produce savings in administration costs (Fishlock, 2000b).

4.6.1.3 Post -Asset Swap Performance

After the asset swap, Wimpey's strategy was to focus on making the company a success and provide good return on capital for shareholders.

Financial Performance: Prior to the asset swap, profits had stagnated, the share price tumbled to a low of 90p and the entire Group was valued at £300M. This was a severe
under-valuation since any of the individual Divisions was worth that amount in its own right. However, the valuations were based on earnings and this was very low as reflected by the share prices. By concentrating on Housing, Wimpey hoped to become considerably more profitable. The share prices over the period are as shown in Figure 4.7. Wimpey’s share prices had been on a downward trend immediately prior to the asset swap. The period leading up to the asset swap finalisation saw the share prices rise by over 40%. The increased share prices were sustained for a few months before losing the gains after mid 1996. Since that time, there have been many share price fluctuations but overall the trend has been level.

Non-Financial Performance: In 1997, no non-financial indicators were used formally, or informally, to measure performance.

Figure 4.7: Wimpey Share Prices June 1995 – December 2000
(Construction News 1995 - 2000)
4.6.2 Tarmac plc

Tarmac has been involved in road construction and quarrying for over 100 years. The company later diversified into Building and Industrial products. Major restructuring over the years meant that, during the asset swap period, the company operated two main Business streams: Heavy Building Materials and Construction Services. In 1995, prior to the asset swap, the Group’s annual turnover was £2482.4M with an operating profit of £106M (4.3%) (Tarmac, 1996). For 1997, the annual turnover was £2773.1M with an operating profit of £159M (5.7%) (Tarmac, 1998). In August 1999 the Tarmac conglomerate demerged into Tarmac – an aggregates business and Carillion – a construction business. In 1999, Carillion’s annual turnover was £1802M with an operating profit of £35.1M (1.9%). One year later, in September 2000, Tarmac was acquired by Anglo American Industries, a minerals company (Pirrie, 2000). The case study data was obtained through an interview with Tarmac’s Construction Division’s Business Analysis Executive.

4.6.2.1 Corporate Strategy

Corporate strategy was developed by Tarmac’s main Board of Directors which consisted of the Chief Executive, the Financial Director and the Directors of the two business streams: Heavy Building Materials and Construction Services. A Central Planning Department advised the main board on major strategic issues. Formal Strategic Reviews were held once a year. Five-year plans were created but this was eventually abandoned because of the effort required in producing them for a rapidly changing environment.
4.6.2.2 Business Portfolio

McLean Homes was divested due to the high cost of maintaining the land banks. Tarmac wanted to return to its core competencies. The Central Planning Department used techniques such as the BCG matrix and the Construction Services occasionally used SWOT analyses. However, these were used as supplementary techniques and it is unlikely that any of these techniques would have been used to determine the divestment of the housing division or the acquisition of the Wimpey businesses. In 1998, no Managing Director was aware of these techniques. However, this has changed in recent times due to more staff training and the employment of more staff skilled in business management. The divestment of the Tarmac Housing Division land banks made more cash available for Tarmac’s other businesses. The acquisition of Wimpey’s Minerals and Construction Divisions led to a number of gains for the company’s portfolio such as:

- a substantial increase in the building capability in the South East UK;
- a wider range of good clients;
- a greater ability in particular areas e.g. Water, Process Engineering, Multi-Disciplinary work, Partnering, Design & Build work and PFI contracts; and
- a substantial increase in the level of work done overseas.

4.6.2.3 Post-Asset Swap Performance

Financial Performance: Figure 4.8 shows the share prices from 1995 - 2000. Like Wimpey, Tarmac’s share prices had been following a downward trend prior to the asset swap announcement. However, after the announcement, share prices rose briefly by approximately 30%. Immediately after the asset swap finalisation, share prices
fluctuated briefly before starting another downward trend from mid 1996. The later demerger to create Carillion clearly demonstrated the stock market’s view of construction organisations with the new Tarmac organisation attracting a share price approximately four times that of Carillion’s share price.

**Non-Financial Performance:** The Construction Division used eight key performance indicators which included items such as business results, customer satisfaction, supply chain management, productivity, information technology, people management, safety & environment and working together.


**Figure 4.8: Tarmac plc Share Prices June 1995 - August 1998**

4.6.3 AMEC plc

Parts of AMEC have a history dating back to more than 100 years. In 1988 the Matthew Hall Group was bought and this led to the creation of an international
engineering, construction and development organisation. In 1996, the group purchased Spie Batignolles, a French electrical contracting and construction business. The Group’s annual turnover was £2451.3M with an operating profit of £32.8M (1.3%) (AMEC, 1996). In 1996 the company reorganised into eight business units as follows: civil engineering; construction; housing; infrastructure services; mechanical and electrical services; process and energy; project investment, development, manufacturing and services; and international. In 1999, the turnover was £3100M with an operating profit of £77M (2.5%) (AMEC, 2000). In April 2000 a merger was completed with the North American firm AGRA. AGRA was a professional services group specialising in engineering, environmental and technology solutions. The merger with AGRA led to further restructuring into two operating divisions: Project Services and Support Services, and Investments. AMEC now promotes the new organisation as a provider of services and engineering solutions.

4.6.3.1 Corporate Strategy

The AMEC group strategy was dictated by its Board members supported by a Strategic Group. That group assessed key markets and how best to enter new business areas. The business units also had strategy units to recommend ideas to the Board of Directors. The Chief Executive had actively recruited staff for key positions with business backgrounds from other sectors and work experience in other countries. A novel idea was the use of young strategy ‘think-tanks’ with business qualifications and experience to conduct extensive research on possible strategic alternatives.

At the time AMEC was seen as quite forward thinking. Due to their strategists’ business background, they implemented a series of new, business ideas. The use of
techniques such as the BCG Matrix, SWOT Analysis and the Balanced Scorecard was extensive in some of AMEC’s businesses.

4.6.3.2 Business Portfolio

AMEC planned to become a global company in a series of strategic steps. In 1996, other than Spie Batignolles, the company also bought two process and energy businesses and divested two businesses because they were not making a profit. The main reason for the French acquisition was its office locations internationally, as setting up costs can be astronomical and a high-risk enterprise.

AMEC’s decision to acquire or divest a firm was multi-faceted. In some cases the company used SWOT and PEST (Political, Economic, Social and Technological) analyses. In other circumstances, decisions were based on available opportunities followed by a more rigid strategic analysis.

4.6.3.3 Post-Acquisition Performance

Financial Performance: The success of acquisitions such as Spie Batignolles was judged in accordance with a ‘mock’ business plan. In 1997, Spie Batignolles’ profit contribution was in line with its business plan. Predictions were made up to five years ahead for the balance sheet and profit and loss accounts. In the medium term low, medium and high-risk expectations were calculated to estimate the acquisition’s performance. Different business units looked at different financial indicators but the main ones used were profit, return on capital employed, share price and price/earning ratio. Figure 4.9 below shows the share prices for the period under investigation. Amec’s share prices had stabilised just before the announcement. A small increase was
noticed but this reverted to the previous value in the weeks leading up to the acquisition being finalised.

![Graph showing AMEC share prices from June 1996 to December 2000](image_url)

**Figure 4.9: AMEC Share Prices June 1996 – December 2000**


**Non-Financial Performance:** In 1998 parts of the company were investigating the use of the Balanced Scorecard. However, the company has since introduced the use of the Excellence Model to keep track of non-financial performance.
4.7 Discussion

4.7.1 Corporate Strategy

Betts and Ofori (1992) commented upon the low-profile use of strategic planning within construction companies. However, the case studies conducted in 1997-1998 found that there was some degree of strategic planning taking place and, due to increased industry competitiveness, strategic planning was becoming more widespread.

4.7.1.1 Corporate Strategy Formulation

Each company had a Board of Directors that placed strong emphasis on strategic planning. The Board members consisted of key construction and finance personnel and professionals from different industry backgrounds. For Tarmac and AMEC, the strategic decision-making took place at both a corporate and divisional level. Tarmac had a Central Planning Department to advise on strategy with its Construction Division and also employed a Business Analysis Executive to provide a strategic framework for their decision making. AMEC's Board decisions were supported by a strategic group underpinned by the recommendations of each business unit's strategy team. From the case study companies investigated, companies had moved away from the concept of a charismatic Chief Executive making decisions to one where Board decisions were supported by other specially formed strategy groups.

4.7.1.2 Frequency of Strategic Planning

Warszawski (1996) recommended that construction companies use a planning horizon of 3-5 years. Hensey (1997) recommended three time-frames to cope with
rapid and unpredictable change. These were long-term (five or more years) for promoting the company’s mission and core values, relatively long term (3-5 years) for goals, and relatively short term (1 year) for objectives. He recommended that these needed to be updated on an annual basis due to emerging or current needs.

Each of the three companies produced a long-term strategic plan for a five-year period. In addition, Wimpey created 18-month short-term plans, Tarmac and AMEC reviewed strategy once per year. Thus, from the case study examples, each company followed the recommended guidelines in terms of planning horizons. They also reviewed their strategies at frequencies appropriate to a rapidly changing business environment.

4.7.2 Portfolio Analysis

In the three case studies documented, each organisation had a different reason for their acquisition or divestment. For George Wimpey, there was a desire for business synergy therefore the company decided to focus on one type of business. The divested Construction Division was felt to have a low financial strength, weak performance and poor future prospects. The Minerals Division had a weak performance and was felt to have poor future prospects. In addition, there was no synergy between the Minerals Division and the remaining Wimpey Divisions. For Tarmac, it was a return to their core competencies. Divesting its cash-intensive land banks complemented the company’s horizontal growth, and the acquired Wimpey Divisions fitted into its existing business portfolio. For AMEC, the acquisition of Spie Batignolles and other companies was part of a strategic decision to become a global company by providing a range of services with a global spread. This continued in 2000 with the merger with AGRA, a North
American engineering services and technology solutions firm to make AMEC the largest international design firm (ENR, 2000).

4.7.2.1 Portfolio Selection

The manner in which these business portfolio decisions were made in 1996 was intriguing. Since the 1970s management experts have advocated the use of a series of portfolio and market share analyses such as the BCG matrix, SWOT and PEST analyses, etc. to support strategic decisions. However, based on the case studies, the use of these techniques was still at an embryonic stage in the construction industry. Of the three companies studied, one did not use any recognised portfolio analysis technique, one used it occasionally but it was not used to support its key acquisition and divestment decisions and in the third company, some Divisions were known to use the techniques extensively. One company representative stated 'very often the decision to acquire or divest a business is based on gut feeling, experience and existing opportunity rather than the use of portfolio analyses'. Although the use of judgement and experience is important, the views communicated in 1997/1998 revealed not much has changed since Lansley (1987) and Hillebrandt and Cannon (1990) highlighted the lack of use of well-established portfolio analysis techniques within the industry. This may be due to the outlook of many companies who are concerned with short-term performance. Fortunately, since then, major changes have taken place within the industry. Many companies have adopted the use of portfolio analysis techniques. This may be attributed to the fiercely competitive environment that has encouraged companies to employ management consultants and a new generation of construction professionals skilled in business management.
4.7.3 Performance Measurement

The metrics adopted to measure performance must relate to the strategic goals of the organisation (Kagioglou et al., 2001). This was clearly demonstrated with the case study companies. Those organisations that based their acquisitions and divestment decisions on portfolio analysis had more robust and holistic mechanisms for judging their performance.

4.7.3.1 Financial Performance

Researchers have mixed views concerning post-acquisition performance. Firth (1979) found no gains and even small losses associated with acquisitions because the stock market placed a lower value on the combined company than the separate firms. Stuart Jones (1982) found the use of profit, expressed in terms of return on investment, misleading because of the different accounting policies and allocation for exceptional items employed by firms. Agrawal et al. (1992) found a loss of about 10% over a five-year period whilst Healy et al. (1992) found increases in operating cash flow.

The UK financial markets traditionally hold a poor view of UK construction companies. The companies' low profit margins given the size of their turnover has always been a concern. Thus construction companies have been urged to improve these margins by consolidating and finding new areas of work (White, 2001). There are numerous ways of examining a company's financial performance (Sefton, 1996). Table 4.2 shows some of the key indicators.
Table 4.2: Key Financial Performance Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit Margin</td>
<td>Measures how much profit a company makes on the turnover</td>
</tr>
<tr>
<td>Return on Capital Employed (ROCE)</td>
<td>measures how much money a company is making from its assets</td>
</tr>
<tr>
<td>Price/Earning (P/E) ratio</td>
<td>measures the company’s earning against the share price</td>
</tr>
<tr>
<td>Gearing</td>
<td>measures the company’s debt as a proportion of its total assets</td>
</tr>
</tbody>
</table>

Table 4.3 shows these key financial indicators for the case study companies for 1996 and 2000.

Table 4.3: Companies’ 1996 and 2000 Key Financial Indicators
(Company Annual Reports, Hemscott, 2001; The Motley Fool, 2001, FAME, 2001)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wimpey</td>
<td>5.16</td>
<td>8.58</td>
<td>4.40</td>
<td>0.80</td>
<td>0.98</td>
<td>2.60</td>
</tr>
<tr>
<td>Tarmac</td>
<td>4.50</td>
<td>16.0</td>
<td>7.6</td>
<td>29.9</td>
<td>12.5</td>
<td>23.5</td>
</tr>
<tr>
<td>Carillion</td>
<td>21.60</td>
<td>7.74</td>
<td>17.80</td>
<td>51.39</td>
<td>12.60</td>
<td>23.26</td>
</tr>
<tr>
<td>Amec</td>
<td>39.1</td>
<td>39.9</td>
<td>29.3</td>
<td>19.9</td>
<td>67.2</td>
<td>32.7</td>
</tr>
</tbody>
</table>

The profit margin for Wimpey and AMEC increased during the four-year period 1996-2000. However, Carillon’s margins were cut to less than 1%. One reason for this may be that the company underwent substantial changes with its demerger from Tarmac, and thereby lost some of its profitable business streams. The ROCE gives an indication of how effectively the company is using its capital. The above figures show the companies have all managed to increase this figure significantly between 1996 and
2000. To analyse the P/E ratio, the companies' performance must be placed within the context of the UK share price and also the Industry Sector for the same period. At the end of 2000, the P/E ratio for the UK was 19.59 while that for the construction industry was 11.55. Thus, Wimpey shares were considered good value, but Carillion's and AMEC's were considered very expensive investments. Gearing for Wimpey has remained almost unchanged but Carillion and AMEC have managed to halve their debt within the period.

The companies' financial performances need to be considered within the context of the global and national economy as well their peers in the construction and building materials industry. Figures 4.10 shows the case study companies' share prices, FT-SE Mid 250 Index (the share price index of the UK’s next 250 companies by size after the Financial Times -Stock Exchange 100), and the share price index of the construction and building materials industry sector.

The middle graph (Carillion plc) requires special consideration. Tarmac demerged in August 1999 to create a separate construction company – Carillion plc. Thus there are no figures for Carillion before mid 1999. Also, Tarmac is now part of another group, hence they are no longer listed under the Tarmac name for share price data.

Strategic decisions such as acquisitions and divestment are meant to lead to long-term performance improvement. Thus, although share prices are influenced by other factors, acquisitions or divestments are expected to produce gains for the shareholders. Figure 4.10 shows that the three companies mirror the fluctuations of both the FT-SE and the industry sector share prices. The decision to acquire or divest seems to have been justified for Wimpey and AMEC. Both their share prices show a widening gap
Figure 4.10: Companies, FT-SE Mid 250 Index and Industry Sector Share Prices

(Hemscott, 2001)
with the FT-SE 250. This implies that they are out-performing UK companies of a comparable size. However, it is difficult to interpret this gap as being due to the acquisition/divestment in isolation, since it may also be attributed to a combination of corporate changes.

Interestingly, all three companies continue to under-perform compared to the rest of the construction industry sector. This may be explained by the fact the industry sector also includes building material companies who, traditionally, have had a more favourable response from the financial markets because of their higher profit margins. Financial indicators must be interpreted with care. They change on a regular basis and must be interpreted with a number of other factors over a period of time, rather than as a snapshot at one point in time. Also, it is important to remember that financial performance are ‘lagging’ indicators that reflect on past corporate actions and thus do not indicate current or future prospects.

4.7.3.2 Non-Financial Performance

Non-financial performance indicators are considered as ‘leading’ indicators. They are considered to be more pro-active and give an indication of how an organisation may improve its future performance. In 1997 George Wimpey did not employ any non-financial means to judge its performance. Its then Chief Executive firmly believed that financial performance should be the main factor in judging performance and, if financial results were good, then the other dimensions, such as customer (shareholders) and employee satisfaction, followed. In 2000, the company appointed a new Chief Executive who, whilst recognising the importance of financial indicators, believed in understanding the drivers of profitability and measuring those drivers. Systems were
therefore being put in place to measure customer and employee satisfaction and other
indicators for performance production such as wastage, re-work overhead cost
benchmarks, etc. The Chief Executive attributed these changes to the changing fashions
of management, the changing role of business in the society, and to his personal
predilections.

In 1998, Tarmac’s Construction Division was implementing a series of non-
financial performance measures such as customer satisfaction, people management, etc.
This was promising since, although the business’s financial results were clearly
important, it showed that the company also considered non-financial performance
indicators of increasing importance, sufficient to include them as a series of KPIs. In
2001, Carillion were continuing to use several non-financial performance indicators
since they realised this was becoming more important for the clients as well as the
industry in general.

In 1998, AMEC had ‘champions’ who introduced the use of the Balanced
Scorecard and the Excellence Model within different AMEC divisions. AMEC
Construction has been using the Excellence Model since 1996 and has also explored the
use of the Balanced Scorecard. The company has implemented the Excellence Model
since they believed that it encompassed, and exceeded, the objectives of the Balanced
Scorecard. The drivers for using the Excellence Model are two-fold: (1) the company
believes that financial results are only a part of overall performance; and (2) major
clients such as the Ministry of Defence, the NHS, BAE Systems and the UK Treasury
Department are requesting its use. In 2001, the company continues to use the
Excellence Model at a strategic level to justify and challenge business plans. There is a
programme to train all units within AMEC’s Capital Projects division in the use of the
Excellence Model and there is an *ad hoc* arrangement to provide training for all companies at group level, as required.

### 4.8 Conclusions and Recommendations

This chapter has investigated how UK contractors developed corporate strategies to review their business portfolios and how they judged the subsequent performance of the acquisition or divestment. Case studies of three major UK contractors were used in the analysis.

The study discovered that all three companies regarded strategic planning as a key element in maintaining competitiveness and profitability in a changing environment. Strategic planning was undertaken for a long-term, typically covering a five-year period. The long-term plans were then broken down into medium and short-term plans. The individuals charged with devising strategy were the Main Board members, in some cases supported by strategy planning units. The Boards consisted of professionals from different industry sectors. This can be seen as a positive influence by facilitating cross-fertilisation of ideas across different business sectors.

The case studies found that, in 1997/1998, the level of portfolio analysis was at an embryonic stage. Techniques that were used in other industrial sectors for almost three decades were not routinely used by top UK contractors to support their decision-making, including acquisition and divestment decisions. Instead, the contractors tended to rely mainly on the judgement and experience of their Board members.

Performance has been a major concern to the construction industry. The UK financial markets have always had a poor view of the UK construction industry. The portfolio changes implemented by the three case study companies may have contributed
to them maintaining their performance. It is difficult to isolate one particular factor that may have impacted on the overall performance. The companies out-performed the FT-SE Mid 250 companies but they continued to under-perform their own industry sector. In 1997/1998 two companies were beginning to consider the use of non-financial performance indicators. By 2001 two of them were actively using non-financial performance measurement indicators and the third company was in the process of developing similar indicators.

Butler et al. (1997) proposed that British companies found it difficult to accept that other factors had equal importance to financial results. However, the increasing global competition means that construction companies will have to be more focused on strategic planning. The strategic directions selected will need to be justified with supporting evidence rather than the gut feeling of senior staff. Portfolio management will play an increasing role as companies compete to distinguish their services offered. This will have to be done in a systematic way, using established portfolio analysis techniques, to ensure the right mix of businesses are available to achieve the company’s goals. Finally, whilst financial performance indicators continue to be important, the use of non-financial metrics will become increasingly important if companies want to extend their client base and achieve long-term profitability.

The next chapter considers how a company, having made a decision to diversify or expand through acquisitions, can develop an acquisition strategy for entering an emerging market.
Chapter 5 Acquisitions Strategies for Emerging Markets

This chapter investigates the acquisition strategies of major UK construction contractors towards emerging markets. The new market of Central and Eastern Europe is used as the basis for the study. Such emerging markets offer new opportunities for construction work because of their rapid economic development. The chapter examines how five leading UK companies perceive the opportunities available in Central and Eastern Europe and investigates their strategies for winning work.

5.1 Introduction

The 1990s recession dramatically affected the major UK construction contractors’ strategic and business thinking (Hillebrandt, 1995). During the late 1980s and early 1990s companies were encouraged to look towards Europe. The Single European Act, signed in February 1986, launched the Single Market programme. Ironically, this was the period during which the UK construction market was experiencing a sharp downturn in its workload (National Economic Development Organisation, 1986). The UK construction industry responded by implementing cost reductions and cost control mechanisms. This resulted in staff redundancies, lowering of overheads, control over capital expenditure on new acquisitions, etc. The inherent risks of entering new overseas markets meant that the expansion into Europe was not a key strategic initiative. Instead, emergency tactics were required for company survival.

Since Hillebrandt’s (1995) observation of the construction industry in and out of recession, the UK business environment has changed. Construction output is forecast
to rise to 2.6% in 2001 and is expected to continue at a similar rate for the next few years (Construction Forecasting and Research, 2001; Euroconstruct, 2001).

Companies have learned lessons from the recession. The improvement in management at board level noticed by Hillebrandt (1995) will be much needed as the construction market becomes more global and international companies look for new markets, including that of the UK, to satisfy their expansion plans. Conversely, many UK companies are exploring international acquisitions as a means of becoming 'global'. This chapter therefore investigates the acquisitions strategies of UK contractors towards emerging markets, using the new market of Central and Eastern Europe as a focus for the study.

5.2 Growth through Acquisitions

Top UK contractors realise the need to operate in a market that is increasingly global. The market is currently driven by long-term privately financed projects and the high expectations of major clients and shareholders who are not satisfied with high turnover but low profit margins (Knutt, 1998a). The trend in the industry is towards a two-tiered market made up of large, international contractors and small, speciality firms (Ball, 1988; Schriener and Angelo, 1995; Carrillo, 1998). This is demonstrated in continental Europe where contractors adopt a more long-term view of the industry as witnessed by the UK acquisitions of HBG and many German and French contractors. The need to expand is slowly gaining acceptance in the UK with pressure from financial analysts for some of the country's major contractors to merge (Knutt, 1998a).
According to Langford and Male (1991) there are three ways to achieve strategic growth:

- Internal growth – a firm uses its own capital to start a new operation;
- External growth – by the use of mergers and acquisitions; and
- Combinations of internal and external growth – joint ventures are an example.

Whilst the first two options are permanent arrangements, the third is a temporary commitment for a defined duration or task. Internal growth to finance overseas business is rarely an option due to its costly nature. International joint ventures are on the increase but these are short-lived arrangements and do not provide the sustained business required.

Crosthwaite’s (1998) study of major UK contractors found that 89% of the respondents had increased their overseas turnover. The increase of long-term profitability was stated as the main objective. In the same survey, all companies expected their turnover to either increase or remain stable in Europe. Birbeck (1995b) also recognised that UK contractors were once again turning towards exporting their skills, particularly in the development of infrastructure.

As part of a company’s expansion plans, one option for growth is an acquisition. It may form part of a globalisation strategy. It is a high-risk option with general agreement that about 50 percent of acquisitions are considered failures by some measure (Kitching, 1967; Bleeke and Ernst, 1991). Within construction there has been a constant stream of acquisitions, mainly targeted at small and medium-sized firms. In recent years the failed attempts at mergers such as Bovis – WS Atkins, and Tarmac - Aggregate Industries have shown how difficult it is for well established companies to come to a compromise (Maclister, 1998; NCE, 1999; Chevin, 1999).
Rockwell (1968) stated that size by itself is an insufficient motive if it fails to produce increased earnings or a more favourable price/earnings ratio. As was characteristic of that era, Rockwell focused on earnings and reinforced this by stating that there is only one valid all-encompassing objective for making an acquisition: to produce increased earnings for the shareholders of both companies.

5.3 The European Market

Europe, as shown Figure 5.1, is divided geographically into Western Europe, consisting of both European Union (EU) and non-EU states, and the Central and Eastern European Countries (CEEC), consisting of many of the former communist states, also including the Baltic states.
Table 5.1 below shows the comparison of the EU countries and CEEC members in terms of their population, land area and Gross Domestic Product (GDP) per capita. The CEEC that have applied to join the EU in its next enlargement are shown in bold.

The table reveals a number of facts such as (1) the size of population and the land area of the CEEC is more than half that of the current EU states, and (2) the considerable difference in the GDP between the rich EU states and the much poorer CEEC.

Table 5.1: Key European Statistics
(Davis Langdon Consultancy, 1998)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Population (million)</th>
<th>Land Area ('000 sq. km.)</th>
<th>GDP per capita '000 ECUs</th>
<th>Countries</th>
<th>Population (million)</th>
<th>Land Area ('000 sq. km.)</th>
<th>GDP per capita '000 ECUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe -EU*</td>
<td></td>
<td></td>
<td></td>
<td>CEEC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>8.1</td>
<td>84</td>
<td>22.5</td>
<td>Armenia</td>
<td>3.8</td>
<td>29</td>
<td>0.3</td>
</tr>
<tr>
<td>Belgium</td>
<td>10.2</td>
<td>31</td>
<td>20.7</td>
<td>Azerbaijan</td>
<td>7.5</td>
<td>87</td>
<td>0.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>5.3</td>
<td>43</td>
<td>22.4</td>
<td>Belarus</td>
<td>10.3</td>
<td>208</td>
<td>1.0</td>
</tr>
<tr>
<td>Finland</td>
<td>5.1</td>
<td>338</td>
<td>16.8</td>
<td>Bulgaria</td>
<td>8.4</td>
<td>111</td>
<td>0.9</td>
</tr>
<tr>
<td>France</td>
<td>58.5</td>
<td>552</td>
<td>20.9</td>
<td>Czech Republic</td>
<td>10.3</td>
<td>79</td>
<td>4.0</td>
</tr>
<tr>
<td>Germany</td>
<td>81.5</td>
<td>357</td>
<td>22.8</td>
<td>Estonia</td>
<td>1.5</td>
<td>45</td>
<td>2.3</td>
</tr>
<tr>
<td>Greece</td>
<td>10.5</td>
<td>132</td>
<td>9.1</td>
<td>Georgia</td>
<td>5.4</td>
<td>67</td>
<td>0.5</td>
</tr>
<tr>
<td>Ireland</td>
<td>3.6</td>
<td>70</td>
<td>14.5</td>
<td>Hungary</td>
<td>10.2</td>
<td>93</td>
<td>3.4</td>
</tr>
<tr>
<td>Italy</td>
<td>57.4</td>
<td>301</td>
<td>15.1</td>
<td>Latvia</td>
<td>2.5</td>
<td>65</td>
<td>1.6</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.4</td>
<td>3</td>
<td>34.5</td>
<td>Lithuania</td>
<td>3.7</td>
<td>65</td>
<td>1.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>15.6</td>
<td>37</td>
<td>20.4</td>
<td>Moldova</td>
<td>4.3</td>
<td>34</td>
<td>0.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>9.9</td>
<td>92</td>
<td>8.7</td>
<td>Poland</td>
<td>38.6</td>
<td>313</td>
<td>2.8</td>
</tr>
<tr>
<td>Spain</td>
<td>39.7</td>
<td>505</td>
<td>11.5</td>
<td>Romania</td>
<td>22.7</td>
<td>238</td>
<td>1.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>8.8</td>
<td>450</td>
<td>19.9</td>
<td>Slovak Republic</td>
<td>5.4</td>
<td>49</td>
<td>2.9</td>
</tr>
<tr>
<td>UK</td>
<td>57.1</td>
<td>245</td>
<td>14.0</td>
<td>Slovenia</td>
<td>2.0</td>
<td>20.5</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ukraine</td>
<td>51.6</td>
<td>60.4</td>
<td>0.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>371.7</td>
<td>3,240</td>
<td>17.6</td>
<td>186.2</td>
<td>2,087</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

*Western Europe Non EU countries include – Cyprus, Iceland, Norway, Switzerland and Turkey
5.4 The CEEC Construction Market

Hewes (1997) predicted that the Central and Eastern European Countries would be one of the key markets for concentration by overseas contractors. The region earned the title of Europe’s Tiger Economies because of the pace of economic growth (Construction Europe, 1997c). In construction terms, the mature markets of Western Europe are saturated but the European Union (EU) one is expanding. Some of the countries due to join the EU, the so-called CEEC 10 (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland Romania, Slovak Republic and Slovenia) are in need of construction services, particularly to satisfy their infrastructure demands (Euroconstruct, 2001).

The construction output in Europe for 1996 amounted to ECU 876 billion, about £588 billion (Davis Langdon Consultancy, 1998). By 2000 this figure increased to ECU 1000 billion or £625 billion (Euroconstruct, 2001). Of this, ECU 250 billion, or 25%, originated from the Central and Eastern Europe Countries. Whilst the forecast for construction growth is decreasing for Western Europe it is accelerating for the major CEEC as shown in Table 5.2. This is indicated by (F) for 2001 and 2002.

Table 5.2: Construction Output for Western Europe and the key CEEC
(Euroconstruct, 2001)

<table>
<thead>
<tr>
<th>Country</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001 (F)</th>
<th>2002 (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>3.0</td>
<td>1.7</td>
<td>0.9</td>
<td>2.4</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Western Europe</td>
<td>0.9</td>
<td>1.9</td>
<td>3.1</td>
<td>2.8</td>
<td>1.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>-2.9</td>
<td>-8.8</td>
<td>-9.2</td>
<td>3.1</td>
<td>3.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Hungary</td>
<td>7.0</td>
<td>5.8</td>
<td>6.0</td>
<td>7.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Poland</td>
<td>13.4</td>
<td>11.5</td>
<td>2.5</td>
<td>2.0</td>
<td>4.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>11.7</td>
<td>-4.0</td>
<td>-26.5</td>
<td>-0.2</td>
<td>10.6</td>
<td>11.3</td>
</tr>
<tr>
<td>CEEC</td>
<td>8.8</td>
<td>5.9</td>
<td>-8.4</td>
<td>2.9</td>
<td>5.3</td>
<td>6.6</td>
</tr>
</tbody>
</table>
5.4.1 Economic Strength

WS Atkins (1994) acknowledged the economic reforms taking place in Central and Eastern Europe. This attracted private investment and will attract increasing levels of aid from the European Union to the region following the accession of the key states of Czech Republic, Hungary, Poland and Slovenia to the EU. In particular, the infrastructure and transport links demand large sums of investment.

The economic strength of the region has increased in recent years and the types of construction projects are now geared towards developing the local economy such as civil engineering infrastructure and commercial buildings as shown in Figure 5.2 (Knutt, 1998b).

![Construction Output in Western and Eastern Europe](image)

**a) Western Europe**

**b) Central and Eastern Europe**

*Figure 5.2: Construction Output in Western and Eastern Europe*
5.4.2 Development Funds

The European Investment Bank reported that the growing economies of the Central and Eastern European Countries (CEEC) required ECU 285 billion for infrastructure spending alone (Anon, 1999c). Previously, the source of funding was a problematic issue, because the EU, whilst willing to provide grants and loan, could not afford the sums of money required. The CEEC governments are now finding ways of funding their economic development. This includes changing legislation to allow private investment through Public-Private Partnerships (PPP) (Anon, 2000c). Many of these PPPs will require the use of large, international contractors for the work because of their capability and experience on similar PPPs in the western world. Indeed, some of the large western European contractors such as Sweden’s NCC and Skanska, and Germany’s Hochtief have already acquired some of the region’s leading construction companies in an effort to gain some of the work available (Anon, 2000c; Anon, 2000d).

5.4.3 Construction Opportunities

All the evidence supports the need for major infrastructure projects that require both technical and managerial expertise. The European Commission has plans for a series of transport links between the EU and the Eastern states including Russia (Construction Europe, 1997c). UK contractors have an opportunity to obtain some of the work forecast for at least the next decade. There are many strategies for pursuing business in a new market. These range from buying a local company, setting up joint ventures or alliances with local companies, staffing offices with UK personnel, etc. Each of these strategies carries a risk that has to be quantified by the company.
5.4.4 Country Focus

Of the CEEC-10 that have applied for EU status, the focus has been on three main countries. These are the Czech Republic, Poland and Hungary because of the size of the population and the level of economic development as demonstrated by their annual GDP per capita.

Poland has attracted a lot of interest in recent years. Its economy has undergone one of the more successful transitions (EU, 2001). The country offers enormous potential for the construction industry. Skanska’s Chief Executive highlighted that Poland currently has less than the construction output of Sweden but five times the population (Anon, 2000c). Poland is expected to dominate construction output in the CEEC with increased expenditure on non-residential and new civil engineering work (Morby, 2000). The road network was the most important area for investment but other areas include water treatment plants, modernisation of the railways and power plant schemes (Sleight, 1999).

Hungary has also attracted attention. The country aims to become an important ‘hub’ for the region and is directing its efforts in improving its communications, manufacturing and service industries (Anon, 1999c). The Czech Republic experienced the strongest construction growth in the region during the mid 1990s after a boost in public spending (Construction Europe, 1997c). Since then private investment has increased and the privatisation of the Czech construction industry was considered a success story.

The increasing workload available in Central and Eastern Europe will continue for sometime as the countries undergo economic development to join the EU. This will bring steep construction growth that is a tremendous business opportunity for UK construction organisations. Already a number of companies in the UK construction
supply chain such as material suppliers (Pilkington and Hanson), consultants (Ove Arup, WS Atkins, and Binnie Black and Veach), project managers (Mace), and several UK contractors are operating in the region.

5.5 Case Study Methodology

Five major UK contractors were identified to investigate their strategy for gaining work in Central and Eastern Europe. The five companies were selected because they were the top five companies in terms of international construction business turnover at the time the study was conducted (NCE, 1998). Four of the companies already had substantial turnovers in Western Europe. One of the contractors was listed as the most successful contractor in Eastern Europe. Semi-structured interviews were used to collect the data. Anonymity of the companies and interviewees was needed to ensure strategic issues were addressed openly. Also, the interviewees would need to have a thorough understanding of strategy at a corporate level. The two main areas for questioning focused on:

- Corporate policy towards Central and Eastern Europe; and
- Acquisitions strategy for the region.

It was important, therefore, that the candidates for interview held senior company positions. Interviews were conducted with:

- Company A: Commercial Director (specialist and largest subsidiary of a construction group);
- Company B: Financial Director (international construction subsidiary of a construction group);
Company C: Business Development Manager (specialist services part of the construction arm of a conglomerate);

Company D: Financial Director (subsidiary construction group of a construction-related group); and

Company E: Business Development Director (European division of a construction group).

5.6 Case Study Results and Discussion

The interviews covered a number of issues including the need to expand into international markets, the CEEC countries offering the most potential, entry barriers, etc. The following sections report and discuss the findings of the interviews held with the five companies.

5.6.1 Importance of Growth

There was no agreement on the need to achieve substantial growth to a size comparable with the leading contractors in France, Germany, Japan and the USA. Companies A, B and D held the view that being a large contractor held little merit because:

- there are no real economies of scale in construction;
- niche operations are where the real value lies;
- specialist offerings (technology, finance, management) offered more potential for work; and
- joint ventures, if necessary, were capable of handling any large project.
Company C already considered itself the largest international construction contractor. Company E believed that a restructuring of the industry was underway and that by 2005 there would be 10 ‘super-global’ players emerging of which they intend to be one.

5.6.2 Importance of Internationalisation

Bryan et al. (1998) stated that business as usual is not good enough and companies will have to look outside their traditional markets to achieve their aspirations. Some top contractors have already advertised their desire to acquire overseas companies (Fishlock, 1999). All five companies interviewed had at least 25% of their 1997 turnover outside of the UK. Hewes (1997) also stated that the traditional English-speaking markets were mature and efforts were being concentrated on those economies with the best growth prospects, such as Central and Eastern Europe.

Overall, all five companies recognised the importance of internationalisation. Western Europe is considered a saturated market for UK construction contractors but Central and Eastern Europe is seen to offer an opportunity for future earnings. Expansion into international markets was required in order to develop their earnings. Whilst acquisitions were regarded as an important way of entering a new market, companies A, B and D considered acquisitions as opportunistic in nature. As far as additional CEEC presence was concerned, companies A, B and C concentrated on major projects with western clients and investigated further opportunities for work during the currency of the major works. This form of entry into a market is not
unusual. Hill (1983) described how several UK manufacturing companies used the same strategy successfully in the same region twenty years ago.

5.6.3 Opportunities in Central and Eastern Europe

Four of the companies were of the view that there would be significant work over the next ten years in the region, and they all wanted to have part of that workload. Table 5.3 shows the regions that the companies considered to offer a good opportunity for construction work.

**Table 5.3: Areas of Opportunity**

<table>
<thead>
<tr>
<th>Company</th>
<th>Caspian Sea</th>
<th>Czech Rep.</th>
<th>Hungary</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

The interest in the Caspian Sea, particularly Azerbaijan, stems from its huge oil reserves. Major Western clients such as Shell, BP, and Amoco work in this region and such clients were seen as desirable. The different stages of development of the Eastern and Central European Countries meant that the region is not looked upon as a whole, but as pieces of a jigsaw. Company D is the notable exception, not seeing any future in the region. Coincidentally, Company D was the only company not having work in continental Europe, preferring work in North America and Asia. The countries and region shown in Table 5.3 also correspond to Knutt's (1998b) selection of countries
with high growth expectation in future years and where, coincidentally, an increasing number of British consultants are operating.

In 1998 only two of the five companies had seriously considered the acquisition of companies within the region. At the time, the acquisition of local companies was considered to carry a high risk. Instead, the UK contractors preferred to rely on participation in current contracts to win future work. The emphasis was on marketing their specialist expertise and using their technological and management advantage to secure work rather than purchasing local companies. However, some companies have since changed their views, most notably Company C which now has a total of 19 offices in the region.

5.6.4 Winning market share

Companies A and C relied on their specialist expertise, using their technological advantage and better management expertise for gaining work in the region. Company B considered acquisitions as a route but also used local partnerships. Company B also intended to use the contacts and experience gained on projects in the region. Company D thought that an acquisition was the only way to enter the CEEC market but acknowledged that in any acquisition it was the personnel that was purchased, rather than a construction business. Company E opted for organic growth through working from business units based in adjacent countries. They also focused on Western multinationals seeking work in the region, and targeted those likely to succeed.

The key to success in international markets lies in the use of new management techniques, new construction methods, new technology and new materials (Russel et al, 1998). This would therefore be the major selling point for any UK contractors.
planning on working in Central and Eastern Europe, particularly those countries earmarked for EU expansion plans and requiring heavy civil engineering works. UK companies are generally well respected for their project management skills and their ability to undertake large, complex construction projects successfully.

5.6.5 Main Barriers

Table 5.4 shows what the case study companies considered the main barriers to acquiring construction companies and working in the CEEC.

<table>
<thead>
<tr>
<th>Company</th>
<th>Political Instability</th>
<th>Financial Risk</th>
<th>Targeting Right Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>E</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

The perceived high risk of establishing permanent offices in Central and Eastern Europe was a major concern. Companies A, D and E stated that political instability was a top concern, particularly if civil war broke out. This concurs with Crosthwaite's (1998) findings that ranked political stability as an extremely important consideration for working overseas. All companies highlighted 'the ability to get paid' and 'earn hard currency' as significant considerations, hence the attraction for working with other Western clients such as oil companies. This would allow payment through UK banks. However, Knutt (1998b) stated that the region's economic strength had improved in recent years and the presence of major Western organisations such as
insurance companies, management consultants, and retailers, etc. had given the market stability and confidence.

5.6.6 Acquisition strategy

Given the perceived business opportunities available in Central and Eastern Europe, the companies were asked about their acquisition strategy towards the region. Table 5.5 shows the results.

Table 5.5: Acquisition Strategy for construction companies in CEEC

<table>
<thead>
<tr>
<th>Company</th>
<th>Deliberate Strategy</th>
<th>Emerging Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>D</td>
<td>✓</td>
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<tr>
<td>E</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Company A has adopted what Mintzberg (1994) described as a deliberate acquisition strategy because they wanted to win work in the region’s oil sector. Deliberate strategies are those which have been realised from an intended strategy. For Company A this entailed setting up a permanent presence in the region, preferring first to undertake project work in a specialist area for large Western clients. Company B hoped that some of their current work would act as a possible ‘launch pad’ for obtaining further work. This can be said to follow Mintzberg’s emergent strategy whereby actions are taken one by one and converge in time to some sort of consistency or pattern. It also complies with what Langford and Male (1991) coined contingency
strategy whereby a firm reacts to existing opportunities. The two conglomerates, Companies C and E, already had a strong presence and were working on an emerging acquisition strategy for a more permanent presence. Both companies viewed Central and Eastern Europe as significant to future earnings. Company E had been working in Russia where the profit margins were very small. However, a long-term view of potential earnings and profitability was being taken given the size and importance of the market. This accords with Lynch's (1990) view on profits from overseas work and also the findings of Crosthwaite (1998) which found that companies operated overseas to increase their long-term profitability. Company D had a deliberate strategy not to enter into any acquisitions in the region because there was no perceived added value.

5.6.7 Data on Countries

A combination of internal and external sources was used to obtain data on the construction opportunities available in the CEEC. The statistical data emanating from the European Commission are not extensively consulted except in the broadest sense at the macro economic level (for example, when examining potential countries to target). In that sense it is consulted early in the strategy process. Company B found that those contacts at the local Government Ministries and other similar organisations were more valuable than European Commission data. The company suggested that it was more important to have a local presence and to have local people collating data and marketing the company. Other sources quoted were trade visits, the press, trade journals and banks (a source of free country profiles).

Company E highlighted the need to judge the intentions of multinationals that may be looking to cross geographical borders as part of their expansion plans. Thus
contact with key individuals within successful companies was regarded as essential to business development and offered the potential to be the first contractor at the location.

5.6.8 Choice of target company

The use of portfolio analyses such as SWOT (Strength, Weaknesses, Opportunities and Threats) and PEST (Political, Economic, Social and Technological), and Porter’s five forces, was not widespread in the selection of a target company for acquisition. Two companies, A and D, stated that the opportunistic nature of acquiring another business is a key element in their strategy. Company C pointed out that too much analysis may mean the loss of an opportunity.

5.6.9 Measuring Acquisition’s Success

The companies acknowledged post-acquisition assessment is particularly difficult. They were all part of public, limited liability companies and therefore the views of the financial community on strategic actions affected the share price and the value of the company. Crosthwaite’s (1998) survey found that maintaining shareholders’ financial returns was a significant reason for operating overseas. Thus in 1998, the success of any acquisition was based on financial indicators only. The key financial indicators used were standard ratios such as profit margin, return on capital employed (ROCE) and Price/Earnings (P/E) ratio. Other methods used were:

- generating a formal mock business to cover a 5 year period post-acquisition;
- setting profitability targets; and
• carrying out a post acquisition audit as to whether the acquisition fulfilled its objective.

5.7 Discussion

The CEEC are geographically close to the UK, and four out of the five UK case study companies recognise the importance of the region in terms of workload. However, the UK contractors’ view appears to be overshadowed by a number of factors that may have led to them not aggressively entering the region. Firstly, because of the region’s former links with Germany, some UK contractors are of the view that the CEEC would favour German companies over UK companies. Research by Sieher et al. (2000) certainly demonstrated that German construction companies, due to their geographical location, were more Europe-oriented than British companies. Secondly, the creation of the EU in 1992 saw many top UK contractors expand into continental Europe only to sustain heavy financial losses (John Mowlem, 1995; Alfred McAlpine, 1997). Thirdly, during the period of investigation, all the case study companies regarded the region as a high risk, politically and financially. Fortunately, time has proved that neither of these are major concerns. Because of these potential risks, the case study companies adopted a low risk option and favoured western clients. However, the construction output statistics forecast the region’s infrastructure will require substantial investment for a number of years hence it is the public sector work that can provide a more sustainable income for UK companies.

Whilst the case study companies accepted the importance of internationalisation, there was agreement that there was no need for UK contractors to grow to the size of her leading contractors for the sake of competition. Four of the companies agreed that
the CEEC region would provide a lot of opportunity in future years and they would rely on their specialist expertise, technological advantage and better management skills to gain work. The case study companies identified a number of risks associated with acquiring companies and only one company had a deliberate, rather than emerging acquisition strategy. There was a reluctance to adopt a deliberate acquisition strategy for the region. Whilst the benefits of having an emerging acquisition strategy is recognised, it is of some concern that UK companies are not entering an accepted emerging market with more confidence. In some cases the views are still very much about short-term gains with one-off projects for western clients rather than longer-term public sector projects. This is reflected in the views that joint ventures are a more acceptable route to gaining work rather than the long term commitment of an acquisition.

5.8 Conclusions

On paper the emerging markets of Central and Eastern Europe appear to provide a tremendous commercial opportunity for the UK construction contractors. The region corresponds with what Crosthwaite (1998) found to be the most important objective for operating overseas – to tap new and booming markets. Central and Eastern Europe consists of countries with large populations, high growth expectations, poor infrastructure and significant levels of investment because 10 CEEC have applied to join the European Union within the next decade. Also, many US and Western European companies are now establishing businesses in the region. This all adds to the attractiveness of the market for construction companies, with a workload predicted
for the next twenty years to bring the CEEC infrastructure and economies up to a level comparable with current EU members.

Top British contractors recognise the region as an important part of their international expansion plans. However, not many are aggressively seeking work, even within the countries in negotiations for EU membership. UK contractors appear to be adopting a cautious, wait and see attitude. They highlight risks, particularly political instability in some countries, as a major concern. This view may not be completely justified but it is the perception of some leading UK contractors (Knutt, 1998b). However, these concerns do not appear to detract the major commercial companies prepared to set up businesses both in construction and other sectors. The companies interviewed tended to rely heavily on gaining work on the basis of current contracts with global clients rather than setting up offices in the region to actively seek work. For the time being, some contractors believe that expansion into Central and Eastern Europe may be better achieved in a non-acquisitive manner such as the use of joint ventures with local firms. Rather than making acquisitions, companies were creating partnerships with local firms as recommended by Russel et al. (1998). Acquisitions were thought to carry high risks in the region and one recommendation for future work would therefore be to investigate the strategies adopted by other international competitors for entering the Central and Eastern European market.

The timing of acquisitions is often opportunistic as much as any other factors. Despite the usual financial analyses that act as a justification for an acquisition, it is quite often the availability, or potential availability, of a target company that starts the process. The fear is that the very cautious attitude adopted by these major UK contractors may lead to them losing the opportunity to develop their businesses in the region because of their lack of commitment. In the meantime, contractors from other
European countries, who have adopted a more positive, long-term approach, would have established a more permanent presence.

The next chapter considers another important aspect of mergers and acquisitions – the impact of information systems and information technology.
Chapter 6  The Impact on Information Systems and Information Technology

This chapter investigates the impact of mergers and acquisitions on construction companies' information systems. It examines the role of information systems and Information Technology within an organisation and the drivers for rationalising and integrating the company's information systems post-merger/acquisition. The chapter uses two UK contractors as case studies to examine how the companies' IT departments managed the changes imposed on the organisations' information systems. It also compares the findings of the UK contractors with a similar study undertaken in two different industrial sectors.

6.1 Introduction

In recent years, there has been a spate of mergers and acquisitions in the UK construction market. Some of these include the acquisition of long established companies by large continental European companies. Acquisitions have a significant impact on many operational areas of a company's business, and usually result in the need to rationalise and restructure the company, to make optimum use of the resources of the newly acquired company. Information Systems (IS) play a key role in tactical and strategic management (Levinson, 1994; Giancomazzi et al., 1997). The increasing nature of global markets and the need to access people and information rapidly ensures that IS are an important strategic tool. Some authors even attribute the high proportion
of merger and acquisition failures to the focus on financial discussions rather than other issues, such as the integration of information systems from different companies (Robbins and Stylianou, 1999; Laudon and Laudon, 2000).

Over the years, UK contractors have used information systems to make their businesses more efficient. IS strategies have been developed to support the company’s corporate culture and business strategies. Hardware and software have been purchased or developed to suit the needs of individual companies throughout a range of project processes. After a merger or acquisition, a number of changes take place both at strategic and operational levels as rationalisation takes place. The degree to which this takes place depends on the dominant partner in the merger, or the type of acquisition and the strategy of the acquiring company. To date, much of the data on the impact of mergers and acquisitions on information systems have been anecdotal and not much research has been done in this area (Weber and Pliskin, 1996; Stylianou et al., 1999). Thus this chapter investigates the role of IS within construction organisations and the drivers for rationalising the information systems post-merger/acquisition. It also examines the changes made by two UK construction companies in their information systems as a result of the change in company ownership.

6.2 The Role of Information Systems and Technology

Information Systems and the technology used for its management (IS/IT) are a strategic concern in almost every organisation and are regarded as a major asset (Khosrowpour and Yaverbaum, 1990). Much has been written about the competitive advantage IS/IT provides for an organisation (Earl, 1989; Galliers, 1991; Porter, 1995;
Powell and Dent-Micallef, 1997). Porter and Millar (1985) and Ward (1987) described the evolution of information systems from enabling operations to be improved efficiency to increasing business competitiveness. Walton (1989) identified the importance of IS in the strategic triangle shown in Figure 6.1.

![Figure 6.1: The Strategic Triangle](image)

Figure 6.1: The Strategic Triangle

(Walton, 1989)

The three corners of the triangle are interdependent and show that Information Systems and Information Technology (IS/IT) cannot be neglected in either evaluating a potential M&A or the post-merger/acquisition integration of the company's business systems. Chandler (1962) first demonstrated how Business Strategy affected Organisation Strategy. He argued that a new strategy required a new, or at least, re-fashioned structure if the enlarged enterprise was to operate efficiently. Miles and Snow (1978) later showed how organisational structure, systems and skills can constrain or shape business strategy. Rockart and Scott Morton (1984) and Goldsmith (1991) demonstrated how IS capabilities could influence and support the choice of business strategy. Beyond IS supporting existing business strategy, they proposed that it should be used to pro-actively create new opportunities for business.
Walton (1989) developed the final link between IS Strategy and Organisation Strategy. He examined cases in a number of different sectors such as car manufacturing, metal working and shipping where the direct link between IS and organisational structure was irrefutable. These studies found that traditional work organisation is ill suited to realise the potential of advanced technology. New technologies require more flexibility, more continuous learning and more internal motivation than traditional organisations provide, and thus, for any change in IS Strategy, there should be an equal change in Organisation Strategy and *vice versa*.

Macmillan (1997) pointed out that the management of information systems has been becoming increasingly important for a number of reasons:

- Information Systems now have fully operational roles rather than the support role of the past;
- Total spending on Information Systems has usually increased, even in businesses which are not IS sensitive;
- Numerous examples suggest that it is possible to achieve competitive advantage by exploiting the new opportunities offered by Information Systems;
- The mode of Information Systems delivery has changed rapidly. Previously, it was mainly in-house development, maintenance and operation of systems; now, there is a wide and sophisticated range of external services available; and
- Responsibilities for the management of Information Systems are often being decentralised.
6.2.1 Mergers and Acquisitions Context

Mergers and Acquisitions occur within the construction sector for a number of reasons as explained in Chapter 2. The increasing reliance on a company’s Information Systems to enhance project delivery in a number of facets is well recognised. Mergers and Acquisitions take place in a number of stages. Many authors advocate the early involvement of IS professionals immediately before and during the merger/acquisition process so that potential, costly problems could be identified early (Stylianou et al., 1996; Robbins and Stylianou, 1999; Laudon and Laudon, 2000). However, during the merger or acquisition negotiations, the focus tends to be on the financial aspects of the transaction and often IS professionals are not involved until the transaction is complete, by which time unrealistic expectations of the information systems may have been made (Robbins and Stylianou, 1999). In addition, little warning is then given to IS professionals to reconcile system incompatibilities so that the flow of information, the lifeblood of many organisations, is minimally disrupted (Stylianou et al., 1996).

The level of autonomy of the combined companies and hence the impact on the company’s Information Systems will be dictated by the strategy of the acquiring organisation. Haspeslagh and Jemison (1991) distinguished between four types of acquisitions based on the level of strategic interdependence and organisational autonomy as shown in Figure 6.2.
The type of acquisition dictates the types of changes required to IS and the future of IS within the acquired company. McKiernan and Merali (1995) highlighted the impact of each type of acquisition on the company’s IS/IT. Preservation and Holding acquisitions have a low level of strategic interdependence, and therefore, tended to have a low impact on IS infrastructure. Absorption and Symbiotic acquisitions have a high level of strategic interdependence, which in turn affects IS, business and organisation strategies. Absorption and Symbiotic acquisitions were also identified as causing the greatest difficulty in the integration of IS (McKiernan and Merali, 1995). Based on the above classification of types of acquisitions, it is important that IS personnel are fully aware of the type of acquisition made and the future expectations of any information delivery system.
6.3 Rationalisation of Information Systems

When Mergers and Acquisitions take place between companies with similar types of business, there is no doubt that a certain amount of duplication in both administrative and technical tasks take place. It may seem prudent, if not immediately but at some stage, for the companies involved to rationalise their businesses (Bengtsson 1992). After a merger or acquisition, a company's Information Systems are certain to be a source of attention given its strategic importance. Considerable management effort is given to integrating or rationalising the firms, and acquiring firms must focus on the quality of information and the IT environment in the respective companies. In a study of acquisitions conducted in the Finance and Mechanical Engineering sectors, McKiernan and Merali (1995) found that 70% of companies had integration plans in place once the acquisition was finalised and 90% of companies created such plans within one year. Rationalisation will include an audit of the hardware and software in use to reduce the number of systems requiring support. Integration will entail the standardisation of some hardware and software to facilitate connectivity throughout the organisation. IS integration can generate a wide range of positive outcomes for the new company. A successful integration can produce efficiencies, economies of scale, introduce new technologies and capabilities, and provide corporate-wide information accessibility (Robbins and Stylianou, 1999).

6.3.1 Rationalisation and Integration Strategies

A number of different options are available for IS strategies following a merger or acquisition. The main factor will be the level of information transmission required
between the two organisations. For Absorption and Symbiotic acquisitions, a full integration of systems may be required to facilitate the full exchange of information. The other extreme cases are the Holding and Preservation acquisitions wherein information exchange is only reported at corporate level. In these cases, rationalisation of the company's information systems may not be required and the status quo may be maintained for as long as possible.

Prior to the actual integration process, it is important for IS personnel to be involved in any decision making regarding systems integration. Laudon and Laudon (2000) identified the role of IS professionals during four key stages:

**Strategic Exploration**
To identify firms with strong IS and IT assets, and or knowledge bases; work with the Chief Executive to identify acquisitions where rapid system integration is possible.

**Valuation**
To identify the specific integration costs of target corporations; explore with target company the key dimensions of their systems operation; identify and estimate economies of scale, scope, knowledge and time.

**Purchase**
To establish a transition team, validate costs and benefits; establish business process integration and IT infrastructure teams.

**Transition**
To develop transition team into systems co-ordinating group; search for 'best of breed' systems; rationalise IT infrastructure by eliminating redundancies.

Giacomazzi et al. (1997) stressed that IS integration did not necessarily mean that a single system, software environment and architecture were chosen, but that the exchange of data and organisational processes, according to needs were important. The authors also classified seven integration strategies using a matrix that considered the
configuration of the software applications and the architecture of the new Information System as shown in Table 6.1.

The advantages of rationalisation or integration are attractive. It removes duplication of information systems and inevitably leads to a reduction in overheads. However, the disadvantages are also compelling, with uncertainty, closure of offices, redundancies, loss of morale and synergy as its by-products (MacNeil 1997).

Table 6.1: Matrix of Integration Strategies
(Giacomazzi et al., 1997)

<table>
<thead>
<tr>
<th>COMPUTER ARCHITECTURE</th>
<th>SOFTWARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Integration A:</td>
<td>Total Standardised</td>
</tr>
<tr>
<td>Unified business</td>
<td></td>
</tr>
<tr>
<td>processes, all</td>
<td></td>
</tr>
<tr>
<td>applications</td>
<td></td>
</tr>
<tr>
<td>standardised, central</td>
<td></td>
</tr>
<tr>
<td>data processing</td>
<td></td>
</tr>
<tr>
<td>centre</td>
<td></td>
</tr>
<tr>
<td>based at acquiring</td>
<td></td>
</tr>
<tr>
<td>company</td>
<td></td>
</tr>
<tr>
<td>Total Integration B:</td>
<td>Partial Integration B: Partial centralisation of computers, centralised software run from data processing centre and non standardised software run locally</td>
</tr>
<tr>
<td>Unified business</td>
<td></td>
</tr>
<tr>
<td>processes but acquired</td>
<td></td>
</tr>
<tr>
<td>system architecture</td>
<td></td>
</tr>
<tr>
<td>not totally centralised for specific functions</td>
<td></td>
</tr>
<tr>
<td>Partial Integration C:</td>
<td>Partial Integration C: Distributed IS architecture and all software run locally.</td>
</tr>
<tr>
<td>Distributed</td>
<td></td>
</tr>
<tr>
<td>processes but acquired</td>
<td></td>
</tr>
<tr>
<td>system architecture</td>
<td></td>
</tr>
<tr>
<td>not totally centralised for specific functions</td>
<td></td>
</tr>
</tbody>
</table>

6.3.2 Difficulty in Integrating Systems

The integration of Information Systems may be desirable but fraught with difficulty, not the least because of the expectations that an integrated system is to
provide. Giacomazzi et al. (1997) identified both technical and organisational difficulties. Technical difficulties stemmed from the physical integration of IS components and the lack of data compatibility. Organisational difficulties stemmed from the company culture and the fact that such problems were often underestimated. Stylianou et al. (1996) also identified a number of reasons why these difficulties arise:

- Corporate planning does not always include IS personnel in the process and typically IS integration planning does not occur until the merger is complete;

- The new company must cope with a change in organisational culture including a change in IS policies and procedures;

- Lack of prior planning resulting in shifting priorities; and

- The technology issues relating to compatibility, connectivity and redundancy of hardware and software need to be resolved.

Clearly, a number of issues need to be addressed at, and even prior to, a mergers and acquisitions announcement but there is support for a greater effort to be placed on IS/IT given its increasing strategic importance.

6.3.3 Acquisition Management

McKiernan and Merali (1995) proposed an iterative, six-stage acquisition management lifecycle as shown in Figure 6.3. The above lifecycle is used in the next section to demonstrate the different approaches adopted by two UK contractors. The difference in approaches is discussed and compared to a similar study conducted by McKiernan and Merali (1995) based on a survey of companies in the Finance and Mechanical Engineering sectors.
6.4 Case Studies

This section documents the experience of two British contractors that have undergone acquisition by continental European companies. The data was obtained from interviews conducted with IT Managers from the respective companies. The companies selected were HBG (Hollandsche Beton Groep) Construction and Kvaerner Construction.

HBG Construction’s strategic plans involved becoming a top five contractor in each of its business areas. In a relatively short period, the group moved from being practically unknown to becoming the UK’s sixth largest contractor with a turnover of £1200M per annum following the purchase of three medium-sized companies. HBG was selected as a case study because their situation was considered complex. Not only
was the acquisition from a Dutch contractor but three different UK companies had to integrate their Information Systems to form a ‘seamless’ organisation.

Kvaerner acquired Trafalgar House Construction (THC) to gain entry into the Far East and international contracting markets (Contract Journal, 1996). Prior to the acquisition of Trafalgar House, Kvaerner had no experience of the construction sector whilst Trafalgar House Construction was ranked in the top 10 UK contractors. The company was selected as a case study because Trafalgar House was, at the time of the acquisition, regarded as a company that was at the forefront of construction IT.

6.4.1 Acquisition Background

6.4.1.1 HBG Construction

In 1989, HBG - the Dutch contractor and dredging firm, acquired Kyle Stewart, a medium-sized building contractor with an annual turnover of £154 million. HBG also later acquired the building firms Gilbert Ash (annual turnover £106 million) in 1993 and Higgs & Hill (annual turnover £290 million) in 1997. Up to 1996, HBG acted as a holding company for Kyle Stewart and Gilbert Ash. The only link with the parent company involved the exchange of financial information and the standardisation of office-based software. With the Higgs & Hill's acquisition, the three UK HBG companies formed one company, HBG Construction. Initially the individual companies' names were retained with the HBG prefix. Eventually, these names disappeared and all the companies became HBG Construction. Each company covered a certain area of work within a particular region. The IT managers of the three UK companies were asked to integrate and rationalise to create their own infrastructure and
organisational structure. Under the new structure, the three HBG companies moved from a Holdings acquisition into a Symbiotic relationship with a high requirement for strategic interdependence whilst retaining organisational autonomy.

6.4.1.2 Kvaerner Construction

In 1995, Trafalgar House Construction (THC), the construction arm of Trafalgar House, was the UK's seventh largest contractor with an annual turnover of £1179 million. The Norwegian based Kvaerner Group acquired the company in April 1996. Kvaerner and Trafalgar House had common lines of business in oil and gas, metals and process engineering. Kvaerner wanted to become an international company and to own a construction business with access to the Far East construction markets. For THC, the acquisition coincided with a large-scale change of senior management. The Trafalgar House title became obsolete and Kvaerner Construction may be regarded as a Preservation acquisition.

In the subsequent sections, the approach of the two companies to the McKiernan and Merali acquisition management lifecycle will be documented. HBG is used as an abbreviation for HBG Construction and KC as an abbreviation for Kvaerner Construction.

6.4.2 Case Study Results

The activities undertaken during each stage of the acquisition management lifecycle are described under the relevant headings.
6.4.2.1 Acquisition target selection

At this stage, high priority is normally given to the target company's finance, human resources, management, operations and marketing. Information systems are generally given a low degree of priority, although this may have important consequences at a later date.

HBG: The Netherlands-based Group Technology division was responsible for company IS/IT. They investigated the IS of all their target acquisitions. In particular, they investigated the existing WAN (wide area network) infrastructure, communications systems and integrated systems. These factors make it easier to integrate companies, particularly for the exchange of financial information in the first instance.

KC: THC's IS/IT was evaluated pre-acquisition. There was an 'unofficial' meeting of IT managers when it was known that the acquisition was inevitable. At this meeting, networking was the only issue discussed.

HBG involved their IS/IT professionals at an early stage, during the acquisition process, to investigate the IS in place at their potential acquisitions, whereas at Kvaerner, contact between the IT personnel at the Oslo and London offices was not actively encouraged, even post-acquisition. These findings do not differ significantly from a similar study of acquisitions undertaken by companies in both the Financial and Mechanical Engineering sectors. In their study McKiernan and Merali (1995) found that companies in the Financial sectors tended to include a greater percentage of IS/IT personnel in their pre-acquisition decision making than their engineering counterparts because of the greater perceived strategic importance of IS/IT.
6.4.2.2 Target evaluation

The degree of strategic interdependence between the acquiring and target companies dictates the level of integration required. At this stage, it is mainly the cost implications of IS/IT integration that are analysed. The process of ‘due diligence’ is normally undertaken, whereby an investigative study of the effectiveness and quality of the IS is carried out.

HBG: The three IT managers met at regular intervals, and communicated electronically several times a day to find out more about each other’s IS and to manage the rationalisation process.

KC: There were no plans for integration and no budget for such activity. No known process of ‘due diligence’ was carried out with respect to IS/IT.

Having evaluated the IS/IT of their target company, HBG had an estimate of the cost and duration of the IS/IT rationalisation. The KC IT managers were never asked to supply any details of their IS infrastructure. Similarly, McKiernan and Merali (1995) found that evaluation of IS/IT was carried out in less than 50% companies. Even when an evaluation was carried out, it tended to be of a superficial nature, little more than an inventory of existing hardware and software assets, and lacking in any analysis of the infrastructure environment and the skills-base.

6.4.2.3 Planning for post-acquisition

Post-acquisition planning tends to be over-shadowed by the short-term objectives of consolidation. Very little strategic planning of IS is normally done pre-acquisition.

HBG: Upon the Higgs and Hill acquisition, the company was asked to rationalise its
information delivery immediately. A checklist of key items to be addressed was drawn up.

KC: No post-acquisition planning was undertaken in terms of IS/IT. HBG had clear goals to be achieved post-acquisition whereas the KC IT department was not informed as to the role that they would play post-acquisition. The McKie and Merali (1995) study found that 70% of companies had formulated integration plans. However, they found that planning was restricted to meeting the short-term objectives of organisational consolidation with no long term provision for information infrastructure.

6.4.2.4 Integration Implementation

Segars and Grover (1996) stated that integrating diverse systems across an organisation was not a competitive luxury but a competitive necessity. One failing of acquisitions is that the task of integration or rationalisation is normally delegated to line managers and the IS/IT infrastructure may not support the integration process. This view is condemned with the belief that senior levels of management should be involved throughout the integration process (Long, 1982; Harvard Business Review, 1995). The IS/IT infrastructure is instrumental to the integration process and to ensuring that projected post-acquisition cash flows will be realised.

HBG: The IT managers were directly involved with the rationalisation process and had the support of HBG's Group Technology based in the Netherlands.

KC: A number of meetings took place to discuss the IS/IT corporate standards to be adopted post-acquisition. A criticism from one of KC's IT managers was
the change of management style. THC had been used to a top-down management style with senior management involvement in key areas of IS/IT provision. Kvaerner's new management style was bottom-up and led to what was interpreted as a lack of direction.

HBG Construction had additional support and expert advice available from the Netherlands-based Group Technology if needed. The company also had a time-frame of 12 months and an undisclosed budget for rationalisation. At KC the IS/IT staff held a number of meetings post-acquisition to discuss the networking protocols to be used between organisations. McKiernan and Merali's (1995) study found that 50% companies expected integration to be completed within six months and all cases by twelve months. However, only 60% of the cases achieved full integration due to both technical difficulties and IS culture.

6.4.2.5 Post-acquisition Review

This stage closes the loop and provides feedback that is particularly important to gauge what could be improved in both the short and long term.

HBG: Reviews were conducted throughout the rationalisation process. There were some minor changes to the original intentions, but broadly speaking, the items on the checklist remained as envisaged.

KC: No review process was conducted.

HBG Construction, through their regular review process, was able to solve problems as these occurred so that their targets were achieved. The KC IT manager interviewed was disillusioned with the situation. He felt Kvaerner's information systems were 5 years behind that of THC. He also felt that Kvaerner did not fully
understand the construction business and the competitive advantages IT could provide. His concern was that some of the systems developed over a number of years could disappear as a result of lack of use. McKiernan and Merali (1995) found that less than 15% of the organisations surveyed conducted post-acquisition reviews, the acquisition process was not well documented, no data was collected, and the extent to which the integration of IS met corporate and acquisition objectives was not evaluated.

6.4.2.6 Acquisition Strategy

Based on Walton's (1998) strategic triangle, the acquisition strategy adopted is expected to have a direct impact on other parts of the organisation, namely the business, organisation and IS strategies.

HBG: The company recognised the link between business strategy and IT strategy. At the time, they did not recognise a link with organisation strategy.

KC: As THC, the linkages according to Walton's strategic triangle were recognised and accepted. It was because of this that the company had set about developing systems that provided a competitive edge. However, it is clear that Kvaerner did not fully appreciate this linkage and so made no provisions for IS/IT in the acquisition process.

Both organisations adopted an IS strategy to provide competitive advantage. HBG Construction continues to support this, but the IT manager at Kvaerner felt that some of the systems developed were not being used to their best advantage. McKiernan and Merali (1995) found that a large proportion of acquiring companies believed they had an IS/IT strategy that was well aligned to their business strategy. However, post acquisition, IS/IT was absent from strategic decision making with over 50% of
companies having no information on the target company's IS alignment with business strategy.

6.5 Discussion

Major contractors now see themselves as global players and national borders are no longer a barrier to conducting business. Therefore, international mergers and acquisitions will continue for some time (Doyle 1995). These create large contractors with more resources to tackle bigger jobs of longer duration.

The two contractors investigated in the case studies illustrate the impact of different types of acquisitions upon a company's Information Systems. The three constituent companies of HBG: Kyle Stewart, Gilbert Ash and Higgs and Hill had to rationalise their construction businesses to fit in with a unified HBG Construction identity based on a Symbiotic acquisition. Trafalgar House Construction had no similar type of business within the Kvaerner Group and could thus be considered as a Preservation acquisition.

Only HBG investigated their target company's information systems pre-acquisition, as recommended by Buck-Lew et al. (1992) and McKiernan and Merali (1995). This had a considerable impact on the IT managers' views post-acquisition. HBG Construction's IT managers knew what their aims and objectives were post-acquisition. However, more than one year after the Kvaerner acquisition, the IT manager interviewed was unaware of the company's strategy or the role IS would play in the new organisation.

Both contractors used a mix of centralised and decentralised IS management. McFarlan and McKenney (1983) regarded this as an asset for companies with a
geographical spread. HBG Construction had its Group Technology department based in the Netherlands while Kvaerner has its Group IT department in Sweden. In each case, the Group IT departments co-ordinated issues such as standardisation of general-purpose software and, where appropriate, communication standards. In turn, each company had control over industry-specific software. De Sanctis and Johnson (1994) emphasised that such a structure facilitates standardisation, integration and economies of scale, something HBG was hoping to achieve. Giacomazzi et al. (1997) also recommended a high level of integration for acquisitions involving the same types of business in different countries.

The findings of these case studies broadly agree with a similar study conducted by McKiernan and Merali (1995). Both studies show that consideration of IS/IT issues do not factor highly in the list of priorities for organisational consolidation. This may be attributed to trying to achieve short term objectives and not fully recognising the strategic importance of IS/IT. However, the failure to carefully consider IS strategies post-acquisition may lead to the development of fragmented systems and the loss of able staff because of the lack of long term plans (McKiernan and Merali, 1995). The latter was eventually demonstrated in the case of Kvaerner Construction when it lost key individuals within its IT department.

Through discussions with the IT Managers and analysis of the interview, it is clear that HBG Construction was satisfied with the outcome post-acquisition and there IS/IT integration policies was considered a success. However, the converse was true for Kvaerner Construction, where their IS personnel was clearly frustrated with the lack of direction. The reasons for these opposing views are substantiated by Stylianou et al.
(1996) who identified a number of factors that contributed to the success of Information Systems integration post merger/acquisition:

- M&A experience;
- IS participation in merger/acquisition planning;
- Quality of merger/acquisition planning;
- Criteria used for setting IS integration priorities; and
- A high level of data sharing across applications.

In all but the first point raised HBG Construction had an advantage over Kvaerner. Table 6.2 proposes guidelines for IS/IT departments involved in acquisitions. It shows guidelines for the two extremes of acquisition type: the Symbiotic acquisition (high need for strategic interdependence and organisational strategy) and the Holdings acquisition (low need for strategic interdependence and organisational strategy). The other types of acquisition form a hybrid of the two extreme cases. The interview with one of Kvaerner Construction's IT managers showed that, even with Preservation acquisition, it is important to go through these stages to ensure that IS continue to play an important role post-acquisition. The problems highlighted at Kvaerner may be partially attributed to findings which show that acquiring and target companies should have a closely related business area and a compatible management style (Bengtsson, 1992).

Additionally, three issues arose from the management of the IS changes demonstrated by the acquisition of the two case study companies.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Guidelines</th>
<th>Symbiotic Acquisition</th>
<th>Holding Acquisition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-acquisition</td>
<td>Clarify type of acquisition</td>
<td>High levels of strategic interdependence and autonomy required. Significant changes will be required to the IS of the target company.</td>
<td>Low levels of strategic interdependence and autonomy required. Some changes required to the IS/IT of the target company to allow at the minimum, the exchange of financial data and facilitate communication.</td>
</tr>
<tr>
<td></td>
<td>Conduct IS inventory</td>
<td>Thorough investigation required of efficiency, structure, investment, resources (hardware, software, documentation, personnel) of the target company.</td>
<td>An awareness of the capabilities and the resources (hardware, software, documentation, personnel) of the target company.</td>
</tr>
<tr>
<td></td>
<td>Evaluate changes required</td>
<td>Evaluation in terms of personnel and other support required, the time and cost required for integration.</td>
<td>Evaluation in terms of personnel and other support required, the time and cost required for any changes required.</td>
</tr>
<tr>
<td></td>
<td>Plan changes</td>
<td>Organise and plan all activities required for IS changes.</td>
<td>Organise and plan all activities required for IS/IT changes required.</td>
</tr>
<tr>
<td>Post-acquisition</td>
<td>Review process</td>
<td>Evaluate whether short and long-terms aims were achieved. Document process. What could be improved next time?</td>
<td>Evaluate whether short and long-terms aims were achieved. Documents process. What could be improved next time?</td>
</tr>
</tbody>
</table>
6.5.1 Leadership

It is inevitable that change will occur after an acquisition. The quality of leadership will have a major impact on the success or failure of the venture. HBG was described as having 'a strong leadership with clarity of thought and vision'. However, Kvaerner Construction's IT manager thought stronger leadership was needed to influence the direction IS/IT should take within the company. The change of UK senior management style that coincided with the acquisition also created problems. Under THC, a strong top-down style of leadership had been adopted, whilst under the new Kvaerner management, a bottom-up style is used. This complete turnaround in style led to what was interpreted as a lack of vision and direction. However, both styles of leadership have their advantages and disadvantages, as advocated by Aaker (1984). Top-down systems may make strategy implementation easier, but not necessarily more effective. Without a top-down system resource allocation, synergy development and strategy co-ordination across business units is more difficult. With a bottom-up system, the process is driven by those who are closer, and therefore, more responsive to the environment, but there is no unifying strategy.

6.5.2 Communication

The move to rationalise is normally swift because the need to make changes as soon as possible is highlighted as a key operating principle (Bengtsson 1992: Anslinger and Copeland 1996). The main advantages of swift changes are that these discipline managers and sharpen priorities. This gives employees a sense of urgency and a challenge. To make changes, it is important to communicate effectively with all staff.
particularly at such a sensitive time, to make them aware of what is happening. Therefore, communication is a key element at this time. Again, one of the HBG IT managers supported this by stating that each of HBG's three companies received strategy documents within 2 days of each other. The changes had also been swift: by the time HBG Construction was officially created, each of the IT managers knew about their checklist of activities. In contrast, more than a year after its acquisition, Kvaerner Construction's IT manager was still uncertain of the new company's business strategy and the role that IS/IT would eventually play.

6.5.3 Organisational Culture

Cultural differences dictated by the existence of Dutch and Norwegian parent companies created fewer problems than anticipated. This may be because the two UK based companies continued to operate with the same staff and only reported to the parent company at a very senior level. The inter-company culture proved more difficult to adjust to. Kyle Stewart was faced with merging with Higgs & Hill, a larger company with a 100-year history and a completely different organisational structure. With Kvaerner, it was the differing views on the importance of information systems that created organisational problems. THC were justifiably proud of their information systems and the competitive advantage it provided. However, Kvaerner were not regarded as sufficiently knowledgeable in these benefits and were not seen to actively promote and develop the use of the systems developed.
6.5.4 Model for IS/IT Changes

Based on the findings of this chapter and the work done by others particularly Walton (1989), Haspelagh and Jemmison (1991) and McKiernan and Merali (1995), a model for the successful change of a company's IS/IT is proposed. Figure 6.4 shows the model, which introduces a holistic view of the various factors that impact on changes to the IS/IT. The company first has to determine the type of acquisition (e.g. Symbiotic, Absorption, Preservation or Holding). Once this classification is known, the impact on the different strands of the company strategy may be assessed. This involves input from a number of different stakeholders as depicted. This strategy formulation exercise will determine the future of the company's IS/IT and the path selected to implement the necessary changes. The IS/IT changes will also be determined by a number of 'hard' and 'soft' issues. System requirements and technological capabilities govern the hard issues. The soft issues are governed by culture and management skills required to make any change management a success.
Determine Type of Acquisition

Symbiotic

Holding

Strategy Team

Finance Team

Strategy Formulation

Acquiring Organisation

New Organisation

Target Organisation

Organisation Strategy

Organisation Strategy

Business Strategy

Business Strategy

IS/IT Strategy

IS/IT Strategy

Human Resource Team

Operations Team

Legal Team

IS/IT Team

HARD ISSUES

Level of Strategic Independence

Extent of Organisational Autonomy

Degree of System Compatibility

Existing IS/IT

Future IS/IT

Plan

Review

Implement

Figure 6.4: Model for IS/IT Changes
6.6 Summary

Change of company ownership impacts on a number of organisational processes because the new owners may wish to impose their corporate identity on the new acquisition. The type and speed of change depends on numerous factors including the aim and type of acquisition. The Information Systems changes undergone by two contractors, HBG Construction and Kvaerner Construction, were investigated. HBG Construction represented a Symbiotic acquisition because the acquisition resulted in the constituent companies requiring a high level of strategic interdependence and organisational autonomy. The changes to the IS were swift and had to be suitable to all the constituent companies. Kvaerner Construction represented a Preservation acquisition because the company had a high level of organisational autonomy and low strategic interdependence on its owners. For Kvaerner construction the IS changes were uncertain and prolonged. Prior to the acquisition, HBG investigated the IS of their target company, whereas this was not done at Kvaerner. The IT managers interviewed had opposing views on how the IS/IT changes were managed since acquisition. A set of guidelines was proposed for two ends of the acquisition spectrum – Symbiotic and Holding acquisitions. Its use and adaptation depends heavily on the type of acquisition made and the level of information transfer required between organisations. The case studies also revealed the importance of strong leadership, good communication and an understanding of the organisational cultural differences in ensuring the necessary system changes went smoothly. A model for effecting the successful change of IS/IT systems was also proposed. It recommends that a number of factors be taken into consideration, notably the early involvement of IS personnel to ensure a smooth transition.
The next chapter examines the importance of managing corporate knowledge management in mergers and acquisitions.
Chapter 7 An Investigation of Knowledge Management Strategies

This chapter investigates the knowledge management strategies within the context of construction organisations undertaking mergers and acquisitions. It uses three case study organisations to demonstrate how organisations can collate and deploy the bodies of knowledge held in the two separate organisations for maximum competitive advantage.

7.1 Introduction

Knowledge Management (KM) is a relatively new terminology within the construction industry. The emergence of the knowledge economy means that organisations’ know-how is becoming more important than traditional sources of economic power (Scarborough and Swan, 1999). Moreover, knowledge is now considered the most strategically important resource and learning the most strategically important capability for business organisations (Zack, 1999). Thus, knowledge assets must be managed deliberately, systematically and with expertise to ensure survival. Knowledge Management, if implemented effectively, appears to offer a partial solution to organisations for gaining sustainable competitive advantage. However, many question whether KM is yet another management fad. Wiig (1999) argued that previous fads were one-dimensional and led to brief performance improvement. He stated that KM’s objectives and scope were quite different, providing a broad, multi-dimensional perspective and covering most aspects of an organisation’s activities.

Construction organisations are becoming more aware of KM issues. Organisational changes due to mergers and acquisitions add a further dimension to KM.
Two organisations which may have had totally different strategies at a number of levels are put together as a corporate entity. They will both have different levels of knowledge and expertise (qualitatively and quantitatively) stored in various media (people, paper and computers). The challenge will be to manage the knowledge held by these two organisations efficiently so as to enhance their collective knowledge assets. This chapter therefore investigates knowledge management within the context of mergers and acquisitions. It analyses literature on issues impacting on the formation of a KM strategy and uses case studies of three construction organisations that have recently undergone merger/acquisition to demonstrate different KM approaches adopted. The chapter ends by proposing guidelines for developing a KM Strategy within the stated context.

7.2 Fundamental Knowledge Management Concepts

Patel et al. (2000) distinguished between data, information and knowledge and summarised that knowledge was typically gained through experience or study in some combination. Davenport (1997a) rejected the distinction between 'data', 'information' and 'knowledge'. He believed information is an umbrella term for all three, and also the connection between raw data and the knowledge eventually attained. He argued data, information and knowledge are not easy to separate in practice: at best, one can construct a continuum of the three. However, he did recognise that defining the three terms helped organisations to come to terms with where they had to focus resources.

Nonaka and Takeuchi's (1995) definition of knowledge is often cited by researchers. They define knowledge as 'a dynamic human process of justifying personal belief towards the truth'. The distinction between data, information and
knowledge has been widely debated. Quintas et al. (1997) defined information as organised facts and data, whereas knowledge adds value to data and information by providing selectivity and judgement. Blumentritt and Johnson (1999) stated that knowledge is built from data that is first processed into information. Information becomes data when it enters the system and is validated (collectively or individually) as a valid relevant and useful piece of knowledge. Knowledge has been classified in a number of ways. These include: explicit and tacit, critical/peripheral, internal/external, individual/shared, specific/generic, background/foreground, rapid rate of change/slow rate of change, learning by training/learning by interacting (Leseure et al., 2000). Alternatively, knowledge can be categorised with respect to its role in the business environment or functional roles within an organisation e.g. control knowledge, technical domain knowledge, equipment knowledge, etc. (Siemieniuch and Sinclair, 1999). Drew (1999) described four types of business knowledge: 1) what we know we know; 2) what we know we don’t know; 3) what we don’t know we know; and 4) what we don’t know we don’t know. He emphasised that most KM programmes were concerned with processes for sharing and distributing existing knowledge, i.e. ‘what we know we know’. However, he recognised that the increasing use of intelligence gathering based on knowledge networks and intranets contributed towards ‘what we know we do not know’.

Quintas et al. (1997) defined knowledge management as ‘the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunity’. Webb’s (1998) definition of KM includes phrases such as ‘create value’, ‘increase productivity’ and ‘gain and sustain competitive advantage’. The Knowledge Management life cycle comprises several different phases. These include the capture.
storage, dissemination, modification and retirement of knowledge (Carrillo et al., 2000; Kazi et al., 1999). It is also recognised that these phases do not occur in a linear process as some literature implies (Laudon and Laudon, 1998; Webb, 1998).

7.3 Context of Mergers and Acquisitions

Elements of Knowledge Management have always been practised within construction organisations whether in the form of codes of practice, lessons learnt or in the use of information technology (IT) applications (Anumba et al., 2000; Kazi et al., 1999). However, organisations find it difficult to manage efficiently their own knowledge resources, through each phase of the life-cycle. This is further complicated in the case of mergers and acquisitions where another organisation’s knowledge assets has to be managed within the context of changing organisational structures, politics and culture. Mergers and Acquisitions increase company size and it therefore becomes increasingly difficult to determine ‘what the organisation knows’ and ‘who knows what’. Horizontal mergers or acquisitions, those which involve organisations with the same type of business portfolio, introduce particular problems when both organisations have similar operations or departments and there is inadequate knowledge exchange to create synergy within the organisation. Ashkenas et al. (1998) noted that few organisations go through sufficient acquisitions to develop best practice in bringing together different organisations. Simonin (1999) reviewed the process of knowledge transfer in strategic alliances such as joint ventures. He discovered that knowledge-specific variables (such as tacitness and complexity) and partner-specific variables (such as prior experience, cultural distance, and organisational distance) impacted on the transfer process.
Chapter 7 An Investigation of Knowledge Management Strategies

Prior to the merger or acquisition, all target companies undergo a phase of 'due diligence' to ascertain the organisation's true worth. However, this is primarily a financial undertaking and little, if any, attention is paid to the organisation's knowledge assets and how it can bring value to the future organisation. Thus, there is a need to assist organisations in developing knowledge management strategies, that also copes successfully amidst organisational changes such as mergers and acquisitions.

7.4 Knowledge Management Framework

Few authors have addressed the need for a framework in which to implement knowledge management initiatives. Balasubramanian et al. (1999) proposed one such framework (Knowledge Mill) for describing the key aspects of knowledge management as shown in Figure 7.1 below.

The framework described the activities that are performed during conceptualisation, design, development and use of a knowledge management application. It starts with a high-level goal for the application, Critical Success Factors are then derived from which the process of designing the application system begins. Balasubramanian et al.'s premise is that a computer-based information system will be built based on the codification of data. It is a framework geared towards solving individual, bounded problems and does not consider the impact of internal and external influences or organisational change. It also assumes that a KM strategy is in place and users are looking for computerised application software to support KM. Whilst this is a reasonable approach, many firms in the construction sector are at a much earlier phase in their development of KM systems and need a framework which covers more fundamental areas.
Another framework proposed for studying KM in organisations is the CLEVER conceptual framework (Kamara et al., 2000). It was developed as part of a research project investigating Cross sectoral LEarning in Virtual entERprises. The CLEVER framework is used to describe the attributes of knowledge and to propose solutions for effectively managing knowledge within organisations. The framework is divided into four inter-related elements as shown in Figure 7.2.
Table 7.1 below describes each element of the framework.

Table 7.1: The CLEVER Framework Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Knowledge Base</td>
<td>the attributes of the knowledge being considered such as its class, source,</td>
</tr>
<tr>
<td></td>
<td>importance and where it is located</td>
</tr>
<tr>
<td>Process Shaping</td>
<td>the internal and external factors that may impact on the KM process</td>
</tr>
<tr>
<td>Factors</td>
<td>KM Process</td>
</tr>
<tr>
<td>Performance</td>
<td>the metrics and measurement methods used to assess the effectiveness of</td>
</tr>
<tr>
<td>Measurement</td>
<td>knowledge management</td>
</tr>
</tbody>
</table>

The CLEVER framework is particularly useful for studying knowledge management within the mergers and acquisitions context because it provides a holistic approach to KM. It helps to identify the organisation’s ‘As-is’ KM state, recommends tools and techniques for achieving its ‘To-be’ state whilst considering internal and external factors that may impact on the organisation. Importantly, it also forces organisations to think about the effectiveness of any KM investment. Based on the above argument, the CLEVER conceptual framework will be used to describe the KM
activities undertaken by the case study companies. The following section describes the framework elements, with particular respect to mergers and/or acquisitions in construction organisations.

7.4.1 The Knowledge Base

The Knowledge Base is concerned with identifying the knowledge the organisation is interested in managing. Construction stakeholder organisations require certain types of knowledge. Kamara et al. (2000) described the construction process and identified information collected and professionals involved at each stage. The authors recognised that knowledge will require to be managed at different, inter-related levels, namely intra-project (across different stages of a project and between different stakeholders) and intra-organisation (across different departments within the same firm). Within the context of mergers and acquisitions, there is a clear need to concentrate initially on intra-organisational KM, i.e. within the new larger organisation.

The CLEVER Framework proposes that the knowledge base must be thoroughly understood before it can be managed effectively. To do this, the framework proposes the attributes shown in Table 7.2 be clearly understood, agreed and communicated to all interested parties.
Table 7.2: The Knowledge Base Description

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Sub-Divisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Class of knowledge, its importance and relationship to business goals</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Explicit/Tacit, Critical/Peripheral, Slow/Rapid change, etc., where the knowledge is located and how it is acquired</td>
</tr>
<tr>
<td>Source and Users</td>
<td>Identifies the source and the end users of the knowledge in terms of People, Software and Paper</td>
</tr>
</tbody>
</table>

Organisational strategy determines the degree of autonomy the target company will have post merger/acquisition. McKiernan and Merali (1995) identified the following four types of acquisitions based on the level of strategic independence:

- absorption (high strategic interdependence, low organisational autonomy);
- symbiotic (high strategic interdependence, high organisational autonomy).
- preservation (low strategic interdependence, high organisational autonomy); and
- holding (low strategic interdependence, low organisational autonomy).

The level of the firm’s strategic interdependence is an important factor to consider since this will have an impact on the attributes of the knowledge that is to be managed.

7.4.2 Process Shaping Factors

Mergers and acquisitions will create uncertainty amongst employees. Employees who do not have a sense of job security or trust their colleagues and new owners are unlikely to co-operate with any KM initiatives. Other Process Shaping Factors that may impact upon the organisation are summarised in Table 7.3.
Table 7.3: Process Shaping Factors

<table>
<thead>
<tr>
<th>Process Shaping Factors</th>
<th>Sub Divisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational Structure</td>
<td>Centralised, hierarchical, function-based, project-based, etc.</td>
</tr>
<tr>
<td>Organisation Culture</td>
<td>Hierarchical, devolved, degree of agility, etc.</td>
</tr>
<tr>
<td>Organisational Strategies</td>
<td>Major differences between organisations</td>
</tr>
<tr>
<td>Team Boundaries</td>
<td>Departmental, functional, project, organisational, cross-organisational</td>
</tr>
</tbody>
</table>

7.4.3 Knowledge Management Process

The Knowledge Management process is concerned with the component activities or sub-processes and the tools that can be used.

7.4.3.1 Knowledge Life Cycle

Ruggles (1997) identified three categories of the KM lifecycle as generate, codify and transfer. Siemieniuch et al. (2000) classified the knowledge life cycle into five stages as shown in Table 7.4 below.
### Table 7.4: Knowledge Life Cycle Processes

(Siemieniuch et al., 2000)

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate</td>
<td>Obtain new knowledge from source e.g. research or training courses, etc.</td>
</tr>
<tr>
<td>Propagate</td>
<td>Disseminate the knowledge to other parties</td>
</tr>
<tr>
<td>Transfer</td>
<td>Convert knowledge from one medium to another and/or one type of knowledge into another e.g. tacit knowledge to explicit knowledge</td>
</tr>
<tr>
<td>Locate and Access</td>
<td>Store the knowledge in a particular medium for access by others</td>
</tr>
<tr>
<td>Maintain and Modify</td>
<td>Ensure the knowledge is current and can be made obsolete when required</td>
</tr>
</tbody>
</table>

Each organisation’s knowledge is unique, therefore an appropriate knowledge life cycle management process for one company is unlikely to be appropriate for all others; nor will it be the same for different domains within a company (Siemieniuch and Sinclair, 1999).

Within the merger and acquisition context, some elements of the KM sub-processes may be deemed of higher priority than others, particularly during the early stages of organisational change. One example may be the need to focus on the ‘who knows what’ in a generic sense rather than the technical details of what they know for knowledge elicitation.
7.4.3.2 KM Tools

IT organisations are keen to market applications as 'KM Tools'. Patel et al. (2000) categorised KM tools into four areas: Knowledge Generation, Knowledge Representation, Knowledge Retrieval and Knowledge Sharing. They also identified over 100 non-mainstream examples of commercially available software that contributed to KM. A search on the internet provides hundreds of software applications being labelled as 'KM Tools'. However, many of these tools are capitalising on the KM hype and in many cases do not address the full spectrum of activities required for the KM life cycle. Carrillo et al. (2000) argued that any KM System must support the full KM lifecycle - from knowledge creation through to distribution and eventual retirement - and not just a subset thereof. Therefore, it is important that organisations identify whether they are building a component of a KM System or a fully integrated KM system.

Realistically, most organisations looking to implement a KM system would expect an IT based system in order to increase efficiency and flexibility. Tuck (2000) recommended firstly building on existing resources and systems and secondly, that each implementation step is a building block for future enhancement. It is widely recognised that, like any other business system, a KM System should fully support business strategy (Kanter, 1999; Seely Brown and Duguid, 2000). Galliers (1999) revised an earlier framework depicting the components of an Information Systems Strategy to reflect current thinking that knowledge management/information strategy should be incorporated within the context of Business Information Systems Strategy. This promotes the concept that a business looks holistically at its information and knowledge needs and devises a strategy that supports its corporate objectives.
7.4.4 Performance Measurement

This section focuses on how organisations may assess their KM systems, including the metrics and measurement methods used. Tiwana (2000) found that whilst several companies had been successful in implementing KM, as yet, none had a strong measurement programme in place. Siemieniuch and Sinclair (1999) also found that, so far, there were no accounting measures to measure the knowledge life cycle directly. The indices discussed in literature were not good enough on their own. They did not provide direct measure on whether the problem was poor systems, bad processes, wrong organisational structure, or disaffected staff. They emphasised the need for agreed measures, with benchmark criteria for them. A number of authors have proposed methods for measuring intellectual capital such as the Return on Assets (ROA) method, Market Capitalization Method (MCM), Direct Intellectual Capital (DIC) method, Tobin’s q, human capital measures, the knowledge bank method, etc. (Abdolmohammadi et al., 2000; Stewart, 1997; Siemieniuch and Sinclair, 1999). However, Siemieniuch and Sinclair (1999) noted that none of these addressed organisational structures, roles, or configuration of knowledge.

This raises the question of how the value of an intangible asset, like knowledge, can be measured. Currie (1995) found that 85.5% of managers believe that qualitative benefits are as important as financial ones but only 53% attempted to quantify them because of their vague nature. Clearly, formal financial accounting terms such as those proposed by Tuck (2000) are inadequate since knowledge assets are hidden, not on the balance sheets, and they seek to provide a range of intangible benefits (Kanter, 1999; Martinsons et al., 1999).
7.4.4.1 Lessons from Information Systems

Some authors recognise the link between KM Systems and Information Systems (IS) (Galliers, 1999; Laudon and Laudon, 2000) thus it may be prudent to look at how industry measures the performance of IS. Information Systems planning, sometimes called Strategic Information Systems Planning (SISP), has been established for some time with considerable research effort placed on performance measurement. SISP is a structured mechanism for designing, implementing and measuring the performance of a company's information systems (Doherty et al., 1999). Measurement of SISP performance has been the subject of much research effort with differing views on what should be measured. Serafeimidis and Smithson (2000) stated that the traditional approach to IS evaluation, based on narrow technical and accounting terms, has limited relevance to the role of IS in today's organisations. This is because it is often treated as if it existed in isolation from its human and organisational effects. They further stated that such formal-rational approaches could not encompass the uncertainties, risks and context dependencies concerning a business that is undergoing often considerable organisational changes.

A number of authors have recommended different ways of measuring SISP performance. Adelman (1992) proposed four primary measures namely efficiency characteristics, organisational impact, personal impact, and enhancement to decision procedures. Delone and McLean (1992) suggested six categories for measurement: system quality, information quality, system use, user satisfaction, individual impact, and organisational impact.

Capitalising on the popularity of Kaplan and Norton's Balanced Scorecard, Martinsons et al. (1999) produced a Balanced IS Scorecard. The modified perspectives with supporting metrics are as follows:
User orientation (to deliver value-adding products and services to end-users);

Business value (to contribute to the value of the business);

Internal processes (to deliver IT products and services in an efficient and effective manner); and

Future readiness (to deliver continuous improvement and prepare for future challenges).

Martinsons et al. (1999) also recognised that all corporate systems, including KM Systems, should be implemented to support a business strategy. Hence, in terms of performance evaluation, it is should be possible to adapt the same techniques used in strategy formulation and performance evaluation. In particular, recognised techniques such as the Balanced Scorecard (Kaplan and Norton, 1992) and the Excellence Model may be useful.

7.4.4.2 Recent Developments in KM Metrics

Tiwana (2000) proposed a number of possible metrics for measuring the success of KM initiatives. He identified Benchmarking but acknowledged this was a good tool for comparative analysis but provided little assistance at a strategic level. He also recommended the use of Quality Function Deployment (QFD). QFD looks at desirable outcomes, allocating relative weights to each of the outcomes, metrics for performance and correlation between the metrics and performance outcomes. However, it is more appropriate for competitive benchmarking since it provides design attributes for new products rather than performance measurement. The third metric proposed by Tiwana is again an adaptation of Kaplan and Norton’s Balanced Scorecard. Table 7.5 below shows the standard Balanced Scorecard criteria and the modified criteria for KM.
### Table 7.5: Knowledge Management Balanced Scorecard

(Tiwana, 2000)

<table>
<thead>
<tr>
<th>Kaplan and Norton Balanced Scorecard Criteria</th>
<th>Tiwana’s Modified KM Balanced Scorecard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Perspective</strong> – what is the face that we want to show our customers? Goals → Metrics → Targets → Initiatives</td>
<td><strong>Translate the KM vision</strong> – Why are we managing knowledge? What is our vision for KM? Reach consensus.</td>
</tr>
<tr>
<td><strong>Internal Business Process View</strong> - are our internal processes clear, effective and at their best? Goals → Metrics → Targets → Initiatives</td>
<td><strong>Learning and Feedback</strong> – Is it working? Are we seeing results? What can be done better? Review the KM Strategy.</td>
</tr>
<tr>
<td><strong>Learning and Growth Perspective</strong> – how can we sustain our competitive advantage over time? Goals → Metrics → Targets → Initiatives</td>
<td><strong>Business Planning</strong> – Set goals, align metrics, align rewards, allocate time and money, establish milestones. Reward performance and contribution to the firm’s knowledge assets.</td>
</tr>
<tr>
<td><strong>Customer Perspective</strong> – how should our customers perceive us? Goals → Metrics → Targets → Initiatives</td>
<td><strong>Communicate and Link</strong> – Have we ‘sold’ the idea? Educate employees. Link rewards to knowledge use and contribution.</td>
</tr>
</tbody>
</table>

In addition to these, Tiwana mentioned the Skandia Method and the Financial Accounting Standards Board (FASB) Method (both advocating the creation of an Intellectual Capital report in addition to the annual Financial Report). He also mentioned the following but explained their unsuitability for measuring knowledge work:

- Return on Investment (ROI);
- Tobin’s q (a ratio between the firm’s market valuation and the cost of replacing its physical assets), and
• Total Cost of Ownership (TCO) (the cost of investment beyond the initial implementation cost).

7.4.4.3 Performance Measurement in Construction

Measuring performance has been a relatively new event for construction organisations. The advent of benchmarking has produced results that have encouraged construction organisations to measure performance for a variety of processes and support systems. Construct IT (1998) proposed that senior managers should measure IT benefits based on three main concepts: efficiency, effectiveness, and system performance. However, this form of measurement relies solely on one stakeholder - the senior managers and not the end-users of IT. KM benefits a wide cross-section of a company's staff, from marketing to engineering specialists. Performance of a KM system therefore requires evaluation from a wide cross-section of the company users and thus the Construct IT recommendations, whilst useful, are inappropriate due to its narrow focus on senior management evaluation.

Within the context of mergers and acquisitions, it is important that any KM system is able to perform satisfactorily with the expansion of the organisation. Also, the benefits of such a transaction are long-term, rather than short-term and any attempt to measure benefits must ensure that a KM System has performance measures spanning both these time periods.
7.5 KM Strategy

An organisational strategic context helps to identify knowledge management initiatives that support its purpose, strengthen its competitive position, and create shareholder value (Zack, 1999). Zack also recommended that firms position themselves strategically based on their unique, valuable and inimitable resources and capabilities rather than the products and services derived from those capabilities. Thus, many construction firms are focusing on developing an individual portfolio of business based on their in-house expertise (e.g. tunnelling - Miller Civil Engineering, railways - Balfour Beatty, etc.)

Several writers on KM include the terminology 'KM Strategy'; however, they cover a diverse range of contents and formats. Many of these strategy discussions tend to be either very broad, for example highlighting the merits of KM, or very focused, e.g. how to implement IT solutions. Clear guidelines on how to create a KM Strategy and how it may be implemented during organisational change are needed.

Drew (1999) advocated building a knowledge dimension into the use of typical strategy tools as a first step towards developing and implementing a knowledge-based strategy. These tools include Kaplan and Norton's Balanced Scorecard, SWOT (Strengths Weaknesses Opportunities and Threats) analyses, and business portfolio matrices such as the Boston Consulting Group (BCG) matrix. In addition to this high-level strategy formulation, there is a need for different degrees of granularity for use by a wide range of employees from senior executives to individual KM System developers.

Zack (1999) proposed the traditional SWOT framework provided a basis for describing a knowledge strategy. The knowledge-based SWOT analysis would provide a mechanism for mapping knowledge resources and capabilities (strengths and weaknesses) against strategic opportunities. Zack also advocated identifying a strategic
intent, identifying the knowledge required to execute the intended strategy, and comparing that to actual knowledge, revealing its strategic knowledge gaps. A gap analysis helps to identify what the firm must do to compete and what the firm must know to execute its strategy as shown in Figure 7.3 below.

![Figure 7.3: Knowledge Gap](attachment:image)

(Zack, 1999)

Jordan and Jones (1997) argued that any attempt to exploit an organisation's intellectual capital must be based on a sound understanding of the organisation's current style. They created a framework that assists organisations in determining their knowledge management style. The framework looks at different dimensions on each of the categories of knowledge acquisition, problem solving, dissemination, ownership and memory.

Hansen et al. (1999) distinguished between two very different types of knowledge management strategies. The first is the codification strategy whereby knowledge is carefully codified and stored in databases to be accessed and used by employees. The second is the personalization strategy whereby the chief purpose of computers is to help
people communicate knowledge, not store it. However, both strategies are not mutually exclusive strategies and any organisation can be expected to adopt a hybrid of the two.

Tiwana (2000) devised a 10-step knowledge road map divided into four phases as shown in Figure 7.4. Each of the 10 steps expands into a number of areas on which to focus and gives details of lessons learnt using case studies of organisations that have implemented KM Systems. Tiwana stresses that a Knowledge Management Strategy will have to be unique to each company. His roadmap helps managers to focus on their own company and develop a knowledge management strategy that no other competitor can easily duplicate. Whilst Tiwana’s road map is extremely useful and relevant, it makes a number of assumptions such as:

(a) the entire organisation is fully committed to Knowledge Management (he even proposes the Chief Executive Officer can fill the role of Chief Knowledge Officer);

(b) the entire organisation will implement knowledge management processes at the same pace (no prototype systems are proposed);

(c) the company has already identified a knowledge problem and indeed the company has one such problem (he places more emphasis on the support staff such as financial, marketing and IT representatives); and

(d) the solution will be very expensive and substantial resources have been allocated to implementing a KM system (it will involve input from senior staff, modification of the existing infrastructure, changing corporate culture, introducing reward schemes, etc.).
<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analyse the Existing Infrastructure</td>
</tr>
<tr>
<td>2</td>
<td>Align Knowledge Management and Business Strategy</td>
</tr>
<tr>
<td>3</td>
<td>Design the Knowledge Management Infrastructure</td>
</tr>
<tr>
<td>4</td>
<td>Audit Existing Knowledge Assets and Systems</td>
</tr>
<tr>
<td>5</td>
<td>Design Knowledge Management Team</td>
</tr>
<tr>
<td>6</td>
<td>Create the Knowledge Management Blueprint</td>
</tr>
<tr>
<td>7</td>
<td>Develop a Knowledge Management System</td>
</tr>
<tr>
<td>8</td>
<td>Deploy the Results-driven Incremental Methodology</td>
</tr>
<tr>
<td>9</td>
<td>Manage Change, Culture and Reward Structures</td>
</tr>
<tr>
<td>10</td>
<td>Evaluate Performance, Measure ROI, and Incrementally refine the KMS</td>
</tr>
</tbody>
</table>

**Figure 7.4: The 10-step knowledge management roadmap**

(Tiwana, 2000)
Anecdotal evidence from UK construction organisations supports a different view. Whilst a few organisations are becoming aware of KM issues within their organisations, and may even have the support for KM initiatives at executive board level (as demonstrated by the case studies presented in section 7.6 below), few have the resources necessary to implement Tiwana’s road map in its entirety. Moreover, there is debate at the more fundamental level of what knowledge needs to be managed. There is therefore a need for guidance for those organisations that are interested in prototyping a KM system in a small, bounded area to allow its more short-term benefits to be demonstrated, with a view to making KM more widespread throughout the organisation. This is the gap that the CLEVER Framework fills. It allows an entry point for organisations that may have heard about the benefits that KM can bring and are interested in exploring a low risk option by investing modest resources.

Mergers and acquisitions produce additional challenges for organisations embarking on KM initiatives. A KM Strategy must therefore be flexible enough to provide for major organisational change, including the potential integration of new organisations that may or may not have the same business portfolio. The following section uses case studies to explore the various KM strategies adopted by three different organisations that have recently undergone mergers and acquisitions within the context of the CLEVER framework.

7.6 Case Studies

Three construction stakeholder organisations were selected as case studies to investigate their current Knowledge Management initiatives. The organisations selected were 1) AMEC plc - a construction and engineering organisation. 2) WSP Group - an
engineering consultant, and 3) Galliford Try - a construction contractor and housebuilder. These case study companies were selected because they had all recently undergone mergers or acquisitions and were expected to provide a rich background of empirical data. In addition AMEC and WSP had publicised their work in knowledge management. Galliford Try was selected because of what Eisenhart (1989) termed an extreme case to demonstrate a polar situation. Galliford Try is a medium-sized company who did not have any 'formal' KM programmes but, by nature of their work, would have practiced knowledge management. The data from each organisation was obtained using semi-structured interviews with senior executives within the organisation. These were as follows:

- AMEC plc – Dr Ruth Mallors, Chief Knowledge Officer who reports directly to the AMEC Executive Board;
- WSP Group – Tom Bower, Assistant to the Group Managing Director; and
- Galliford Try – George Marsh, Deputy Chief Executive.

7.6.1 AMEC plc

AMEC plc is a leading international capital projects, services and investment group with significant operations in Europe, Asia and Australia. It is the leading UK construction and engineering organisation with an annual turnover of over £3.1 billion. In 1997, AMEC acquired a 41.6% holding in Spie Batignolles, the French electrical engineering, IT, infrastructure and construction business. In April 2000 a merger was completed with the North American firm AGRA. AGRA is a professional services group specialising in engineering, environmental and technology solutions. AMEC is
now the largest international design firm (ENR, 2000) with over 50,000 employees in more than 40 countries. The case study focuses on the AGRA acquisition.

### 7.6.1.1 Merger Background

AMEC's corporate strategy is to grow into a major international organisation using organic growth and existing expertise coupled with mergers and acquisitions. The AGRA merger created a greater presence in the American and Canadian markets, a key international market whilst maintaining complementary business units. A full integration process has occurred since the merger to create one company with one vision. AGRA has changed its name and has adopted AMEC's new corporate identity. All the major corporate systems, such as the Project Management, Financial and Human Resource Systems are to be integrated on an international basis through an innovative Web-based Enterprise Resource Planning (ERP) system. The acquisition of the American organisation provides AMEC with leading edge web-enabled capability and e-business.

### 7.6.1.2 Knowledge Management Processes

**Knowledge Base:** Knowledge Management within AMEC is a relatively new initiative that focuses on achieving a culture of sharing, learning and best-practice dissemination throughout the group. At present KM activity is considered at a more advanced state in the UK. AGRA is not known to have indulged in any formal knowledge management activity prior to the merger. However, as an integral part of the group, it will now play a full role in AMEC's knowledge management initiative. The main focus to date has been an attempt to capture tacit knowledge in areas such as the customer base, their
relationships, current web-based technologies and marketing expertise. This is being accomplished mainly through networking and face-to-face meetings. A company intranet is operational with its key knowledge management elements consisting of personal profiling and 12 communities of practice. In the UK, key individuals and specialist groups are considered to be the main source of knowledge. Some 'external' knowledge is held by joint venture partners and strategic alliances. The knowledge currently being investigated may be characterised as:

- tacit – mainly who knows what;
- peripheral – related to the business process but not critical; and
- rapid changing- such as lessons learnt and generic to the business units.

Process Shaping Factors: The new AMEC intends to be a centralised, function-based organisation with a devolved organisational culture. It will rely on strong leadership from the top whilst promoting cross-organisational team boundaries. The main barriers to knowledge management within the organisation are seen as follows:

- The protectionism of middle management where there is a climate of individual job and bonus protection, and reluctance to co-operate; in fact, intense competition between business units. This is due to the earlier focus on geographical and operational profit centres;
- The lack of a KM culture supported by a good knowledge management system that is easy to navigate and update;
- The low level of IT literacy at key levels within the organisation; and
- The perceived lack of time to expend on knowledge management activities.
Knowledge Life Cycle Context: To date, the focus has been on storing, sharing and using knowledge. A KM system will eventually be implemented that is expected to cover the entire life cycle of knowledge management from creating to retiring knowledge. The main problems encountered stem from the need to validate the knowledge stored in the system and providing a quick response to queries posted. No special KM tools are currently used but it is envisaged that a proprietary system will be built, perhaps on a piecemeal basis.

AMEC recognises that a KM System can be delivered without IT. However, such a system would be inefficient and IT is seen as an enabler to increase speed, flexibility and efficiency.

Performance Measurement: The area of performance measurement is still under consideration and no cost/benefit analysis has been completed. To date funding for the KM initiative has been obtained through story-telling the success of other organisations but more tangible measures need to be considered for further funding.

7.6.2 WSP Group

The group was established as a building services consultancy in the 1970s. The company was floated on the stock market in 1987 with 50 staff and a turnover of £3.2 million. It has actively pursued acquisitions as a mechanism for growth, completing 12 horizontal acquisitions since 1988 (such as Parsons Brown, Donald Rudd & Partners, AB Consulting plc, R. T. James Ltd., etc.). WSP is now one of the UK’s top Consulting
Engineering practices with a turnover of £150 million and over 3000 employees. The group has 8 UK operating companies and operations in the US, South Africa and Asia.

7.6.2.1 Acquisition Background

WSP’s strategy is to increase their international business in order to reduce reliance on the UK and to benefit from the globalisation of the market. This growth is being done through organic means but mainly through acquisitions. Early acquisitions were of UK companies but during 1999-2000, 5 international acquisitions were made in the US, South Africa and Hong Kong. In 2000 the Group acquired 2 US companies—Cantor Seinuk Group (Structural Engineers rated in the top three in the USA for high-rise buildings) and Flack + Kurtz (a building services engineering firm specialising in high-rise buildings and rated in the top five internationally for high-rise buildings). The acquisition of these two US companies gives WSP a strong presence in a niche market not only in the US but also internationally. The degree of autonomy of each acquired company varies depending on individual circumstances such as location, turnover, goodwill, etc. For example, the US companies will retain their name because the WSP name is not well known in North America. Integration of both companies has been to limited Business Development and IT systems due to the conditions of purchase. The case study will focus on the two recent US acquisitions.

7.6.2.2 Knowledge Management Processes

Knowledge Base: In the case of Cantor Seinuk Group (CSG) and Flack and Kurtz (F+K), WSP is interested in their knowledge of the high-rise building market. The knowledge is mainly of a tacit nature, core to the organisation, changes rapidly and is
project-specific for CSG but generic for F+K. In both cases, knowledge is held internally, either with individuals or groups and acquired mainly by interacting with others. Primarily individuals or groups hold this knowledge but some is held on paper and software.

**Process Shaping Factors:** WSP has a dual organisational structure. It uses centralised support for common areas such as HR, Finance, Marketing, IT, etc. and a decentralised structure for the various operating companies. A concern has been the rapid growth of the organisation in recent years and the loss of key staff. The autonomy of the operating companies is also a factor in that each company tends to manage projects in isolation without input from the other operating companies. In the case of CSG and F+K, the organisations have a very high degree of autonomy linked to purchase agreements and operate in a very narrow market that makes knowledge transfer to the wider WSP Group more difficult.

**Knowledge Life Cycle Context:** WSP installed an intranet several years ago. This consisted of a skills database, a library service, collection of technical papers, etc. However, its use relied on personal initiative only (i.e. it was a ‘pull’ system). It was not very intelligent, and there was a lack of appropriate business processes to encourage its use. 1WSP is the name of a new Knowledge Management initiative involving the 8 core UK operating companies. 1WSP will focus firstly on implementing business processes as the pre-cursor to improving knowledge management within the organisation. The improved processes are expected to change the current culture within the organisation. The immediate focus will be on obtaining and sharing knowledge. Eventually, maintaining and modifying knowledge will gain importance. A number of
problems were identified at different phases of KM. These included lack of business processes, the culture against sharing in a rapidly expanding organisation, too many sources and ways of acquiring knowledge, lack of affordable technology, etc. The causes of these problems were identified as the rapid growth of the organisation leading to a strong focus on client needs rather than knowledge management, insecurity of staff and hence their reluctance to share knowledge, lack of finance for IT resources, lack of training, lack of will and a culture against learning. Possible improvements were identified as primarily ensuring business processes were in place for employees to follow, adopting technological improvements, introducing a reward scheme for KM through staff appraisals, ensuring the knowledge is structured for easy access, and effective training.

The main drivers for a Knowledge Management initiative within WSP has been to reduce the amount of re-work required for repeat clients. The main inhibitors have been identified as the culture that does not encourage sharing, the high cost of systems technology, geographical distance, lack of time and lack of training. The key enablers are the improving technology, the culture of new staff to take on new methods of working and the existing KM programme.

Performance Measurement: No performance measures are currently being used but WSP believes that performance measurement should be directly linked to their three existing measures:

1. Client satisfaction (service improvement);
2. Staff satisfaction (whether the KM System provides satisfactory help); and
There is agreement that the measures used could also include quality of knowledge (will depend on type of knowledge – business or technical), use of knowledge (monitored by the system), impact in terms of business performance and project performance and efficiency of KM processes. There was also agreement for a move toward producing ‘knowledge accounts’ as done by COWI, a Danish Consulting Engineering group (COWI, 2001). This involves accounts that show details of the clients and market, staff and the organisation (all in terms of resources, processes and results). The accounts also show details of inter-organisation collaboration, project management capacity and competence profile.

7.6.3 Galliford Try Group

Galliford and Try merged in September 2000 to form Galliford Try. Both organisations were medium-sized UK companies providing Construction Services and House Building in specific geographical regions. The combined company has a turnover of £452 million and approximately 1750 employees. Galliford provides Construction Services in the Midlands, the North, and the East. Its Housing businesses are in the Midlands and the South West. Try provides Construction Services in the Midlands and the South East and its Housing business operates in the South East. Try Homes had acquired Amey Homes in October 1998 to increase its market share in South East England.
7.6.3.1 Merger Background

Galliford's 1999 Business Plan had three main goals. The company wanted to (1) increase their market capitalisation, (2) increase the construction services provision in the South East England, and (3) increase the geographical spread for the housing business. However, it was also very important that any merger involved a company that had a similar philosophy towards purpose, values and excellence. This compatibility was considered more important than the acquisition of additional technical building skills. The combined businesses are complementary in terms of geographical spread, business units and management style. The merger is expected to produce growth, cost savings and synergy. Galliford Try wishes to maintain its status as a medium-sized business because the company believes that it provides a more personal service to clients than a large, international organisation. Each business unit will maintain its existing autonomy because they operate in specific, complementary geographical regions. Some core functions/areas are being integrated to provide an enhanced service. These functions/areas are Marketing and Sales, IT support, Purchasing, Human Resources, Accounting, Safety and membership of Best Practice clubs.

7.6.3.2 Knowledge Management Processes

Knowledge Base: For the merger, Galliford and Try were primarily interested in increasing geographical coverage (and therefore a wider client base) than in acquiring each other's knowledge base or technical skills. However, Galliford was interested in Try's expertise in commercial buildings in London and housing on brownfield sites. Correspondingly, Try was interested in Gallifords's work towards the Environment standards (ISO 14001) and its Partnering expertise. Both companies were also
concerned with the sharing of Best Practice and Product Knowledge because their Housing divisions each targeted a certain market. The knowledge required for this type of construction and house building could best be characterised as explicit, core, slow change and both project-specific and generic. This knowledge is held by groups of people both internally and externally. A large proportion of knowledge is held externally because of the reliance on sub-contractors (typically 70-80% work) to complete housing projects.

Process Shaping Factors: The merger has not had a significant impact at an operational level and the emphasis has been on continuity. Galliford had a decentralised, function-based structure, whilst Try had a more centralised, function-based structure. The new company wishes to move towards a decentralised, project-based structure to provide a better service to its clients.

Knowledge Life Cycle Context: Galliford Try’s focus has been on obtaining new knowledge and embedding them in its business and technical processes. New knowledge is obtained through involvement in initiatives such as the Construction Best Practice Programme, Construct IT (collaborative group involving industry and academia), Movement for Innovation (M4I), Warwick University, etc. This new knowledge was then disseminated throughout the company by a number of means, mainly paper-based. The company is about to implement a Management Information System (MIS) that will be intranet-based for the purpose of disseminating explicit knowledge (e.g. accounting information, drawing registers, document management system, etc). This will be supplemented with monthly digests and a biennial company
newspaper. Previously, the company did not place much emphasis on creating knowledge (they are not a major investor in R&D) and maintaining knowledge in a structured manner. The main problem faced by the organisation is the effective dissemination of knowledge. The onus was on individuals to source knowledge of previous projects. The main problem causes were seen as lack of a proper system and the culture of staff i.e. staff are interested in obtaining new knowledge but do not see the internal knowledge base as primary source. The new MIS is expected to solve some of these problems. The problem of lack of maintenance of knowledge is due to the underestimation of the resources required. The cause of the maintenance problem stems from staff not taking ownership of the material held and the complication of different data from different groups being updated by different people. Training and communication are expected to help overcome this problem.

The drivers for better Knowledge Management within the organisation stem from the need to be more efficient than competitors by managing knowledge and risks better. Thus, for Galliford Try this translates into managing its customer relationships better. The main inhibitors to this are (a) the culture of 'not invented here' and (b) the lack of proper IT support (hardware and software) to support sharing knowledge. In addition, Try is considered a more compartmentalised organisation with functional barriers that will need breaking down in order to promote greater sharing. The key enablers for Knowledge Management are seen as (a) the consistent mission and value statements to promote a culture of continuous improvement, (b) the organisation’s open culture for sharing best practice internally and externally, and (c) the proposed new MIS.
Performance Measurement: Galliford Try does not measure the performance of any of its Knowledge Management processes at the moment. The view is that Knowledge Management should not be measured in isolation. Its performance should be linked to other company performance indicators, namely its Customers’, Employees’ and the Supply Chain’s satisfaction and Egan’s KPIs. These indicators, when investigated in detail will determine whether knowledge is being managed efficiently. The key issues to address will be the accessibility of knowledge and ensuring that staff are able to add value once the knowledge is obtained.

7.7 Discussion

The three case study companies target different aspects of the construction industry. WSP is a large international consultant, AMEC is a large international company that provides a wide range of construction services and Galliford Try is a medium sized contractor and house builder. All three companies had undergone mergers and acquisitions within the year 2000. The following sections analyse the knowledge management strategies adopted by the case study companies.

7.7.1 Mergers and Acquisitions Background

The two large companies, AMEC and WSP operate in a global environment. Thus they are competing for work with organisations from the US and continental Europe, who tend to have a much larger turnover (Carrillo, 1998). Both AMEC and WSP have acquired North American companies since they recognise that the North American market is very important for any international company. International
companies also recognise the importance of emerging markets and hence WSP has also made acquisitions in the Far East market and in South Africa. Galliford Try operates in a different environment. It is a national company that focuses on Housing and Construction in specific geographical regions. The main objective of the Galliford Try merger was to increase their geographical coverage whilst still maintaining a medium-sized operation.

7.7.2 Knowledge Management Processes

The four-part CLEVER Framework will be used to discuss the main attributes of the case study organisations’ knowledge management processes, namely the Knowledge Base, the Process Shaping Factors, the Knowledge Life Cycle Context and Performance Measurement.

7.7.2.1 Knowledge Base

The Knowledge Base is that body of knowledge that the acquiring company wishes to gain from the acquired company for competitive advantage. AMEC is currently interested in AGRA’s customer base, its relationships with clients, marketing expertise, and web-based technologies rather than its technical construction knowledge. Most of this knowledge is tacit and is being shared with AMEC through small networks facilitated by their Chief Knowledge Officer. It is anticipated that this knowledge will be shared throughout the integrated AMEC organisation. WSP is interested in their acquisitions’ technical knowledge of high rise building construction and the associated building services. Most of this knowledge is also tacit and held by individuals. However, the two US acquisitions operate in such a narrow, specialised market that the
sharing of this knowledge with the rest of the WSP organisation is difficult. The knowledge base of these two autonomous organisations is expected to remain within their confines with WSP reaping benefit at a corporate rather than technical level. Like AMEC, Galliford Try was more interested in increasing their geographical coverage than acquiring technical knowledge. However, there is some knowledge exchange in both directions between Galliford and Try. Galliford Try's key focus is on disseminating Best Practice obtained from a number of different bodies. Unlike AMEC and WSP, most of their knowledge is of an explicit nature with a very high proportion (70-80%) being held by their sub contractors. This external location of the knowledge poses additional difficulty for its management due to Galliford Try's lack of control and ownership.

Zack (1999) and Tiwana (2000) both agree that whilst IT systems are capable of managing explicit knowledge, it can do little to support the management of tacit knowledge as required by AMEC and WSP. Instead, such organisations are advised to concentrate on encouraging staff to interact repeatedly over time to disseminate tacit knowledge. Many organisations are experimenting with new organisational cultures, forms and reward systems to enhance social relationships (Davenport et al., 1996; Nahapiet and Ghoshal, 1998). However, this is something that few construction companies are addressing seriously. Instead, many are spending resources on building IT-based systems, particularly intranets to assist in transferring knowledge. This is despite an increasing acceptance that it is extremely difficult to capture tacit knowledge in an electronic format.
7.7.2.2 Process Shaping Factors

The Process Shaping Factors are those internal and external factors that impact on the manner in which knowledge is managed within the organisation. The specific factors considered were the organisational structure, the organisational culture and the team boundaries. AMEC envisaged an integrated organisation with all its acquisitions. This has an impact on the level of knowledge to be centralised in its KM System. WSP's strategy is quite different. They allow their acquisitions to maintain their identity and autonomy. This means knowledge is only managed at a high level for core systems such as HR, Finance, Marketing and IT. Technical knowledge will remain the domain of the individual companies and business units. This is similar to the views adopted by Galliford Try where, because of the regional nature of their operations, the business units will maintain their autonomy and little knowledge will be shared across units. Like WSP, only centralised functions such as Marketing, Sales and IT will be integrated.

The three companies all agreed on a devolved organisational culture. However, there was no agreement on the team boundaries to be adopted (these were organisational, cross-organisational and function-based). Companies adopt KM Strategies based on a number of factors including company history, organisational culture, the autonomy of the acquired business, and the degree of overlap within existing businesses. Analysing the characteristics of the organisation in terms of organisational structure, culture and team boundaries highlights the size and geographical spread of the project teams involved and the need for KM Systems which complement how staff interact.
7.7.2.3 Knowledge Life Cycle Context

The Knowledge Life Cycle Context is concerned with the KM sub-processes. Tiwana (2000) outlined these as the creation, location, capture, sharing and use of knowledge. The case study companies are each at different stages of development in KM terms. AMEC has focused on storing, sharing and using knowledge using their intranet. They plan to implement a KM System that goes beyond the intranet to cover the other KM sub-processes. However, they have not yet identified any specific tools to be used. WSP has focused on their intranet to store explicit knowledge but the sharing and use of the knowledge was ad hoc. A new KM initiative intends to focus on obtaining and sharing knowledge through establishing improved processes. Galliford Try’s focus has been on obtaining new knowledge. However, dissemination has been problematic because of the paper-based media used. This has meant that there is little guarantee that the right people obtain knowledge in a timely fashion. A new MIS is expected to reap rewards for sharing explicit knowledge.

IT Issues: The three companies all plan to implement IT systems to deliver a KM solution. AMEC and WSP plan to implement KM Systems that cover a number of KM processes whereas Galliford Try plans to use a company intranet for sharing knowledge only. Many companies have a different interpretation of KM and the focus was on sharing and transferring knowledge. It was not conclusive whether any of the companies had a clear understanding of all the KM sub-processes and the current tools available. Tiwana (2000) stated most of the technology for knowledge management already exists and the critical issue was determining the best mix of tools available and integrating them into KM processes. The larger companies were aiming for high-ended solution to cover all aspects of KM whereas Galliford Try was attempting to improve
one element of the KM process, that of sharing knowledge using IT. The development of high-ended solutions poses additional difficulty in the mergers and acquisition context. The change of ownership has been relatively recent, it may therefore make sense to establish a sharing culture amongst employee and developing processes that support KM before implementing sophisticated solutions to cover all aspects of KM.

**Cultural Issues:** All three companies identified cultural issues as a major barrier for knowledge management. The unwillingness to share knowledge for a number of reasons including 'knowledge is power' and lack of time were highlighted. Other barriers included the lack of knowledge validation and the lack of a recognised, easy-to-navigate and maintain IT system to support knowledge management.

The major shortcoming of these findings is that despite the larger companies’ recognition that most of their knowledge was tacit, there was relatively little effort being spent on addressing cultural issues as part of the KM initiative. The focus to date had been mainly on IT solutions. All three companies admitted that there was not a sharing culture within the organisations. Egbu (2000a) outlined factors that either promoted or inhibited knowledge sharing in construction organisations and emphasised that KM cannot take place effectively without extensive behavioural, cultural and organisational change. Bourdreau and Couillard (1999) proposed the use of new organisational structures, designed around teamwork, self-managed teams, and overlapping responsibilities to facilitate knowledge sharing and development. This is particularly important when as in the case of AMVEC, the full assimilation of another company is planned.

AMEC currently has a number of communities of practice (and intends to increase these) for sharing tacit knowledge. WSP has selected a different approach to address
their cultural issues. They have recognised that they must first have business processes in place as part of their KM initiative so that all employees are clear as to what is expected of them. However, it is unclear whether the existence of these processes will be effective in changing the culture and encouraging employees to obtain and share knowledge.

Drew (1999) suggested that the popularity of creating knowledge networks and communities of practice can be explained by the search for competitive advantage, not just through communication, but also through cultural change, motivation of people and the development of unique and complex relationships. Hence, it is these networks that foster and disseminate tacit knowledge that need development in conjunction with IT solutions for explicit knowledge. Tiwana (2000) views KM as less of a technology problem and more of an organisational problem. However, the technology is easier to fix than changing corporate culture, particularly when two different organisations are involved.

7.7.2.4 Performance Measurement

It is important to evaluate whether any KM initiative implemented is effective, good value for money and has an impact on business performance. None of the three case study companies are at a sufficiently advanced stage of KM development to implement performance measurement. Within AMEC, funding had been obtained for its KM initiative through story telling. King (1999) stated that it is important to document KM system performance even if this is anecdotal and just a series of success stories. However, AMEC recognised the need for more tangible measures and these were being investigated. WSP hoped to link any performance measurement with their
company-wide measure for client satisfaction, staff satisfaction and shareholders satisfaction. Currently these measures are obtained through surveys of clients and staff; shareholder satisfaction is measured by the monthly monitoring of share price and dividends. However, it was unclear how performance in these categories could be directly linked with KM initiatives. Likewise, Galliford Try would like to link the performance of KM with existing performance indicators of customer, employees and supply chain satisfaction. Like WSP, performance is measured through post-project reviews with customers, and annual employees’, suppliers’ and subcontractors’ surveys. Clearly an effective KM System should be reflected in the company’s performance indicators. However, it will be difficult to isolate the specific contributions of KM to such generic indicators.

Potential KM Performance Indicators: Many UK companies are implementing the European Foundation for Quality Management (EFQM) Excellence Model as a mechanism for assessing performance. Tiwana (2000) proposed adapting the Balanced Scorecard for KM performance measurement. However, although many authors have advocated its strength as a measurement tool, the Balanced Scorecard is better known, particularly in the US, for strategy formulation. For this reason, the use of the Excellence Model may be better suited because of its strengths in performance measurement, rather than the Balanced Scorecard, which requires adapting both for KM and as a measurement tool. Those organisations interested in measuring performance against stakeholder satisfaction will find this fits comfortably under the Excellence Model’s ‘Results Criteria’, namely People Results, Customer Results and Key Performance Results. Thus, the high level goals of a KM Strategy can be broken down...
into more task specific objectives and assessed for effectiveness by the stakeholders in conjunction with the overall financial results.

Table 7.6 shows a summary of the strategies adopted by the case study companies based on the CLEVER Framework.
### Table 7.6: Case Study Companies’ Key Knowledge Management Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>AMEC</th>
<th>WSP</th>
<th>Galliford Try</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Characteristics</td>
<td>Knowledge of North American construction markets. Mostly tacit knowledge held internally by key employees.</td>
<td>Knowledge of structural design and building services for high rise buildings. Mainly tacit knowledge held internally by both individuals and groups.</td>
<td>Greater need to increase geographical coverage rather than knowledge. Mostly explicit knowledge held externally by sub-contractors.</td>
</tr>
<tr>
<td>Process Shaping Factors</td>
<td>Complete integration of all systems post acquisition. Aim to be a centralised and function-based organisational structure, devolved organisational culture with cross-organisational team boundaries.</td>
<td>Very rapid growth through acquisitions. Acquisitions to remain autonomous. Knowledge too specialised to share easily. Aim to be de-centralised company with devolved culture and organisational boundaries.</td>
<td>Each organisation maintains its autonomy in their region. Aim to be a de-centralised, project-based organisation with a devolved organisational culture and project team boundaries.</td>
</tr>
<tr>
<td>Knowledge Life Cycle Context</td>
<td>Intranet for sharing knowledge with personal profiles and 12 communities of practice.</td>
<td>Intranet used to share knowledge on skills, technical papers, etc.</td>
<td>Paper-based system for sharing knowledge.</td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>None in place.</td>
<td>None used for KM but eventually should be linked to clients’, staff’s and shareholders’ satisfaction.</td>
<td>None for KM but should be linked to clients’, staff’s and supply chain’s satisfaction.</td>
</tr>
<tr>
<td>KM Initiatives</td>
<td>A full-fledged KM system to be built after investigation of the specific tools required.</td>
<td>New KM initiative to focus on improving processes before developing an IT solution.</td>
<td>New MIS to be implemented to share explicit knowledge.</td>
</tr>
<tr>
<td>Key Barriers to KM</td>
<td>Lack of sharing culture, low level of IT literacy at key levels, perceived lack of time.</td>
<td>Company culture. Expensive systems technology. Geographical distance, time and lack of training.</td>
<td>Lack of ownership of knowledge, Lack of IT systems and compartmentalised structure.</td>
</tr>
</tbody>
</table>
7.7.3 KM and Business Strategy

All three companies strongly supported the link between their Business Strategy and a Knowledge Management Strategy. However, it was unclear what intermediate steps were being taken to relate a high level Business Strategy into specific objectives for a Knowledge Management Strategy, including practical implementation phases. AMEC and WSP are both at an elementary stage of deducing 'what they know' and have not yet developed the level of competence required to implement sophisticated strategies and infrastructure as recommended by Zack (1999) and Tiwana (2000).

Fundamentally, KM strategy, like business strategy, has to be unique to an organisation. This will depend on organisational context and external factors such as the market, and the drivers for KM. The CLEVER Framework assists companies in identifying a specific KM problem and how it relates to the business context. However, an overlying KM Strategy with objectives and performance indicators is necessary and must be linked to Business Strategy. The latter provides high level goals that need to be translated into practical, measurable KM goals.

*Lessons from Information Systems:* A KM Strategy could follow best practice from the more mature and related field of Information Systems Management. Information Systems should also be derived from Business Strategy, and deliver the correct information in a timely fashion within a given budget. Also, the value of information is as subjective as knowledge and therefore it must allow for delivering intangible benefits. A number of well-known authors have published material on the development of Information Systems Strategy (Tricker, 1982; Earl, 1989; Cushmore and Lyall, 1991; Galliers, 1999). These authors help to translate an organisation’s high-level Business Strategy into implementation steps for Information Systems. The key points deduced
from the literature, within the KM context, is that Business Strategy has to set objectives for a KM Strategy. The KM Strategy should be selected from a number of available options based upon the environment, resources, and potential benefit amongst others. When the KM Strategy is implemented, resources will have to be planned (staff, time and money), the organisational structure (in terms of possible changes) will have to be considered as well as the adaptation of people and systems.

The above issues highlight the shortcomings of the approaches adopted by the case study organisations. Based on the case studies, there are gaps in the KM processes. In addition to the structural changes imposes by mergers and acquisitions, the companies have clearly embarked on KM by implementing KM projects without first devising a robust KM Strategy. As a consequence, not much focus has been placed on how knowledge held by the new acquisitions can be incorporated into KM initiatives. This is where the CLEVER Framework has a role to play. KM Strategy will affect a number of individuals and processes within the organisations. The CLEVER Framework fills the gap between selecting an overall KM Strategy and implementing specific KM projects. It assists the organisation in putting its knowledge problem within a business context, to consider an organisational environment, select the most appropriate KM sub-process, and consider the key drivers and inhibitors whilst assessing performance based on key indicators.

7.8 Conclusions & Recommendations

This chapter has investigated Knowledge Management Strategy within the context of construction organisations undertaking mergers and acquisitions. It introduced the CLEVER Framework as a mechanism for studying KM in organisations. The CLEVER Framework looks at the company’s Knowledge Base (the specific knowledge the
company is interested in managing); the Process Shaping Factors (the organisational environment as it affects knowledge management); the Knowledge Life Cycle Context (the various sub-processes involved in the management of knowledge); and Performance Measurement (mechanisms for analysing whether the KM programme is of benefit). Three case studies were undertaken to investigate the different approaches adopted for Knowledge Management with construction organisations involved in mergers and acquisitions.

7.8.1 Existing KM Practices

Mergers and acquisitions reinforce the need to have a more coherent KM strategy. The study found companies were embarking on a number of mechanisms for enhancing the management of knowledge within the organisation. One company was creating an integrated organisation whose knowledge was mainly tacit. This company was focusing on developing an IT driven KM System. The second company consisted of autonomous operating units holding mainly tacit knowledge. This company was focusing on getting its business processes right before implementing a KM System. The third company consisted of autonomous business units each having a large proportion of explicit knowledge held by sub-contractors. This company was at an early stage of KM development and was planning to use a new MIS for knowledge sharing only. Within each organisation the drivers, inhibitors and enablers to knowledge management were identified. The case studies identified an anomaly in the manner in which knowledge was shared. The existing and future focus of all three organisations will be on using IT as an enabler for their KM initiatives. However, there was an imbalance in the resources allocated to IT solutions compared to those allocated to organisational culture issues, particularly when encouraging employees to part with their knowledge and
others to use that knowledge. The system of rewards, both financial and non-financial, for knowledge sharing had not been considered in any detail.

7.8.2 KM Strategy

All organisations recognised a link between Business Strategy and Knowledge Management Strategy. However, there appeared to be a gap between this high level recognition and implementation. The consideration of these intermediate steps may lead to a more focused strategy that encourages organisations to consider the realistic objectives of a KM Strategy. This should also lead to a more balanced resource allocation considering both hard issues such as IT solutions as well as softer issues such as organisational culture.

7.8.3 Performance Measurement

All three case study organisations considered it important to measure the performance of any KM initiative implemented. However, none of the companies had devised any such mechanisms for measuring KM performance. Two companies stated they would like to see this linked to other company performance indicators such as client and employee satisfaction but it was unclear how this was to be done. The use of the Excellence Model was proposed since three of the existing criteria would satisfy the companies' needs to align KM with other corporate indicators.
7.8.4 Recommendations

The management of knowledge is a business imperative. However, resources are too scarce to allocate to adhoc projects that are not justified based on a Knowledge Management Strategy, particularly when organisational changes dictated by mergers and acquisitions introduce additional difficulties. Knowledge Management may be relatively new to the construction sector but there is a growing body of information, both theoretical and practical, that is available from the experience of both researchers and companies. Based on these, any company about to embark on a dedicated KM programme is recommended to consider the following guidelines:


2. Ensure that specific objectives are set for the KM strategy with goals and mechanisms to judge performance.

3. Translate the KM Strategy into specific KM projects. Zack’s (1999) Knowledge Gap analysis can be used to identify ‘what the firm knows’ and ‘what it needs to know’ in terms of knowledge.

4. Use the CLEVER Framework to identify:
   - the Knowledge Base – to identify the type of knowledge the firm is interested in managing better;
   - the Process Shaping Factors – to identify the organisational context and external factors that will affect any knowledge management initiative;
   - the Knowledge Life Cycle Context – to identify the various sub-processes the company would like to focus on; and
   - the metrics to be adopted for Performance Measurement – to ensure that results are being achieved both at a corporate level and for individual KM initiatives.

5. Focus equally on KM processes for tacit knowledge as well as explicit knowledge:
6. Investigate IT Tools suitable for use under the KM sub-processes the organisation would like to develop and ensure that these are an integral part of an IS Strategy;

7. Ensure that organisational changes are put in place to foster and promote the relevant KM sub-processes;

8. Evaluate the Knowledge Management strategy periodically to ensure goals are being achieved.

9. Establish appropriate reward and other mechanisms to foster knowledge sharing and reuse.

The next chapter draws together the findings of the research into four key aspects of mergers and acquisitions and provides conclusions and recommendations.
Chapter 8  Conclusions and Recommendations

This chapter summarises the findings of the research in terms of the project's aim, its objectives, the research methodology adopted and the results. A number of conclusions are made based on the four aspects of mergers and acquisitions investigated within a construction industry context. Finally, the chapter provides recommendations to enhance success within key areas of mergers and acquisitions and proposes areas for further work on this subject.

8.1 Summary

Mergers and Acquisitions (M&A) are a major strategy adopted by many organisations including those within the construction industry. To date, little work has been done in this area with particular relevance to construction organisations. The few authors within the construction industry that have discussed mergers and acquisitions have made reference to M&A as a growth strategy. These authors concentrated on why construction companies would like to achieve growth rather than the mechanics of mergers and acquisitions at either the strategic or operational level. Such work was mainly conducted in the early to mid 1980s. However, the business environment, particularly for construction organisations, has changed dramatically over the last fifteen years and there is therefore a need to address some of these strategic and operational issues which influence company performance.

Mergers and Acquisitions cover a wide range of issues and affect many organisational processes. It would therefore be impossible to address all of these issues in one research project. Thus, the aim of this research was to investigate the impact of
mergers and acquisitions on specific areas within the construction context. Chapter 2 provided an extensive literature review that indicated M&A were being increasingly used by major construction organisations as a strategy to become global players and to provide new services. The literature review also helped to highlight gaps in current understanding of M&A within the construction context and hence identified the objectives used to achieve the research's aim. This resulted in the identification of four aspects of mergers and acquisition for further investigation. Each of these aspects was covered in separate chapters as follows:

- **Strategy, Business Portfolio and Performance Measurement (Chapter 4)** - in an effort to maintain competitiveness and profitability, construction companies need to investigate alternative strategies. This chapter therefore fulfilled the research's objectives 1 and 2 (see page 4) and focused on investigating how construction companies devised strategy, developed their business portfolio and judged their subsequent long-term performance.

- **Acquisition Strategies for Emerging Markets (Chapter 5)** - should the development of the company's business portfolio include gaining access to other markets, a company will have to decide on the acquisition strategy to adopt for that market, taking into account any potential risks. This chapter therefore satisfied objective 3;

- **The Impact on Information Systems and Information Technology (Chapter 6)** - information systems are critical to the successful operations of companies. Following a merger or acquisition, the extent to which IS/IT changes are required, the extent of the consultation process and the manner in which changes are implemented are key issues to be addressed. This satisfied objective 4.
• An Investigation of Knowledge Management Strategies (Chapter 7) – knowledge is now described as the most strategically important organisational asset. Objective 5 therefore investigates the knowledge management strategies adopted to ensure that corporate knowledge is exploited when companies undertake mergers and acquisitions.

• This chapter, Chapter 8, satisfies objective 6 and draws conclusions from the four aspects and makes recommendations for improving the mergers and acquisitions process within construction organisations.

The range of research methodologies reviewed and a justification for the approach adopted for the whole research project is covered in Chapter 3. A qualitative research methodology was considered the most appropriate method to study the four aspects identified. In particular, a descriptive, multiple case study methodology was adopted. This approach was justified on the basis that it was the most appropriate manner in which to gain a unique, in-depth and holistic understanding of both the individual mergers and acquisitions issue under consideration and the associated case study.

Each of the four aspects provided pertinent and highly informative material for analysis, discussion, conclusions and recommendations. This has certainly added to the previous, limited body of knowledge and understanding with respect to mergers and acquisitions within the construction industry. A summary of each of the four, inter-related aspects investigated will now be discussed.

8.1.1 Strategy, Business Portfolio and Performance Measurement

Chapter 4 focused on the acquisition and divestment strategy adopted by UK construction contractors and how they judged their subsequent performance. The
research used three case study companies – George Wimpey plc, Tarmac plc and AMEC plc. The study found that strategic planning was a key consideration for all the case study companies to maintain their competitiveness and profitability. The initial study conducted in 1997/1998 found that the level of business portfolio analysis was at an embryonic stage within the construction industry. Well-established techniques for portfolio analysis were not being routinely used to support decision-making with regard to acquisitions and divestments. Instead, a much greater emphasis was placed on the judgement and experience of the company's Board of Directors to devise strategic options. Also, at that time, a strong emphasis was placed on the use of financial indicators as the measure for company performance.

A follow-up study of the same case study companies was completed in 2001. This showed that the business environment had changed drastically. There were several drivers for change within the construction industry. These included, amongst others, changing clients' needs, and highly critical industry reports resulting in a number of government supported initiatives to improve knowledge exchange and performance. The study concluded that the use of business portfolio management techniques had become much more widespread and sophisticated. The case study companies relied increasingly on portfolio management techniques to support strategic decision-making and the use of non-financial indicators was gaining importance. The case study companies attributed these changes to the rapidly changing and competitive environment where companies were attempting to distinguish their products and services whilst improving their performance and competitiveness.
8.1.2 Acquisition Strategies for Emerging Markets

Chapter 5 focused on how companies devised an acquisition strategy for emerging markets. The Central and Eastern Europe Countries (CEEC) were selected as such a market because this region was identified as an important growth market. Forecasts for construction input in this region were substantially higher than that of the western European countries. Five UK case study contractors were used because they had the highest international turnover, four of these already had substantial turnover in continental Europe.

The study found that, although the CEEC region was acknowledged as having tremendous growth potential, only one of the five case study companies had a deliberate strategy to acquire companies within the region. A further three case study companies adopted an emerging strategy and reacted to current opportunities, which was heavily biased toward work for western clients. The fifth company perceived that the region offered little added value and was firmly against making acquisitions in the region. A number of barriers to conducting company acquisitions in the CEEC region were identified. These included political instability, financial risk and insufficient knowledge of the target company. It was suggested that not all of these barriers actually existed, but, at that time, that was the perception of some of the major UK contractors.

Given the cautious attitude of the case study companies, the favoured mechanism for companies to enter the CEEC market would be through the less risky option of forming joint ventures with local firms. The study also concluded that tremendous business opportunities might have been lost by the failure of some companies to demonstrate their commitment to the region. In the meantime, companies from other countries have established a more permanent presence and were successful in winning work.
8.1.3 The Impact on Information Systems and Information Technology

Chapter 6 investigated the changes made to construction companies’ Information Systems and Information Technology (IS/IT) post merger/acquisition. The strategic importance of IS/IT was acknowledged and hence the need to examine the impact due to organisational changes. Two companies were selected as case study organisations. These were HBG Construction and Kvaerner Construction. HBG Construction was selected because its situation was considered complex. Not only was the acquisition from a Dutch contractor, but three different UK companies had to integrate their Information Systems to form a ‘seamless’ organisation. Kvaerner Construction was selected because the company that was acquired (Trafalgar House Construction) was, at the time of the acquisition, regarded as a company that was at the forefront of construction IT.

The research identified that the impact on the company’s IS/IT depended upon the type of acquisition made. Acquisitions were categorised based on: (1) the level of organisational autonomy; and (2) the level of strategic interdependence. These two factors influenced the impact on the company’s IS/IT and the extent to which subsequent changes were made. Each of the case study companies was then investigated in terms of a six-stage acquisition integration life-cycle.

The research found that the two case study companies had opposing views on how the post-acquisition IS/IT changes were implemented. HBG Construction was satisfied with the outcome of their IS/IT changes because the entire process was carefully planned and monitored. Each of the IT Managers had an early involvement in the decision-making and a clear understanding of the IS/IT changes required, and there was continuous dialogue between all the parties concerned. Kvaerner Construction, on the other hand, was less satisfied with the post-acquisition changes. There was a perceived
lack of direction and understanding of both the construction business and the role of IT within the organisation. The IT Manager was not involved in any initial decision-making, did not have a clear understanding of the changes required and communication between IS/IT personnel was limited.

Chapter 6 therefore proposed guidelines for implementing IS/IT changes as a result of acquisitions at two ends of the acquisitions spectrum – Symbiotic and Holding (Table 6.2). IS/IT changes for the remaining acquisition types – Preservation and Absorption lie along the continuum proposed, and will be dictated by the level of information exchange required between the acquiring and target companies. A model for IS/IT changes was also proposed based on the type of acquisition. This included strategy formulation and the early involvement of a number of parties with a vested interest in the company’s IS/IT (Figure 6.4). The study also concluded that those ‘soft’ issues such as leadership, communication and organisational culture play an important role in ensuring that the necessary IS/IT changes are implemented smoothly.

8.1.4 An Investigation of Knowledge Management Strategies

Chapter 7 investigated Knowledge Management (KM) Strategies within the context of construction organisations undertaking mergers and acquisitions. The CLEVER Framework (developed at Loughborough University) was used as a mechanism for studying four aspects of Knowledge Management within the case study companies. These aspects were the company’s Knowledge Base, the Process Shaping Factors, the Knowledge Life Cycle Context and Performance Measurement.

The research used three case studies of recent mergers and acquisitions: AMEC plc, WSP Group and Galliford Try plc. The key findings of this chapter were:
Chapter 8

Conclusions and Recommendations

- Two companies were focusing on developing IT-driven KM systems whilst the third was initially concentrating on developing processes that would facilitate KM;

- All three case study companies recognised a link between Business Strategy and KM Strategy but there was a gap between this high level recognition and implementation; and

- All three case study companies considered it important to measure the performance of any KM initiative implemented. However, none of the companies had yet devised any suitable performance measures.

Recommendations were made for key areas to be considered by a company about to embark on a dedicated KM programme.

The above summary provides evidence that the four identified aspects of mergers and acquisitions were investigated as planned and that the aim and the objectives of the research project were achieved. The results of the research now provide a much better understanding of how mergers and acquisitions impact upon construction organisations and how certain elements of the process may be improved.

8.2 Conclusions

Mergers and Acquisitions will continue to play an important role in construction companies' expansion plans to become global players. The research acknowledges that
M&A is quite a broad area for investigation. Whilst four specific aspects were selected for study, it is recognised that there are several other important aspects that were not covered within the research. This was due to the limited time available. Indeed, each of the four aspects investigated could be developed for further research. Given these limitations and the broad nature of this research, the following conclusions are drawn from the discussions and conclusions presented in the preceding chapters:

1. The use of strategic management techniques, such as portfolio analysis, will become more widespread in supporting decision-making as to which markets construction companies should enter and exit. Companies will therefore rely more on these accepted techniques rather than mainly the experience and subjective judgement of their senior executives.

2. There will be an increasing focus on the use of non-financial performance indicators, such as those advocated by the Balanced Scorecard and the Excellence Model, as mechanisms for sustaining growth, improving performance and increasing profitability. Financial indicators, whilst important, have been discredited as a lagging indicator; a more holistic view of company performance is considered to generate future economic value.

3. UK companies need to be more entrepreneurial in their desire to enter emerging markets. Particularly in a global environment, they need to be more decisive and move quickly. Their cautious ‘wait and see’ attitude could lead to them missing out on business opportunities in emerging markets. The competition for work in the construction industry is fierce, and British firms no longer have a monopoly in
certain regions or types of work. Therefore, UK construction contractors need to be more aggressive in winning work in emerging markets.

4. Acquisition planning should include both pre-acquisition and post-acquisition activities. Wider participation of key personnel (e.g. IS personnel) and better communications are required if the synergies and benefits anticipated are to be realised. Too often, acquisitions are dominated by short-term financial objectives; other strategic and operational aspects of the business also need careful planning.

5. A Knowledge Management Strategy is important if the benefits of a merger or acquisition are to be realised. KM Strategy should be linked to the company’s business strategy and offer different levels of granularity so each level of staff has a framework in which to act. A better understanding of organisational culture and processes that facilitate Knowledge Management should be addressed before companies embark on IT systems to support KM.

8.3 Recommendations

The scope of mergers and acquisition is extremely broad and the duration of this study was limited by time. The research covered four aspects of mergers and acquisition in relation to construction organisations. The research project’s conclusions are therefore wide-ranging because of the aspects investigated. However, during the course of the research undertaken, a number of recommendations have been identified:

- Construction companies should ensure that they have a thorough understanding of strategy formulation and the implications of mergers and acquisitions on both the acquiring and target companies;
Chapter 8 Conclusions and Recommendations

- Construction companies need to understand what non-financial performance indicators are, and why they are important for sustainable performance;

- Construction companies that identify new markets should have a pro-active strategy to help them gain work in competition against other international organisations;

- Construction companies need to plan mergers and acquisitions carefully and consider processes, other than those with a financial or legal focus. This should include pre-merger/acquisition activities as well as post merger/acquisition activities; and

- Construction companies embarking on KM initiatives should devise processes that facilitate rather than inhibit KM, and strive to create an organisational culture that is an enabler for KM.

8.4 Areas for Further Work

There are a number of recommended areas for further work within mergers and acquisitions. These include:

- Cultural Dimensions of Mergers and Acquisitions - organisational culture is deeply embedded in a company's staff and processes. The manner in which both of these are affected by organisational change, and the steps taken to minimise any adverse effects would be extremely useful for companies planning to undertake mergers and acquisitions in the future;

- Knowledge Management Performance Measurement - the need to identify, implement and evaluate realistic measures to judge the performance of Knowledge
Management initiatives will be paramount to ensure that KM expenditure is correctly targeted and adding value to the company;

- Prioritisation of M&A Impact – there is a need for a study on how individual companies can map their processes and to prioritise the impact of those processes affected by mergers and acquisitions. This should ensure that companies address issues other than finance during the M&A process; and

- A Mergers and Acquisitions Model – with the increasing importance of internationalisation, followed by globalisation of the construction market, it is foreseeable that more mergers and acquisitions will take place. Rather than reinventing the wheel for each merger or acquisition, the development of a generic framework or model, perhaps based on the GEC model, but modified for the construction sector and easily adaptable to suit different operating conditions, needs to be investigated.

8.5 Closing Remarks

Mergers and Acquisitions form a key element in modern business strategy. The benefits can offer tremendous competitive advantage. However, the entire process has to be carefully managed to ensure that these benefits are maximised. If construction organisations address the issues raised in this research report and implement its recommendations, they should achieve the synergies and benefits expected which would lead to an improvement in both their financial and non-financial results.
References
References


References


References


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References


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References


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References


References


Appendix 1

Framework for Strategy Interviews
Sample Framework for Strategy Interview

Company Names: George Wimpey plc, Tarmac plc and AMEC plc.

Person Interviewed:
Interview Date:
UK Turnover:
No. Staff:
Date Transaction Announcement:
Date of Transaction:
Value of Transaction:

Background

1. When was the company first registered?

2. What was the company’s main business at registration?

3. How did you refer to the transaction?

4. Before the transaction, what the organisational structure of the company?

5. When did the various divisions start operations?

6. Before the transaction, what were the goals of your Corporate Strategy?

7. Did each business unit have its own Strategy?
   If Yes, explain the differences with Group Strategy.

8. How often was Group and Business Strategy reviewed?

9. What was the Group’s Strategy for the recession?

Leading Up to the Asset Swap/Acquisition

10. Approximately when did the idea of divesting and concentrating on a specific business first occur?
11. What was the main catalyst for this idea?

12. What were the mechanism used to decide which businesses to keep and which to divest?

13. What were the other feasible options for divesting and how did you arrive at the current solution?

14. How anxious were you to divest? Could you have held onto the business if necessary?

15. What gains were expected from the divestment?

16. How was the company’s performance immediately prior to the transaction rated?

17. What mechanisms were used to judge performance?

18. When did you first contact with the other company?

19. How much did you know about the other company’s business prior to the transaction?

20. How did your measure comparability between the two different businesses?

**After the Transaction**

21. What is your current Business Strategy?

22. What changes (organisational and other) have to be implemented to achieve your new strategy?
23. How much organisational changes had to be made?

24. Where does the new acquisition fit into the new structure?

25. What was the cost of these changes?

26. Are you on target for restructuring?

27. What has been the easiest and most difficult parts of the restructuring process?

28. Company culture is important. How difficult do you think it will be to incorporate the new staff? What are the big issues anticipated?

29. How valuable was communication to staff of changes throughout the transaction?
Appendix 2

Framework for Emerging Markets Interviews
Appendix 2

Sample Framework for Emerging Markets Interview

Company Names: AMEC, Balfour Beatty, Bovis, Kvaerner and Tarmac

Person Interviewed:
Interview Date:
UK Turnover:
No. Staff:

Policy on Central and Eastern Europe Region

1. Do you forecast significant increased work over the next ten years coming from Europe?

2. Do you forecast the opportunities in Central and Eastern Europe being a significant part of it?

3. How will you win market share?

4. Which remain as the biggest barriers to entry?

5. A recent report into the CEEC concluded that the Big Emerging Markets were Russia, Turkey and Poland. Does the company agree that these countries are significant to the corporate goals? If so how? If not which ones are of more interest and why?

6. Do you believe there is likely to be over capacity in the construction industry in Europe?

7. How does the company go about gathering data on opportunities in the different European States? Who does it? What are the sources of information?

8. The European Commission publishes a lot of data on European markets. Is it consulted rigorously? How is it treated? Which of it is of particular practical use?

Mergers and Acquisitions Strategy

9. Does a formal mergers and acquisitions strategy exist towards Europe?

10. How would you describe the strategy?

11. Do different strategies exist between the Big Emerging Markets of Central and Eastern Europe and the developed countries like France and Germany?

12. Could you outline a significant acquisition and divestment decision made in the 1990's (in the CEEC if possible) with reference (if possible) to some of the following:
Appendix 2

- How was the target company found?
- Was any 'scientific' analysis done to select that type of business to acquire / divest or was it mainly gut feeling and experience?
- How important was the forecast impact on the company stock value?
- Was the short-term effect for shareholders a prime concern?
- How do you measure the success of the acquisitions?
- In what time-frame is a positive result expected?
- Considering financial indicators only (share price, profit, return on capital etc) which is the most important?
- What do you believe is the major repositioning that resulted from the actions from the client’s and company’s viewpoints?

13. Generally how does the company in practical terms go about identifying suitable targets for acquisition?

14. What are the main criteria that make a target attractive?

15. To compete in the long term do you believe the top UK construction firms need to grow to a size comparable with the biggest firms in Germany and France in order to compete across Europe? (Which are in turn small compared with the American and Japanese large companies).

16. Is acquisition considered to be the most suitable way to grow in this context given a reported 50/50 success to failure rate?

17. Does your company have a better success rate than this? If so what do you attribute it to?

18. Of the joint ventures currently being undertaken is the success rate greater or lower than the 50% cited for acquisitions?

19. Does the company see joint ventures as a precursor to possible acquisition?
Appendix 3

Framework for IS/IT Interviews
Sample Framework for IS/IT Interview

Company Names: Kvaerner Construction Ltd and HBG Kyle Stewart

Person Interviewed: 
Interview Date: 
UK Turnover: 
No. Staff: 

Background
1. What terminology was used to describe the transaction?
2. What was the strategic aim(s) of the purchaser?
3. What was the strategic aim of purchased company?
4. Are there any plans to integrate/rationalise the other common business units, particularly their systems? If so, how?
5. Are there any similar plans to integrate / rationalise the Construction group?
6. Describe the IT department’s organisational structure and the staffing levels.
7. What type of information is transferred from the UK company to the Group at present? Format? Frequency?
8. Referring to the Strategic grid, how important is IT to the company?

Impact on IT
9. Were your IT Systems investigated before take-over? If Yes, what aspects of the Systems were investigated and why?
10. What were the advantages and disadvantages of the take-over as far as IT is concerned? (Financially / Technologically?)
11. What were the aims of your IT strategy and how were these to be achieved? (time and cost)
12. What was the relationship between the Business Strategy, Organisational Strategy and IT Strategy?
13. What are the aims of your current IT strategy and how is it to be achieved?
14. What was the relationship between the Business Strategy, Organisational Strategy and IT Strategy?
15. What are the major IT changes since the merger/acquisition? Any additions or subtraction? Instantaneous or prolonged?

16. How do you go about setting your priorities and allocating your time?

17. What impact has the take-over had at strategic planning level and lower down at the technical level?

18. How does the country (or company) culture affect the information Systems in use and the people involved with using IT? (also ‘human issues’)

19. At present, what is the organisational relationship and degree of communication between IT Managers / Directors within the Group?

20. Future plans?

**Technology Transfer**

21. In terms of IT, what do you think you can learn from the Norwegians/Dutch?

22. What can the Norwegians/Dutch learn from you?
Appendix 4

Framework for KM Interviews
Appendix 4

Sample Framework for IS/IT Interview

Company Names: AMEC, WSP, Galliford Try
Interviewee Name:
Title:
Interview Date:

SECTION A: COMPANY BACKGROUND

<table>
<thead>
<tr>
<th>Item</th>
<th>Former Company</th>
<th>New Company</th>
</tr>
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<tbody>
<tr>
<td>Annual Turnover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Employees</td>
<td></td>
<td></td>
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<tr>
<td>Geographical Spread</td>
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<td></td>
</tr>
<tr>
<td>Business Units</td>
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</tbody>
</table>

Company Aim?

SECTION B: MERGER/ACQUISITION BACKGROUND

1. Company's general Merger and Acquisition Strategy

2. Aim of the Merger/Acquisition

3. Extent of Autonomy

4. Pre-acquisition: Valuation of target's Knowledge/Capabilities/Expertise

5. Post-acquisition: Valuation of target's Knowledge/Capabilities/Expertise

6. Integration Management Team

7. Priority Areas for Integration

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SECTION B: KM BACKGROUND

KM Group Report to:
Size of Group:
Date Established:
Aim of KM Group:

SECTION C: KNOWLEDGE MANAGEMENT STRATEGY

1. The Knowledge Base
Q1.1: Type of Knowledge

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>Knowledge interested in</td>
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<tr>
<td>Class of knowledge</td>
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<td></td>
</tr>
<tr>
<td>Importance of knowledge</td>
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<td></td>
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<tr>
<td>Relation to business goal</td>
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Q1.2: Users of this Knowledge

<table>
<thead>
<tr>
<th>Former Company</th>
<th>New Company</th>
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Q1.3: Source of Knowledge

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<thead>
<tr>
<th>Former Company</th>
<th>New Company</th>
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Q1.4: Location of Knowledge

<table>
<thead>
<tr>
<th>Former Company</th>
<th>New Company</th>
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</table>
## Appendix 4

### Q1.4: Characteristics of Knowledge

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<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td><strong>Type:</strong></td>
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<tr>
<td>Explicit Tacit</td>
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<tr>
<td>Peripheral Core</td>
<td>Peripheral Core</td>
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<tr>
<td>Rapid change</td>
<td>Rapid change</td>
</tr>
<tr>
<td>Slow change</td>
<td>Slow change</td>
</tr>
<tr>
<td>Generic</td>
<td>Specific</td>
</tr>
<tr>
<td>Generic</td>
<td>Specific</td>
</tr>
<tr>
<td><strong>Mode of Acquisition:</strong></td>
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</tr>
<tr>
<td>By doing</td>
<td>By doing</td>
</tr>
<tr>
<td>By interacting</td>
<td>By interacting</td>
</tr>
</tbody>
</table>

### 2. Process Shaping Factors

#### Q2.1: Structure of Organisation

<table>
<thead>
<tr>
<th>Former Company</th>
<th>New Company</th>
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</thead>
<tbody>
<tr>
<td>Centralised</td>
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<tr>
<td>De-centralised</td>
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<tr>
<td>Function Based</td>
<td>Function Based</td>
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<tr>
<td>Project Based</td>
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#### Q2.2: Organisational Culture

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Hierarchical</td>
<td>Hierarchical</td>
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<tr>
<td>Devolved</td>
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#### Q2.3: Team Boundaries

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<th>New Company</th>
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<tbody>
<tr>
<td>Department</td>
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<tr>
<td>Function</td>
<td>Function</td>
</tr>
<tr>
<td>Project Team</td>
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<tr>
<td>Organisation</td>
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<tr>
<td>Cross-organisation</td>
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#### Q2.4: Organisational Strategy - major differences

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Q2.5: Other Organisational Changes (financial crisis/staff departure)

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Q2.6: Specific barriers to KM/Knowledge Transfer between organisations


Q3.1: Procedures used during various phases of Knowledge Management Process

<table>
<thead>
<tr>
<th>Former Company</th>
<th>New Company</th>
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<tbody>
<tr>
<td>Generate</td>
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<tr>
<td>Store</td>
<td>Store</td>
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<td>Search</td>
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<td>Use</td>
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<tr>
<td>Share</td>
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<tr>
<td>Change</td>
<td>Change</td>
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<tr>
<td>Retire</td>
<td>Retire</td>
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Key: ✓ some attention given  ✗ ignored at present

Q3.2: Problems & Causes within Each Phase of KM Process

<table>
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Q3.3: KM Tools used (formal/commercial and informal) and Function (Generate/Store/Search/Use/Share/Change/Retire)

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<tr>
<th>Former Company</th>
<th>New Company</th>
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Q3.4: KM Process problems experienced & Strategies adopted to overcome

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Q3.5: Preferred way of learning from past experience?

Q3.6: Role of People within KM Process
Q3.7: Role of IT within KM Process
Q3.8: KM Strategy vs. Information System Strategy vs. Business Strategy

4. Performance Measurement

Q4.1: What needs to be measured at present?
Q4.2: Existing Performance Measures used
Q4.3: Efficiency & Effectiveness of Current Measures
Q4.4: Future Strategy for Performance Measurement
Q4.5: Cost/Benefit of KM in M&A
Appendix 5

Publications
List of Relevant Publications


