

‘Exploring the Relationship between the Configurations of International Construction Majors and the Effectiveness with which they Develop their Core Competencies’

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I, Ioannis I. Zoiopoulos, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

ABSTRACT

This research explores the relationship between the configurations that international construction majors (ICMs) adopt and the effectiveness with which they develop their core competencies. Its significance lies with the fact that - due to the project-based, diversified and internationalized nature of ICMs - findings from this research not only contribute to our knowledge regarding the strategic management of large construction organizations, but also to our knowledge regarding the management of project-based organizations (PBOs) in general, and production-oriented multi-national corporations (MNCs). In addition, it expands the boundaries of core competence theory's application towards a novel context, other than the production-oriented industries in which it has been traditionally examined.

In this research, theory was critically reviewed to define and describe core competencies within the context of multi business unit (BU) organizations - such as ICMs. Drawing from 'cybernetics', 'management control' and mainstream strategic management theories, five corporate-level activities were brought forward as effectively shaping core competence development. Implementing a qualitative multiple case study strategy in the tradition of critical realism, four ICMs - and one shadow case which was ultimately not included - were studied through collection and analysis of documentary and semi-structured interview data. Their cross-case comparison - and discussion of findings in light of the extant literature - showed that the divisionalization inherent in diversified configurations can influence negatively the effectiveness with which ICMs develop their core competencies. In contrast, in the presence of 'lateral links' between distinct, yet related, BUs: i) standardization of processes (particularly regarding project-team integration and organizational learning mechanisms integrated with reporting processes), ii) standardization of skills and iii) standardization of norms, positively influence the effectiveness with which core competencies are developed. In addition - and perhaps most importantly - particular 'structural' and 'functioning' organizational characteristics were identified, which enable core competencies to effectively emerge.

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To my parents, for all
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List of Abbreviations

ASCE	American Society of Civil Engineers
BD	Business Development
BoD	Board of Directors
BU(s)	Business Unit(s)
CEO(s)	Chief Executive Officer(s)
CFO	Chief Financial Officer(s)
CGS	Cyclone Global Services
CRGP	Colaboratory for Research on Global Projects
COO	Chief Operating Officer
DM	Division Manager
DoD	Department of Defence
DoE	Department of Energy
DoS	Department of State
EBIT	Earning Before Interest and Tax
EBRD	European Bank of Reconstruction and Development
EE	Evolutionary Economics
ENR	Engineering News Record
EPC	Engineering Procurement Construction
ERP	Enterprise Resource Planning
FD	Finance Director
GBU(s)	Global Business Unit(s)
GFT	Global Functional Track
GPM	Global Policy Manual
HCR(s)	Human Capital Resource(s)
Hi-Po	High Potential
HR	Human Resources
ICM(s)	International Construction Major(s)
IL	Industry Line
ILCC	Individual Level Core Competence(s)
ICT	Information Communication Technology
IT	Information Technology
JV(s)	Joint Ventures
MD(s)	Managing Director(s)
M&E	Mechanical and Electrical
M-Form	Multidivisional Form
MI	Management Information (Systems)
MNC(s)	Multi-national Corporation(s)
MPV	Market Power View
OLCC(s)	Organizational Level Core Competence(s)
OLM(s)	Organizational Learning Mechanism(s)
ORC(s)	Organizational Capital Resource(s)
OSM	Operating Systems Manual

PDPPs	Personal Development and Performance Plans
PMCP	Project Management Certification Program
PFI	Private Finance Initiative
PCR(s)	Physical Capital Resources
PM	Project Manager
PMCP	Project Management Certification Programme
PPP	Public Private Partnership
PRISM	Pacifico Resource Information System Manager
RBV	Resource-Based View
R&D	Research and Development
SA	Strategic Architecture
SI	Strategic Intent
SIGs	Special Interest Groups
SM	Sector Manager
SMD	Sector Managing Director
SOT	Sales Operations Technology
SPV	Special Purpose Vehicle
SVP	Senior Vice President
SWOT	Strengths Weaknesses Opportunities Threats
UK	United Kingdom
US	United States
USA	United States of America
USAID	United States Agency for International Development
VP	Vice President

*'We live in the tension between the shapes we take as
the world acts upon us, and the ideas of order that our
imagination imposes upon the world'*

Wallace Stevens

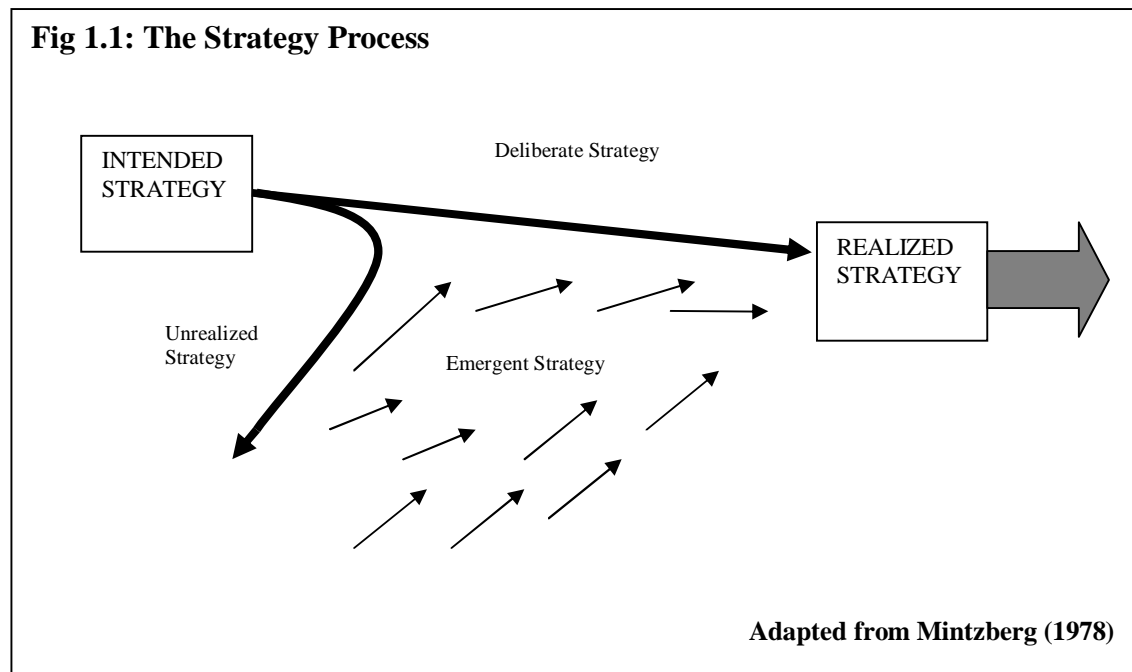
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Chapter 1: Setting the Context

1.1 Introduction

Certain companies exhibit superior performance compared with their peers and have had greater success in setting and pursuing their intended strategies. This phenomenon has been of great interest for strategic management researchers and practitioners (e.g. Penrose, 1959, 1995; Rumelt, 1974; Mintzberg, 1978; Nelson and Winter, 1982; Porter, 1985; Hamel and Prahalad, 1994). It is this phenomenon that this research explores, within the context of construction.

The first straight-forward conceptualization of the way a company sets and pursues its intended strategies was brought forward by Mintzberg (1978). The *strategy process* (Figure 1.1) labels strategy as ‘intended’, ‘deliberate’ - where intentions that existed previously were realized - and ‘emergent’ - where patterns develop in the absence of intentions or despite them - forming a conceptual framework through which how a firm’s ‘realized’ strategy comes to be can be explained.



During the 1990s it became widely accepted that a firm’s superior performance and greater success in pursuing its intended strategies lies in its ability to ‘align’ its organizational resources with the requirements of the industry environment it operates in (Powell, 1992; Ghoshal and Nohria, 1993; Kay, 1993; Hamel and Prahalad, 1994; Teece et al., 1997). Close alignment, yet flexibility to change - as the requirements of alignment change - form part of developing and sustaining competitiveness in a

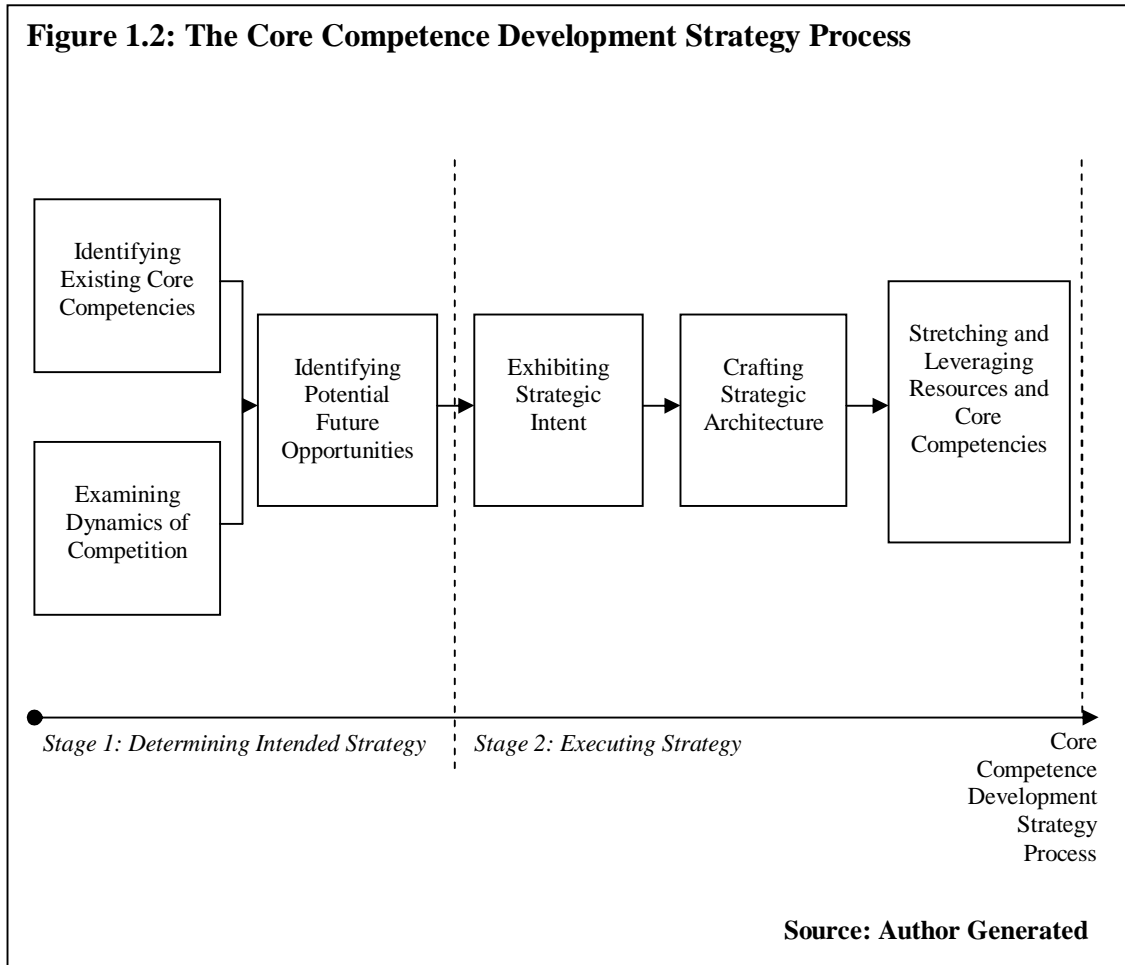
constantly changing marketplace (Peters and Waterman, 1982). This point of view was embraced by construction strategy researchers - particularly Langford and Male (1991; 2001), Male and Stocks (1991) and Chinowsky and Meredith (2000), who applied mainstream strategic management theory principles to address the competitiveness of organizations operating in the construction industry.

Although strategic management can be separated into two major streams, one focusing on 'external analysis of competition' - including the 'competitive interactions of firms' - and the other focusing on the 'internal works of organisations', researchers (De Wit and Meyer, 1994; Grant, 1994; Sanchez and Heene, 1997 and in construction: Langford and Male, 2001 and Chinowsky and Meredith, 2000) agree that neither of them in isolation provides a framework to understand an organization's ability to align its resources with the requirements of its complete environment. Within this notion of market-company alignment, Prahalad and Hamel (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994) brought forward *core competence theory*.

1.2 Core Competence Theory

The theory's proponents (Hamel et al., 1989; Prahalad and Hamel, 1990; Hamel and Prahalad, 1994; Markides and Williamson, 1994; Sanchez et al., 1996; and in construction Chinowsky and Meredith, 2000 and Haan et al., 2002) postulate that an organization's superior performance is based on a collection of desired skills which are part of the organization's collective learning and/or on collective aptitudes that add-up to the organization's culture. These they call 'core competencies'¹. Core competence theory emphasises the importance of 'proactive organizational development' by proposing an organization must start building on its strengths 'now' to develop the core competencies necessary to be successful in its markets in the future. It is the idea of focusing on what an organization does best that resides at the centre of core competence theory's notion of proactively aligning organizational resources and (potential) future market requirements (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994 and in construction: Chinowsky and Meredith, 2000). The further the organization moves away from what it does best, the more likely it will fail to meet its objectives.

¹ The use of the term 'core competence' in industry and academia often results in confusion, since it is being used in a variety of different contexts and derived from different meanings (Hamel and Prahalad, 1994; Lahti, 1999). Even though the concept of core competence will be described, explained and defined in Chapter 3 of this thesis, the researcher felt that a brief introduction of the term at this stage would benefit the reader in understanding the arguments presented in this chapter.



Core competence theory promotes the notion that ‘competing for future opportunities’ is more important than ‘competing for present opportunities’. In light of this, the goal for organizations should be to develop an independent point of view about future opportunities and how to exploit them (Hamel and Prahalad, 1994). Underlying the theory’s philosophy is the ‘core competence development’ process (Figure 1.2). This starts with an organization’s leadership identifying and understanding its existing core competencies, in tandem with developing a foresight of desirable core competencies for markets in which it may choose to compete. This exercise can provide the organization with direction regarding its development, as it highlights the skills and collective aptitudes it needs to develop. Leadership should then steer the organization towards that direction, by exhibiting the strategic intent (SI) to do so (Hamel and Prahalad, 1989; 1991). Subsequently, leadership needs to create a ‘roadmap’ for the implementation of its strategic plan, referred to in core competence theory as ‘strategic architecture’ (SA) (Hamel and Prahalad, 1991; 1993). Having done that, core competence theorists advocate that the organization can develop its core competencies quicker and more cost

effectively than competitors by ‘stretching and leveraging’ the resources and core competencies it already possesses².

Core competence theory postulates that organizations following this ‘exhibiting strategic intent’ to ‘stretching and leveraging’ process, and the principle of ‘focusing on what their organization does best’, will pursue intended strategies with greater success than competitors who do not (Hamel and Prahalad, 1989; 1991; 1993; 1994; Prahalad and Hamel, 1990; Sanchez and Heene, 1997). At the same time, the theory’s proponents not only recognize, but also emphasize, that integration of ‘intra-organizational’ and ‘inter-organizational’ competitive dynamics is required for effective core competence development, embracing what Mintzberg (1978) had referred to as ‘integrating emerging with intended strategies’.

Before presenting further the research that has been undertaken in core competence theory in order to highlight the knowledge gaps that exist in the field and better position this research within them, its theoretical origins will be reviewed, in order for the reader to better understand its open-ended, yet integrative nature.

1.3 Theories Implicit in Core Competence Theory

Core competence theory is rooted in a number of theoretical perspectives that have been proposed to explain the issues behind superior organizational performance, differences in the success rate with which organizations set and pursue their intended strategies, and the effectiveness with which they can (pro-actively) align their resources with the changing requirements of the market/industry environment they operate in.

The following theories are the most clearly implicit in core competence theory.

- Organization Theory;
- The Market-Power View (MPV) of the Firm;
- The Resource Base View (RBV) of the Firm;
- The Behavioural Theory of the Firm;
- Evolutionary Economics;
- Organizational Learning.

² According to Hamel and Prahalad (1994), the essence of stretching and leveraging resources and core competencies following the exhibiting of strategic intent is to ‘do more with less’. Although it is reasonable to be sceptical about the practical application of ‘doing more with less’ in real life, it is mentioned here to show the focus on efficiency and creativity that is implicit in core competence theory.

Each will be briefly reviewed here so that core competence theory can be positioned within the wider field of strategic management, its theoretical background can be better understood and its 'integrative' nature demonstrated.

1.3.1 Organization Theory

Traditionally, the issue of how organizations 'structure' to align themselves with the requirements of their industry environment has been the focus of organization theory³. Scott (2004) and Hatch (2006) identified two major sources of thought that formed the pre-history of organization theory, one sociological and one managerial. They argue the sociological source is represented in the works of Emile Durkheim, Max Weber and Karl Marx - who focused on the changing shapes and roles of formal organizations in society and the influences of industrialization on the nature of work and its consequences for workers - and the managerial source is represented by the work of Frederic Taylor, Henry Fayol and Chester Barnard - who were industry practitioners and focused on the potential problems faced by managers of public and private sector organizations.

Absent from both of these early approaches was attention to organizations as of interest in their own right (Scott, 2004). Barnard (1938) and Selznick (1948) were among the first scholars to focus primary attention on the organization as the unit of interest. Both viewed organizations not only as technical systems, but also as 'adaptive' social systems attempting to survive in their environment. In the 1950s, organizations emerged as a recognized field of social scientific study, with March and Simon (1958) focusing attention on decisions and decision makers in organizations, Merton (1949), emphasizing the unintended consequences of purposive action and Blau (1955), who focused on the dilemmas of 'bureaucracies' - as formal structures designed to solve one problem give rise to others. When the theory of 'open systems' (von Bertalanffy, 1956) was first introduced, organization theorists started paying attention to the environment within which organizations operated, as opposed to paying attention solely on organizational actors and processes. This gave rise to innovative theoretical models, affording new insights into the determinants of organizational structure. Scott (2004) has grouped them in the following six areas:

³ When applied to construction organizations, organization theory can be confusing and conflicting, perhaps because its theoretical thrust has come predominantly from the analysis of 'manufacturing' or 'service' companies (Male, 1991; Lansley, 1994).

- Contingency Theory: recognizing that, although all organizations are dependent on their environment for resources and technical information, these environments vary in complexity and uncertainty, and therefore, organizational structures are expected to differ (Burns and Stalker, 1961; Lawrence and Lorsch, 1967; Galbraith, 1973). Those organizations whose structures are best adapted to their specific environments are expected to perform best. Burns and Stalker (1961) argued that if a stable, routine and fairly predictable market environment prevailed, companies could reap advantages from 'mechanistic' functional organizational forms, whereas in the case of rapidly changing technological and market conditions, flexible and organic organizational management is required to successfully link functions. Lawrence and Lorsch (1967) found that environmental conditions surrounding an organization in simple and stable environments relied upon coordination mechanisms of direct supervision and standardization, whereas organizations in more dynamic and complex environments favoured mutual adjustment as a means of coordination. Galbraith (1973) was the first to explain the role of mutual adjustment devices such as 'task forces' and 'matrix forms' in the formal organizational structure;
- Transaction-Cost Theory: in which Williamson (1975) built on Coase's (1937) insight that organizations arise to deal with transaction costs that markets are ill-equipped to handle. He blended organization theory with economic theory to propose the 'transaction cost' approach as a way of determining a firm's boundaries, with respect to the extent it decides to 'internalize' activities that it can procure from the market⁴;
- Resource-Dependence Theory: building on Emerson's (1962) formulation of 'power-dependence' relations, this framework recognizes that organizations must exchange resources to survive, but such exchanges, if imbalanced, give rise to power differences (Pfeffer and Salancik, 1978);
- Network Theory: This was applied during the 1970s and 1980s to the study of relations among organizations. Building on the work of White et al. (1976), scholars moved to develop measures and methods appropriate to examining networks of organizations. An organization's location in a network of relations, as

⁴ Due to its direct applicability to construction, the 'transaction cost' approach has enjoyed a number of successful applications in the field (e.g. Gunnarson and Levitt, 1982; Reve and Levitt, 1984; Stinchcombe and Heimer, 1985; and Winch 1989). One particularly powerful illustration of the approach can be given by considering the issue regarding at what stage does it make sense for an organization to subcontract work, rather than to undertake the work directly (internally).

well as the structure of the network itself, were recognized to affect organizational behaviour and outcomes⁵;

- Organization Ecology: Building on the work of Hawley (1950), Hannan and Freeman (1977) argued that previous theories exaggerated the extent to which it is possible for individual organizations to undergo fundamental change. They therefore argued that those interested in change should shift their attention from a focus on single organizations to ‘populations’ of organizations of the same type;
- Institutional Theory: This stresses the importance of the ‘structural’ features of environments organizations operate in. Building on the work of Berger and Luckmann (1967)⁶, institutional theorists (e.g. Meyer and Rowan, 1977; Meyer and Scott, 1983) argue that not only their technical, but also their institutional environment (i.e. regulative, normative and cultural/cognitive features) need to be considered.

As noted in Section 1.2, core competence theory proponents not only recognize, but also emphasize, that integration of intra- and inter-organizational dynamics is required for effective core competence development. The notion of (proactively) aligning organizational resources with the requirements of (potential) future market environments, resides at the centre of core competence theory. Therefore, the ideas of aligning organizational structure with market environment requirements explicit in organization theory are of great relevance to core competence theory.

1.3.2 The Market Power View (MPV) of the Firm

In the tradition of industrial organization economics, Caves and Porter (1977) developed the argument that an industry’s structural forces impede firms from freely changing their competitive position and are seen as substantially independent of a firm’s actions (mobility barriers). This provided an explanation of why profit rates differ systematically among the groups making up an industry. Later, Porter (1980) took the analysis a step further, suggesting the concept of mobility barriers alone is inadequate to explain performance differences among firms of the same strategic group. He argued

⁵ Because network theory emphasizes the ‘relational’ aspects of environments, its development aided the study of resource dependence connections (Pfeffer, 1987).

⁶ In ‘The Social Construction of Reality: A Treatise in the Sociology of Knowledge’, Berger and Luckmann (1967) contend reality is socially constructed and should be understood in terms of an ongoing dialectic process, composed of the three moments of ‘externalization’, ‘objectivation’ and ‘internalization’ of the knowledge of individuals.

that the profitability - and hence the prospects for growth - of a firm, depend on how the firm is positioned in an industry with respect to the 'Five Competitive Forces' (Figure 1.3) operating in its environment.

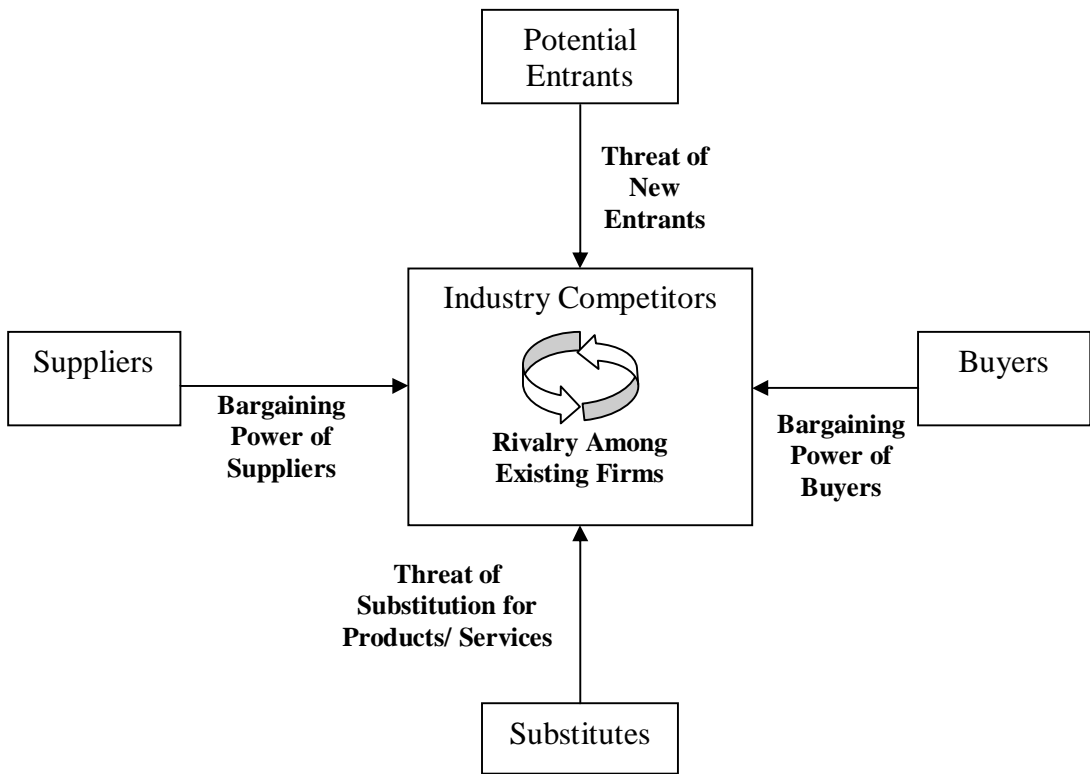
By introducing further the 'Value Chain' concept (Figure 1.4), Porter (1985) related internal company structure in specific ways back into the structure of the marketplace, linking the MPV of the firm with the internal functions and activities that a company performs. The value chain distinguishes between 'primary' and 'support' activities and can aid value analysis in order to assist management in identifying where value is added and the optimum way to exploit it. Assuming that each business unit of a company represents a separate value chain, Porter (1985) distinguished between three broad types of interrelationships among a company's distinct business units (BUs):

- 'Tangible interrelationships': arising from opportunities to share activities among related BUs, due to common buyers, technologies and other factors;
- 'Intangible interrelationships': involving the transference of management know-how among separate BUs, stemming from the fact that businesses that cannot share activities may nevertheless be similar in generic terms, such as type of buyer, type of purchase by buyers, type of relationships with clients and type of production processes.
- 'Competitor interrelationships': stemming from the existence of rivals that actually or potentially compete with a company in more than one industry.

Porter (1985) advocated that companies should actively manage and exploit these interrelationships by setting-up and maintaining a 'horizontal organization' that would link their distinct - although perhaps related - BUs.

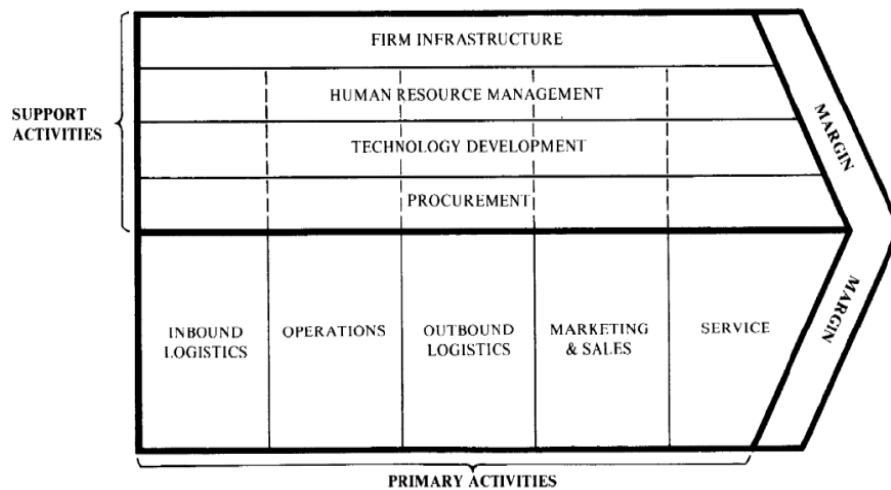
The MPV of the firm examines how organizations set or adopt strategies to position themselves within the industry they compete, such that they will enjoy superior competitiveness over 'worse' positioned competitors. In contrast, core competence theory advocates that organisations which are 'leaders' in their industry can cooperate and collaborate with other organisations through alliances, joint ventures and knowledge sharing agreements, and succeed in actually 'shaping' the landscape of the industry in which they compete.

Figure 1.3: Porter's Model of 'Five Competitive Forces'



Source: Porter (1980)

Figure 1.4: Porter's Value Chain



Source: Porter (1985)

Core competence theory acknowledges the ideas within the MPV of the firm and their contribution to the wider field of strategic management. It does this, first, by recognizing the strong influence industry characteristics exert on the type of core competencies that organisations need to develop to be successful. Second, it does this by emphasizing that the development and deployment of core competencies through organisation-specific activities is about adding value, the same philosophy behind Porter's (1985) 'Value Chain' concept. The most important relationship between the two theories, however, is based on the concept of 'interrelationships' between distinct business units (BUs) and the 'horizontal organization' set-up to exploit them. Hamel and Prahalad (1994) implicitly acknowledge that multi-BU organisations are more advantageously structured to develop and deploy their core competencies than single-BU organisations. They advocate that core competencies needed to access future opportunities may be spread across a number of BUs and it is up to the organisation to bring them together at the appropriate time and place, highlighting thus the importance of a 'horizontal organisation' for effective inter-BU coordination.

1.3.3 The Resource Based View (RBV) of the Firm

The RBV of the firm emerged largely from the works of Selznick (1957) and Penrose (1959). Penrose (1959:15) was the first to define the firm as a pool of resources, whose 'general purpose is to organize the use of its own resources together with other resources acquired outside the firm for the production and sale of goods and services for a profit'. Penrose also described the firm as a collection of resources bound together in an 'administrative framework', the boundaries of which are determined by the area of 'administrative coordination' and 'authoritative communication'. She further advocated, 'the firm's rate of growth is limited by the growth of knowledge within it, but a firm's size by the extent to which administrative effectiveness can continue to reach its expanding boundaries' (Penrose, 1995:24).

According to the RBV of the firm, the long-term competitiveness of a company depends on the resources it has obtained and developed that differentiate it from its competitors, as well as its ability to use them towards achieving its goals and meeting its objectives (Rangone, 1999). The RBV of the firm is therefore an approach to look internally for sources of superior organizational performance (Mahoney and Panadian, 1992; Peteraf, 1993). The approach taken is one whereby the strategy process revolves

around identification, development/acquisition and exploitation of ‘idiosyncratic’, ‘path dependent’ and ‘company-specific’ resources (Helfat and Peteraf, 2003).

The RBV of the firm does not consider all resources but focuses only on ‘critical’ or ‘strategic’ ones, which are the basis of the company’s superior performance (Cool and Schendel, 1988; Barney, 1991; Rangone, 1999). It has been argued (Barney, 1991; Collis, 1994; Collis and Montgomery, 1995; Foss and Foss, 2005) that for resources to yield ‘sustainable competitive advantage’ they must be:

- Valuable: exploiting opportunities and/or neutralizing threats;
- Rare: among current and potential competitors;
- Imperfectly Imitable: not easily copied by competition;
- Non-Substitutable: not easily substituted;
- Durable: not easy to destroy;
- Appropriable: allowing their owner to appropriate the benefits acquired from them.

The strongest association between the RBV of the firm and core competence theory lies in the relationship between resources and core competencies themselves, a complex relationship which will be better understood through the theoretical models developed at a later stage of this thesis⁷. In addition, core competence theory adopts a notion inherent in the RBV of the firm: it is the efficiency and effectiveness with which each company utilizes its resources that ultimately shape its future. Finally, core competence theory’s tenet of ‘focusing on what the organization does best’ is drawn from the RBV of the firm and the work of Wernerfelt (1984; 1995), who advocated companies should pursue opportunities where success is dependent on types of resources that are supplementary or complementary to the resources they already possess.

1.3.4 Evolutionary Economics

The theory of evolutionary economics was first introduced by Nelson and Winter (1982) and has its roots in the work of Schumpeter (1942). This theory attributes superior organizational performance to the organization-specific routines that a company has developed and retained through its history of operation. Routines are organisation-specific, as is each company’s unique evolutionary path (Teece et al. 1997;

⁷ Viz. Chapter 3, sections 3.1-3.2.6

Eisenhardt et al. 2000). Nelson and Winter (1982) use the term ‘organizational routines’ to include characteristics of firms ranging from well-specified technical routines for producing things and procedures for hiring and firing, ordering new inventory, to policies regarding investment, R&D, advertising and business strategies about diversification. In evolutionary economic theory, routines represent an organization’s collective learning assimilation and cultural position, especially regarding informal routines that end up becoming organizational norms.

Routines may change over time, but in the short run they function as carriers of knowledge and experience. In the words of Nelson and Winter (1982: 14): ‘routines play a role that genes play in biological evolutionary theory. They are a persistent feature of an organism and determine its possible behaviour (though actual behaviour is determined also by the environment), they are heritable in the sense that tomorrow’s organisms generated from today’s (for example, the building of a new plant), have many of the same characteristics and they are selectable in the sense that organisms with certain routines may do better than others and, if so, their relative importance in the population (industry) is augmented over time’. In addition, they argued that the idea organizations ‘remember’ a routine by exercising it is similar to how an individual remembers skills by exercising them.

Following the footsteps of Schumpeter (1942), Nelson and Winter (1982) built the concept of ‘organizational capability’⁸, which can be defined as ‘a high level routine (or collection of routines, particularly formal ones) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type’ (Helfat and Peteraf, 2003: 999). Grant (1996b) argued that, if knowledge resides in specialized form among individual organizational members, then the ‘essence’ of organizational capability is the ‘integration’ of individuals’ specialized knowledge.

Core competence theory embraces Schumpeter’s (1942) and Nelson and Winter’s (1982) evolutionary approach, where the competitive dynamics of an industry are driven by the actions of the companies belonging to that industry. This is the opposite direction of causality than the one postulated by the industrial organization economics’ paradigm of structure-conduct-performance (Porter, 1980). Adopting this direction of causality, core competence theory recognizes not only that firms in an industry compete for both markets and critical resources, but also, and at the same time, must cooperate in many ways to create new resources and develop new markets that

⁸ Further described in Chapter 3, section 3.2.2

may benefit all firms in that industry (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994; Sanchez and Heene, 1996). Thus, the theoretical lens of core competence theory allows better insights into inter-firm dynamics than has been accessible through prior strategy theory and can also link those to issues related to intra-organizational dynamics and more specifically the routinization of activities.

1.3.5 The Behavioural Theory of the Firm

Also implicit in core competence theory is the theory of organizational behaviour. Its foundations were laid by organization theory scholars Simon and March (Simon 1952; March and Simon, 1958), who modelled human behaviour to better understand how decisions are made in complex organizations. The resulting behavioural theory of the firm was consolidated and formalized in the work of Cyert and March (1963), who made detailed observations of the procedures by which firms make decisions and used these observations as a basis to develop a theory of 'decision making' within organizations. Organizational behaviour views the firm as a 'coalition of individuals', some of them organized into 'sub-coalitions'.

The same authors have further suggested a business is constrained by the uncertainty of its environment, the problems of maintaining a viable coalition and the limitations on its capacity as a system for assembling, storing and utilizing information. As a result, behavioural theory characterizes the firm as an 'adaptively rational system', which it assumes to have the following properties:

- There exist a number of states of the system. At any time, the system operates better under certain states than other possible states;
- There exists an external source of disturbance or shock to the system, which cannot be controlled;
- There exist a number of decision variables internal to the system, which are manipulated according to some decision rules;
- Each combination of external shocks and decision variables in the system changes the state of the system. Thus, given an existing state, an external shock and a decision, the next state is determined;
- Any decision rule that leads to a preferred state at one point is more likely to be used in the future than it was in the past. Any decision rule that leads to a non-preferred state at one point is less likely to be used in the future than it was in the past.

It can be argued on the basis of the above criteria that a company is an adaptive institution that learns from experience. The resolution of conflict, uncertainty avoidance, problematic research and organizational learning are central phenomena with which the model of Cyert and March (1963) deals.

Core competence theory explicitly recognizes the firm as a proactively adaptive institution, which learns from its experience. In addition, it acknowledges the influence the way decisions are made in organizations have in the successful pursuit and realisation of strategies, by emphasizing an alignment between organizational objectives and the objectives of individual employees has to be achieved during the process of exhibiting strategic intent (SI) and crafting strategic architecture (SA) (Hamel and Prahalad, 1989; 1994).

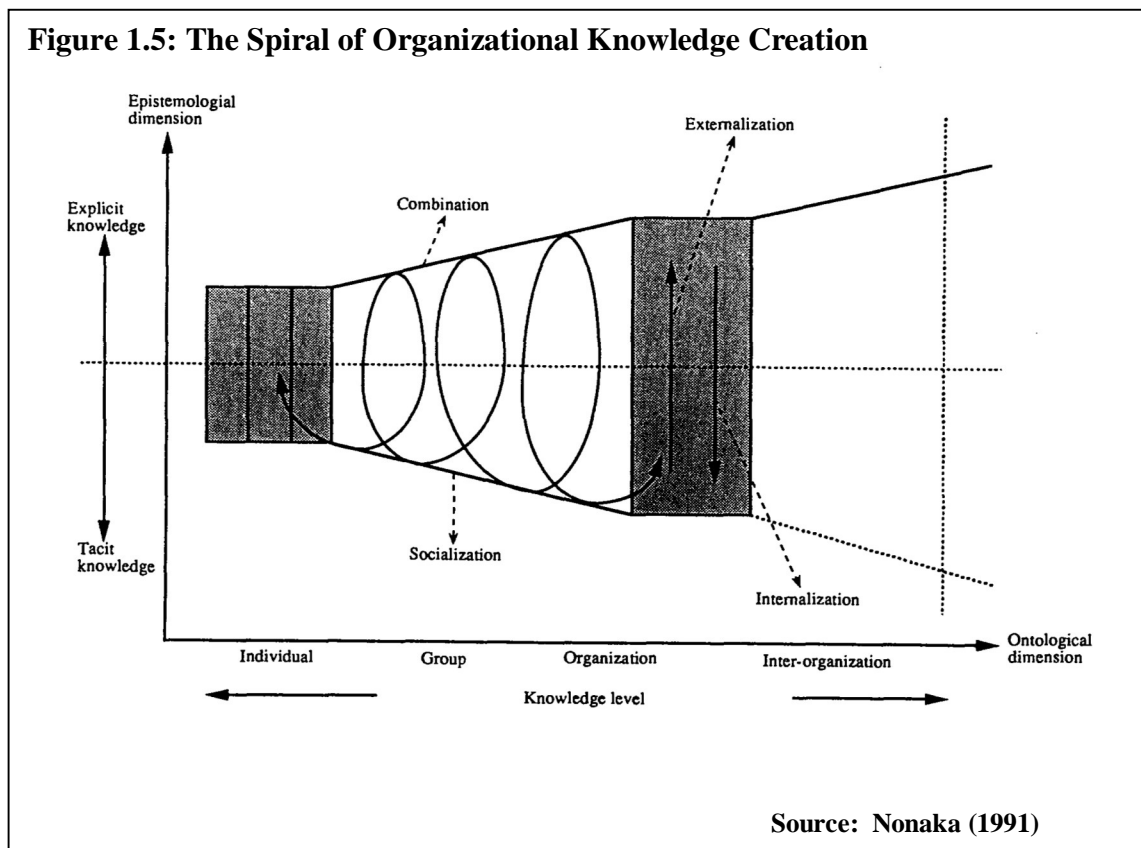
1.3.6 Organizational Learning

The first integrated theory of organizational learning was presented by Argyris and Schön (1978)⁹. They argued that organizational learning occurs in a ‘double-loop’ process, during which existing perspectives, interpretation frameworks and decision-making procedures are questioned and reconstructed. Argyris and Schön (1978) recognized that organizational learning is often difficult to achieve and the use of organizational development programs is often required to overcome this difficulty. Building on their work, Nonaka (1991, 1994) and Nonaka and Takeuchi (1995) argued double-loop learning need not be a special task, but a daily (in other words ‘routine’) activity of organizations.

Focusing on ‘knowledge creation’, Nonaka (1991; 1994) proposed a model that hinges on a dynamic interaction between ‘tacit’ and ‘explicit’ knowledge. He identified four ‘modes’ of dynamic knowledge interaction: i) socialization (tacit to tacit), ii) externalization (tacit to explicit), iii) combination (explicit to explicit) and iv) internalization (explicit to tacit). He argued that organizational knowledge creation occurs when all four modes are organizationally managed. Subsequently, he described

⁹ It is worth mentioning that the importance of knowledge and organizational learning has been widely recognized in the strategic management literature. Penrose (1959) was one of the first academics to stress the importance of ‘managing knowledge’. Nelson and Winter (1982) had recognized that knowledge is captured through the ‘routinization’ of activities, which leads to routines representing the organization’s collective learning assimilation and cultural position in the long run. Organizational learning is also a concept implicit in the work of Cyert and March (1963; 1995), who perceived the firm as an adaptive institution that learns from its experience.

knowledge creation as a 'spiral process'. In his 'spiral of organizational knowledge creation' (Figure 1.5), the process starts by 'socialization', usually through the building of a 'team' or 'field' of interaction, which facilitates the sharing of members' experiences and perspectives. Then, 'externalization' is triggered through dialogue. In search of more solid and sharable specifications, concepts formed by teams, existing data and external knowledge are combined. Often, this mode of 'combination' is facilitated by the documentation of existing knowledge. Experimentation through trial and error then leads to internalization through a process of 'learning by doing'.



Examining 'individual' learning within groups, Lave and Wenger (1991) argued that it should not be viewed as simply the transmission of abstract and de-contextualized knowledge from one individual to another. They proposed 'situated learning' as learning that takes place in the same context in which knowledge is applied and used the term 'communities of practice' to describe situated learning through practice and participation. They described communities of practice as groups, who share an interest, a craft and/or a profession and argued it is through the process of sharing information and experiences within the group that community members learn from each other and develop themselves personally and professionally. Finally, they explained that communities of practice can evolve naturally because of the members' common interest

in a particular domain, or they can be created specifically with the goal of gaining knowledge related to a particular field.

Wenger (1998) and Wenger and Snyder (2000) recognized that communities of practice are not easy to build and sustain within organizations, as their organic and often informal nature makes them resistant to supervision and interference. They observed, however, that a number of organizations have managed to overcome this problem by bringing the right people together and providing an infrastructure in which communities can operate. More recently, Wenger et al. (2002) have been examining learning as 'social participation', where community members continuously create shared identity through engaging in and contributing to the practices of their communities¹⁰.

Drawing from Argyris and Schön (1978), Lipschitz et al. (2002) stressed that learning 'by' organizations is distinct from learning 'in' organizations and requires the existence of organizational learning mechanisms (OLMs). Learning 'by' organizations occurs when learning 'in' organizations by individuals occurs within the context of OLMs that ensure the people get the information they need and that the products of their reflection are stored and disseminated organization-wide. Along those lines, individual-level learning produces individual insights and changes in habits, skills and actions, whereas organizational-level learning produces changes in norms, standard operating procedures, structures and cultures.

Lipschitz et al. (2002) proposed that the mere existence of OLMs is not sufficient for effective organizational learning. This also depends on i) cultural, ii) psychological, iii) policy and iv) contextual facets. Subsequently, they described OLMs as observable organizational subsystems in which organizational members can interact for the purpose of learning. They distinguished four types of OLMs:

- Integrated: to the extent that organizational members who possess information are the same as those who apply this new knowledge;
- Non-integrated: to the extent that learning is carried out by different individuals;
- Dual-purpose: to the extent that learning takes place in conjunction with task performance;
- Designated: to the extent that task performance and learning are carried out at separate times and different places.

¹⁰ It should be recognized here that the ideas of Berger and Luckmann (1967) resonate powerfully in the field of organizational learning and particularly in the work of Lave and Wenger (1991), Wenger (1998), Wenger and Snyder (2000) and Wenger et al. (2002).

They concluded that by relating ‘individual-level’ with ‘organizational-level’ learning, OLMs warrant the attribution of a learning capacity to organisations.

Core competence theory, with its explicit notion of ‘proactive organizational development’, draws heavily from ideas developed in the field of organizational learning. In addition, the importance of ‘double loop learning’ is evident in the core competence theory’s key texts (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994), where the importance for companies to question their existing practices and continuously try to find new solutions that will differentiate them from competition and add value to their products/services is strongly emphasized. Organizational knowledge and learning are also embedded in the characteristics of core competencies themselves¹¹, which have been described by the proponents of core competence theory as being part of the ‘collective learning’ of an organization.

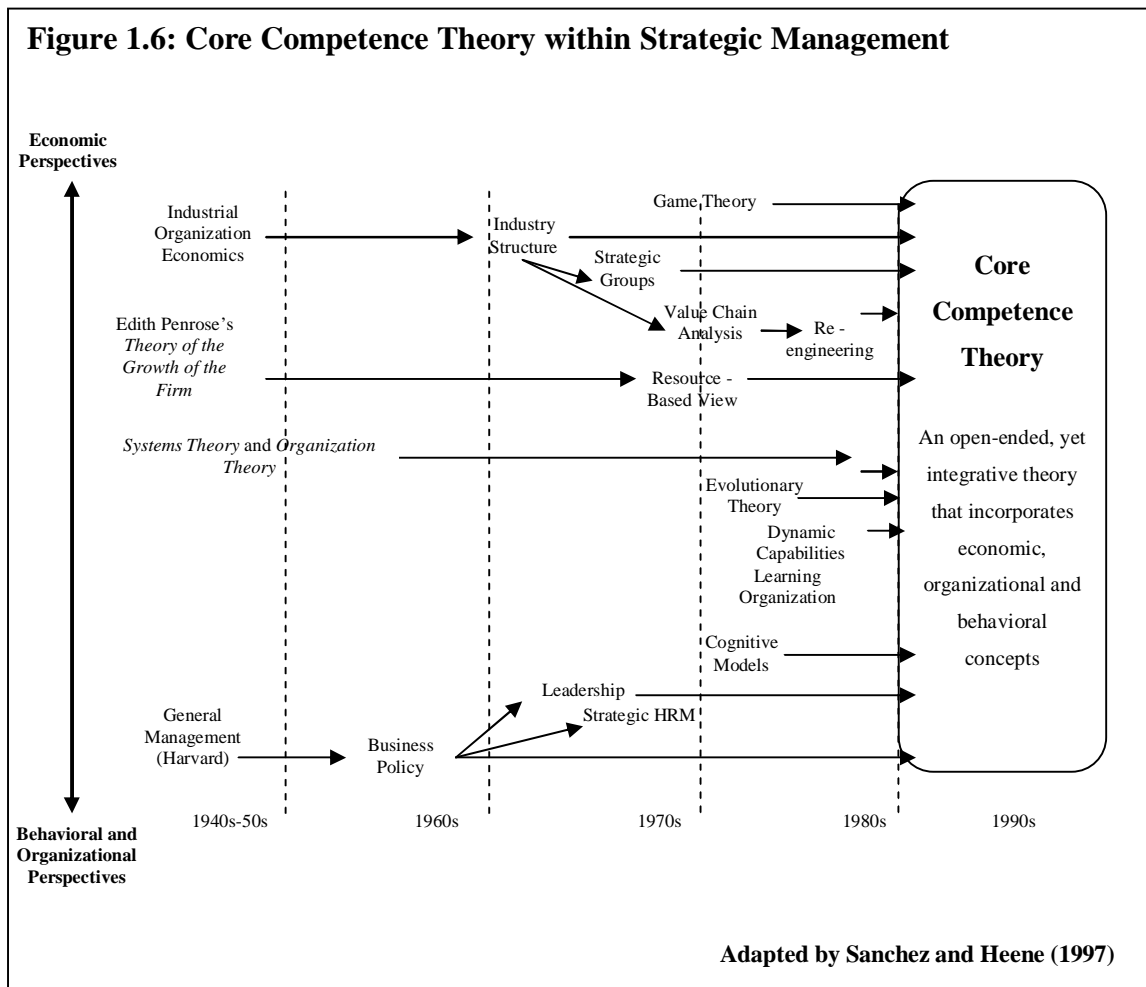
1.4 The Integrative Nature of Core Competence Theory

The six theories briefly reviewed in sections 1.3.1 to 1.3.6 are implicit in core competence theory. It is exactly this integrative nature of the theory that makes possible the ‘conceptual’ as well as ‘practical’ integration of the many insights that have already been developed by prior theory but which remain unconnected in the fragmented domains of the strategic management field. This integrative nature provides a theoretical lens that permits analysis of contemporary ‘inter-organizational’ (competitive, cooperative) as well as ‘intra-organizational’ dynamic phenomena that have been difficult to represent and research in prior strategy perspectives. The core competence theory’s position within the wider field of strategic management is shown in Figure 1.6.

The advantage of core competence theory’s integrative nature is that it can facilitate under a single theoretical umbrella the conceptualization of the firm as an ‘activity-based’ organization¹² (Porter, 1985), as a ‘pool of resources’ (Penrose, 1959; 1995), as a ‘collection of organizational capabilities based on organizational routines’ (Nelson and Winter, 1982), as an ‘adaptively rational system’ (Barnard, 1938; Cyert and

¹¹ A relationship explained in Chapter 3 of this thesis.

¹² The conceptualization of the firm as an ‘activity-based’ organization deserves some additional clarification. Heavily influenced by Giddens’ (1979; 1984) approach to the reproduction of the social practices of social systems - of which organizations are a subset - some researchers (Whittington, 1996; 2006; Johnson et al., 2003) have advocated that strategy research should shift its focus towards the examination of routines through which organizational actors conduct day to day activities, and their relationship with their organization’s performance. Although their point of view is not at odds with the core competence theory approach, the term ‘activity-based’ is used here to refer to activities of a higher order of abstraction, closer to the strategic-level activities such as the ones Porter (1985) proposed as constituting his value chain model.



March, 1963; 1992) and as a 'knowledge-based' and 'learning' organization (Nonaka, 1991; 1994), recognizing that all five conceptualizations evolve through time. It can be argued that it is exactly this integrative nature that makes it the most appropriate theoretical foundation to examine both inter- and intra-organizational issues related to the effectiveness of developing competitiveness of organizations and issues of relative success in setting and pursuing intended strategies.

Although encompassing numerous domains of the strategic management field, the theory's 21 year-old history is relatively short. As a result, only a limited amount of research has been carried out, which means that gaps in our knowledge still exist regarding 'whether' and 'how' its principles apply in practice. The purpose of the next sections is to highlight these gaps, so as to better position this research within a core competence theory and strategic management context, explaining its purpose and potential contributions to knowledge.

1.5 Current Gaps in Core Competence Theory

Following a critical review of existing core competence theory literature, the prevalent ‘themes’ studied were identified and the works undertaken by various authors were grouped into one ‘Theory-based’ and two ‘Industry-focused’ categories (Table 1.1)¹³. From this critical review the following emerged:

First, efforts have been made to define core competencies and describe them within an organizational context (e.g. Prahalad and Hamel, 1990; Prahalad, 1993; Hamel and Prahalad, 1994; Tampoe, 1994; Sanchez and Heene, 1997, Lahti, 1999; Duysters and Hagedoon, 2000; Drejer, 2000 and Scarbrough, 2002). However, none of these efforts has been descriptive enough to assist in adequately understanding what core competencies actually are, as well as how they relate to the ‘structural’, ‘functioning’ and ‘agency’ characteristics of the organization that possesses them.

Second, two partially overlapping research streams have evolved to address the issue of core competence development - both from the context of production-oriented multinational corporations (MNCs). The one stream built on the similarities between core competence development and Mintzberg’s (1978) strategy process to describe the former as consisting of sequential activities organizations should pursue (Hamel and Prahalad, 1994; Band and Scanlan, 1995; Sanchez and Heene, 1997; Hamilton et al., 1998; Javidan, 1998; Dufort and Matais, 1999; Clark, 2000; Drejer, 2000; Scarbrough, 2002 - and viz. Section 1.2, Figure 1.2¹⁴). The other stream (Hamel et al., 1989; Hamel, 1991; Hamel and Prahalad, 1994; Band and Scanlan, 1995; Lei et al., 1997; Dufort and Matais, 1999) started from the notion that core competencies represent the collective learning and/or collective aptitudes that add-up to organizational culture, to approach core competence development from the point of view of organizational learning (Argyris and Schön, 1978)¹⁵.

Both streams represent valid attempts to describe core competence development in practice. However, it could be argued that they fall short in providing a clear

¹³ The work of certain authors appears under more than one theme in the table, when their work transcends any single category.

¹⁴ According to the work of these authors, core competence development and the strategy process, exhibit the strongest similarities in Stage 1, where i) a future direction/orientation needs to be chosen and ii) strategic decisions about ‘what’ the company should be doing are taken. Their differences become clearer in Stage 2, where a) the focus of Mintzberg’s strategy process is on managing the relationship between the organization and its environment and ii) the focus of the core competence development process is on achieving organizational transformation through proactive organizational development.

¹⁵ Within an organizational context, a further ‘link’ between the two has been provided by Band and Scanlan (1995), who argued that core competence development is the most effective means of ‘controlling’ the strategy process, as it links business strategy with organizational learning.

Table 1.1: Core Competence Theory Literature - Themes Studied

Themes Studied	Author/Year	Topic	Industry Focus vs. Theory-based Works
Defining Core Competencies and Describing their Development	1. Prahalad (1993) 2. Post (1997) 3. Hamel and Prahalad (1994)	1. Technological core competencies are the basis of core competencies and leadership should harmonize ‘business’ with ‘technology’ development strategies. Core competencies result when organizations harmonize multiple technologies; 2. Defines core competencies; 3. Describes sequential stages of core competence development.	Production-Oriented Industries
	1. Duysters and Hagedoon (2000)	1. Core competence development equals technology development.	Other Industries
	1. Prahalad and Hamel (1990) 4. Tampoe (1994) 5. Sanchez and Heene (1997) 6. Lahti (1999) 7. Drejer (2000) 8. Scarbrough (2002)	1. Description and definition of core competencies in a MNC context; 4. Proposed a core competence identification method; 5. Describes core competence development largely re-iterating Hamel and Prahalad (1994); 6. Lahti (1999) distinguished individual-level core competencies from organizational-level core competencies and argued the importance of their alignment for core competence development; 7. Defined core competencies and was the first to explicitly recognize their development is linked with i) transformation in structure, ii) people, iii) technology and iv) culture; 8. Distinguishes intra-organizational cooperative competencies recognizing they are path-dependent;	Theoretical Works
Technology-oriented Core Competencies and their Development	1. Hamel, Doz and Prahalad (1989)	1. Description of ‘technology-oriented’ core competencies and their development, through inter-partner learning between MNCs;	Production-Oriented Industries
	1. Duysters and Hagedorn (2000)	1. Core competence development equals technology development.	Other Industries
Core Competencies and their Development in the Context of MNCs	1. Hamel, Doz and Prahalad (1989) 2. Hamel (1991) 3. Very (1993) 4. Hamel and Prahalad (1994) 5. Bergenherouwen, Hom and Mooijman (1996) 6. Lei, Hill and Bettis (1997) 7. Haffez, Zhang and Malak (2002)	1. Description of ‘technology-oriented’ core competencies and their development, through inter-partner learning between MNCs; 2. Inter-partner learning between MNCs to develop skills and knowledge linked to core competencies; 3. Stressed the importance of managerial relatedness between BUs of diversified MNCs for skills/knowledge constituting core competencies to be transferred across BUs; 4. Described and defined core competencies and their development in the context of diversified MNCs; 5. Identical to 4. 6. Innovation equals core competence development in MNCs; 7. Developed a core competence identification methods in MNCs;	Production-Oriented Industries
	1. Hamel and Prahalad (1991) 2. Very (1993) 3. Clark (2000)	1. Focus on ‘internal workings’ of organizations (MNCs), to improve product functionalities - develop this as a core competence - and make the functionalities recognizable to clients; 2. Stressed the importance of managerial relatedness between BUs of diversified MNCs for skills/knowledge constituting core competencies to be transferred 3. Re-iterates Hamel and Prahalad’s (1994) core competence development process;	Other Industries
	1. Prahalad and Hamel (1990) 2. Markides and Williamson (1994)	1. Description and definition of core competencies in a MNC context; 2. Related diversification contributes to MNCs being able to learn faster and develop core competencies quicker and cheaper than competitors;	Theoretical Works

Table 1.1: Core Competence Theory Literature - Themes Studied (Continued)

Themes Studied	Author/Year	Topic	Industry Focus vs. Theory-based Works
Core Competence Development and the Strategic Management of Organizations	1. Hamel and Prahalad (1993) 2. Hamel and Prahalad (1994) 3. Hamilton, Eskin and Michaels (1998) 4. Javidan (1998) 5. Dufort and Matais (1999)	1. Described the strategy of stretching and leveraging resources and core competencies; 2. Described core competence stretch and leverage as a part of core competence development for MNCs. 3. Highlight the importance of identifying skill-gaps for 'stretch' to effectively occur; 4. Operationalized the concept of strategic intent; 5. Identical to 4;	Production-Oriented Industries
	1. Clark (2000)	1. Re-iterates Hamel and Prahalad's (1994) core competence development process;	Other Industries
	1. Band and Scanlan (1995) 2. Sanchez and Heene (1997) 3. Drejer (2000) 4. Scarbrough (2002)	1. Pursuing core competence development is an effective means for 'controlling' the strategy process, as it links business strategy with organizational learning; 2. Describes core competence development largely re-iterating Hamel and Prahalad (1994); 3. Defined core competencies and was the first to explicitly recognize their development is linked with i) transformation in structure, ii) people, iii) technology and iv) culture; 4. Distinguishes intra-organizational cooperative competencies recognizing they are path-dependent;	Theoretical Works
Core Competence Development and Organizational Learning	1. Coyne, Hall and Clifford (1996) 2. Gilgeous and Parveen (2001)	1. Describe core competence development as a function of organizational learning; 2. Stress the importance of organizational learning for core competence development;	Production-Oriented Industries
	1. Whitehill (1997)	1. Knowledge-based' strategy complements core competence development;	Other Industries
	1. Band and Scanlan (1995)	1. Pursuing core competence development is an effective means for 'controlling' the strategy process, as it links business strategy with organizational learning;	Theoretical Works
Core Competence Development and Organizational Structural Forms	1. Ritter and Gemünden (2004)	1. Argued intra-organizational networking, promotes technological competence development.	Production-Oriented Industries
	1. Fairtlough (1994) 2. Sanchez (1997) 3. Drejer (2000)	1. Intra-organizational networks facilitating 'idea-exchange', foster the development of core competencies; 2. Suggests core competence theory should be the basis for designing a firm that would be an adaptive system in complex environments; 3. Defined core competencies and was the first to explicitly recognize their development is linked with i) transformation in structure, ii) people, iii) technology and iv) culture;	Theoretical Works
Human Resource Management Practices and ILCC Development	1. Gratton (1996) 2. Higgins (1996)	1. Human resource management instruments can be used to develop employees whose individual-level core competencies are part of their organization's core competencies by aligning individual with organizational objectives) 2. Identical to 1;	Production-Oriented Industries
	1. Capelli and Heffer (1996)	1. Argued that human resource management frameworks to help managers develop their individual-level core competencies;	Other Industries
	1. Hagan (1996) 2. Lahti (1999) 3. Drejer (2000)	1. Human resource management instruments should be used to develop individual-level core competencies, which can in turn support organizational-level core competencies; 2. Lahti (1999) distinguished individual-level core competencies from organizational-level core competencies and argued the importance of their alignment for core competence development; 3. Defined core competencies and was the first to explicitly recognize their development is linked with i) transformation in structure, ii) people, iii) technology and iv) culture;	Theoretical Works

explanation as to what core competence development entails in practice and for different types of organizations. This shortfall is exacerbated by the pre-existing lack of understanding as to what core competencies actually are. Theory (Hamel and Prahalad, 1994) acknowledges that core competence development is a corporate responsibility and that it should be undertaken by a cohort of BU heads working horizontally across the organization. In light of this, the shortfalls of both ‘core competence development’ research streams will be discussed here in turn.

In the first stream, organizational agents are responsible for steering efforts from ‘identifying’ to ‘stretching and leveraging’ existing core competencies. Existing theory however, does not identify specific corporate-level activities they should focus upon in order to achieve this effectively. In addition, it does not identify the ‘structural’ and ‘functioning’ characteristics that can better facilitate their efforts, regarding:

- Appropriately and effectively developing intended strategies;
- Stretching and leveraging their resources and core competencies across organizational units;
- Effectively integrating ‘emerging’ with ‘intended’ strategies when necessary.

In relation to the second stream, another issue becomes apparent. From the description of core competencies as the collective learning of the organization and/or collective aptitudes that add-up to organizational culture (Hamel and Prahalad, 1994), it follows that, during core competence development, organizations will have to reconfigure their structures, functions and re-negotiate their organizational norms as a function of organizational learning. The research undertaken so far however, does not provide insights as to the particular organizational characteristics that enable effective transformation of structure, functions and norms, towards core competence development. Consequently, a gap in our knowledge exists regarding the relationship between the ‘structural’ and ‘functioning’ characteristics of organizations on the one hand and the effectiveness with which they can develop their core competencies as a function of learning on the other¹⁶.

¹⁶ Giddens’ (1979; 1984) theory of ‘structuration’ is very useful to understand the dynamics of this process at a theoretical level. The theory of structuration, outlined by Anthony Giddens (1984) in ‘The Constitution of Society’ (first introduced in ‘Central Problems of Social Theory’ (1979)) holds that all human action is performed within the context of pre-existing social structure which is governed by a set of norms and/or laws which are distinct from those of other social structures. Along those lines, all human action is at least partly pre-determined based on the varying contextual rules under which it forms. At the same time, the theory recognizes that structure and rules are not permanent and external, but sustained and modified by human action through reflexive feedback. In Giddens’ terms, core competence development involves reconfiguration of ‘social practices’ and ‘structural properties’.

Following this section's review, a better description/definition of core competencies, as well as an identification of the 'structural' and 'functioning' organizational characteristics that enable organizational agents to effectively develop core competencies, are pertinent to the advancement of core competence theory. The latter is the dominant theme around which this research revolves. That is: *'exploring the relationship between the configurations that organizations adopt and the effectiveness with which they develop their core competencies'*.

The choice of the term 'configuration' (Mintzberg, 1979; 1983; 1989) is not arbitrary, as it simultaneously captures both 'structural' and 'functioning' dimensions of organizations, while including descriptions of their 'agency' characteristics and linking them with the level of uncertainty and complexity of their environment. Therefore, the term can facilitate a better examination, explanation and understanding of the interdependency between 'structure' and 'function', during the transformation process that organizations go through when developing their core competencies¹⁷.

Core competencies and their development have been mostly examined in a production-industry context (such as electronics, automotive, pharmaceuticals, petrochemicals) and for the case of multinational corporations (MNCs). Consequently, it can be argued that core competence theory research is production-industry laden and undertaken mainly within the context of MNCs. This calls for research across different industries and organizational contexts to be undertaken, to also test for the theory's overall validity. In light of this, it was decided that this research would study multi-business-unit (BU) organizations operating within the construction industry.

1.6 'Construction' as the Industry Context Studied

The choice of construction was not arbitrary but based on the following reasons: First, the construction industry is an important and large part of each nation's - and consequently the global - economy (Crosthwaite, 2000; Hillebrandt, 2000; Ive and

¹⁷ The work of Giddens is also relevant here. Giddens (1979: 60) described the structure of social systems, of which organizations are a sub-set, as 'a pattern of social relationships with properties that can be understood in terms of 'rules' and 'resources' recursively implicated in their reproduction'. He described 'functions' as the way these patterns actually operate as 'systems', defining systems as 'reproduced relations between actors or collectivities organized as regular social practices'. According to Giddens, a fundamental property of social systems is that of the 'duality of structure'. By duality of structure, Giddens means that the structural properties of social systems are both the 'medium' and the 'outcome' of the practices that constitute those systems. Applying Giddens' ideas in the context of this research, it can be understood that the 'structural' and 'functioning' characteristics of organizations are interdependent and therefore they should both be considered when issues related to their reproduction (such as issues related to core competence development) are examined.

Gruneberg, 2000), as it constitutes normally between 7% and 15% of a nation's GDP (Male, 1991). Its importance is not only related to its size but also to its role in economic development, as it produces all the facilities and is directly - or indirectly - responsible for the procurement (sometimes also production) of the machinery needed for the production of goods and services (Linder, 1994; Crosthwaite, 2000). Due to construction's nature, different actors and roles involved in the production of the built environment are integrated on a project-basis (Langford and Male, 2001; Ive and Gruneberg, 2000; Morris, 2004). Consequently, findings from the construction context can be of interest and have a wide appeal to economic actors involved in the construction industry and beyond.

Second, even though the concepts of strategic management are not new to this industry¹⁸, there is scant research related to core competencies and their development in the construction strategic management field. Lampel (2001) identified core competencies related to the execution of large projects by engineering-procurement-construction (EPC) organizations. He did not however investigate issues related to their development by EPC organizations. Haan et al. (2002) showed that core competence theory has validity when applied to construction companies and advocated that, its application represents a shift of focus towards the strategic relevance of a firm's resources. Adams (2004) used core competence theory to demonstrate that speculative house-builders, who develop core competencies related to 'brown-field' development, will be market leaders in their field. Finally, Chinowsky (2001, 2001) and Chinowsky and Meredith (2000) linked organizational learning, continuous improvement, leadership and the effective collaboration of project teams with the effective core

¹⁸ In addition to the works of Langford and Male (1991; 2001), Male and Stocks (1991) and Chinowsky and Meredith (2000), some significant works are the following: Stokes (1977), who addressed corporate planning; Smyth (1985), who examined the behaviour of property companies in the British construction industry; Ramsay (1989), who highlighted the importance of strategic management for the case of large construction groups; Hillebrandt (1989), who addressed the challenges diversification creates to construction organizations; Lansley (1994), who drew from organization theory to analyze construction organizations; Ive (1995) and Ive and Gruneberg (2000), who argued that vertical integration in construction aligns the opportunity, means and motives to make cost-reducing and value-adding innovations to co-exist; and Smyth (2000), who proposed a number of marketing and selling strategies for construction and professional service firms. In the domain of international construction, of significance are the works of Seymour (1989), who investigated the relationship between international contracting and Forward Direct Investment (FDI); Seymour and Enderwick (1989), who were the first to use the theoretical perspective of the 'multinational enterprise' to analyze international construction organizations; Shirazi et al. (1996), who proposed different options construction organizations operating in the international construction market are faced with regarding the 'structures' they adopt, this depending on the forces acting on them from that market; Strassmann and Wells (1988), who examined through country-focused, author-specific chapters, the national contexts which created firms that were (apparently) more successful in winning contracts abroad and Langford and Rowland (1995) and Mawhiney (2001), who highlighted the specific challenges contracting organizations face when they internationalize.

competencies development of engineering and construction organizations. They did not however provide any empirical data on how this can be effectively achieved in practice. As a result, the choice of construction as the industry context studied also contributes to the creation of knowledge that will expand the boundaries of the construction strategic management field.

1.6.1 The Organizational Context in the Study

Within construction, some organizations have developed to the scale and scope of large, diversified and internationalized multi business unit (BU) organizations, such as the MNCs studied in mainstream strategic management and core competence theory research. It is such organizations that this research studies, as they are the most comparable to the production-oriented MNCs. As a result, findings from construction industry MNCs can be comparable to findings from production-oriented MNCs and (potentially) applicable to them.

Large construction MNCs operate in more than one market and undertake work across most of the spectrum of type of work, complexity and geographical location, and to some extent, size of work (Mawhinney, 1991; Hillebrandt, 2000). Some have become leading service providers in a number of construction markets within their country, e.g. Balfour Beatty in the UK with respect to civil engineering and PFI, Bechtel in the US with respect to construction and project/program management and Vinci in France with respect to construction and concessions. Others have managed to successfully compete in a number of geographical regions around the world (e.g. Skanska, Vinci and Bechtel). Such organizations will be referred to in this research as '*international construction majors*' (ICMs). ICMs are increasingly involved in the development, operation and maintenance of the built environment (Ive and Gruneberg, 2000; Flanagan et al., 2007). Hence, from a 'strategic management of construction companies' point of view, the importance of studying these organizations can be argued to be greater than ever, and can contribute to our knowledge regarding the strategic management of construction organizations.

It should be noted that although ICMs exhibit similarities with MNCs in other industries, they also exhibit some stark differences. These stem primarily from the fact that ICMs are project-based organizations, undertaking large numbers of projects simultaneously. At the same time, the ICMs' project-based nature offers the opportunity to use project-based management theoretical concepts when examining their behaviour,

particularly in relation to how they learn - and by extension develop their core competencies¹⁹. The benefits of this are dual. First, the use of project-based management knowledge contributes to a better conceptualizing and understanding of ICMs (viz. Chapter 2, Sections 2.7 and 2.8). Second, findings from the ICMs' context can contribute to our knowledge regarding the management of project-based organizations (PBOs) in general.

1.7 The Research Question

Having introduced the 'industry' and 'organizational' context within which this study is positioned, this research can be described as *an exploratory study to understand the relationship between the organizational configurations that international construction majors (ICMs) adopt and the effectiveness with which they develop their core competencies*.

It should be clarified that this research focuses on 'organizational level' core competencies (OLCCs), not 'individual level' core competencies (ILCCs), except insofar as how the latter influences the development of the former. Therefore, core competencies refer to OLCCs except where indicated otherwise. In addition, this research focuses on the intra-organizational dynamics of the 'execution' stage of core competence development (i.e. Stage 2 of Figure 1.2). Consequently, it does not address issues related to the external analysis of competition and construction industry environment dynamics, nor the identification of the core competencies ICMs possess.

In light of the above, it can be understood that issues related to the effectiveness with which organizations in general - and ICMs in particular - develop their core competencies, call for an investigation of their behaviour as well as how this relates to the organizational configurations they have chosen to adopt, as manifested in corporate-level activities. Through these behaviours and activities personal and organizational competencies arise and are developed into core competencies. Building on the analogy between Mintzberg's 'strategy process' and the 'core competence development strategy process', a framework of corporate-level activities was developed (viz. Chapter 4), drawing from 'cybernetics' (Beer, 1959) and 'management control' (Berry et al.,

¹⁹ Research in project-based organizations has contributed to this domain, by investigating and identifying mechanisms through which knowledge captured at projects may be codified and re-used at following projects (Brady and Davies, 2000; Lipschitz et al., 2001; Prencipe and Tell, 2004; Davies and Brady, 2005).

1995)²⁰. This provided the basis for collecting, analyzing and interpreting empirical data, in order to address the following research question:

‘How do the configurations that ICMs adopt influence the effectiveness with which they execute a core competence development strategy?’

1.8 Research Methods

To address the research question, this academic undertaking adopted an epistemological approach of ‘critical realism’ and conducted a multiple case-study through a qualitative research strategy. Four ICMs were studied - and one ‘shadow’ case that was ultimately not included. The selection criteria stipulated that ICMs studied should:

- Have been in the list of ‘ENR’s 225 Top International or Top Global Contractors’ for the last five years in a row;
- Follow a strategy of related diversification within the construction industry²¹;
- Be internationalized in at least two geographical regions of the world;
- Have - at the time that this research began - an annual turnover in excess of \$1billion.

Both ‘documentary’ and ‘semi-structured interview’ data was collected and analyzed²². Findings on each ICM are presented in four case-study chapters (viz. Chapters 6-9)²³. Subsequently, exploratory findings emerge from a cross-case comparison and a discussion in light of the extant literature (viz. Chapter 10). Ultimately, conclusions are drawn from the research as a whole, contributions to knowledge discussed and topics for future research outlined (viz. Chapter 11).

²⁰ It is argued here that both theories are appropriate to examine the behaviour of purposive organizations - such as ICMs - and that both fit well with the concepts of the ‘strategy process’ and the ‘core competence development’ process (viz. Chapter 4).

²¹ As this is described in. Chapter 2, Section 2.4

²² The research methodology followed will be extensively described in Chapter 5 of this Thesis.

²³ The names of the companies and company-specific technologies have been changed because of issues of confidentiality.

1.9 Research Aims and Objectives

This research aims to contribute to our knowledge regarding the ‘gaps’ identified from the theory reviewed in this chapter so far, by:

- Developing a universally accepted definition of core competencies, while describing their relationship with resources, capabilities, competencies and non-core competencies within an organization-specific context;
- Developing a framework that can describe core competence development as a collection of corporate strategy activities;
- Evaluate the practical application of core competence theory principles outside the context of production-oriented MNCs;
- Identifying ‘causal links’ in the relationship between the configurations that ICMs adopt and:
 - The development of corporate strategies with optimal potential of effective implementation;
 - The effectiveness with which they integrate emerging with intended strategies when necessary;
 - The effectiveness with which they stretch and leverage their resources and core competencies;
 - The effectiveness with which they learn, reconfigure their social practices and structural properties, and renegotiate their organizational norms;
 - The effectiveness with which they develop their management and organizational leadership.

To fulfil these aims, the research has set the following objectives:

- Describe in theory the ‘structural’ and ‘functioning’ characteristics of international construction majors (ICMs), drawing from mainstream strategic management literature, organization theory and project-based management concepts;
- Develop a model to explain the relationship between resources, capabilities, competencies and core competencies, distinguishing between those referring to individuals and those referring to organizations while positioning them within an organizational context, such as the one of the ICMs studied in this research;
- Integrate aspects of ‘cybernetics’ and ‘management control’ theories under the umbrella of core competence theory, to propose a number of generic, corporate-

level activities that would enable to identify for the case of ICMs, which organizational routines effectively shape group strategy;

- Compare and contrast empirical data gathered from different organizational contexts to identify similarities and differences between them, and better explain the causal links between company activities and their results;

Due to the multi-BU and project-based nature of ICMs, it is argued here that findings from the ICM context will also be applicable - following contextual sensitivity and modifications - and contribute to our knowledge regarding the management of MNCs and PBOs.

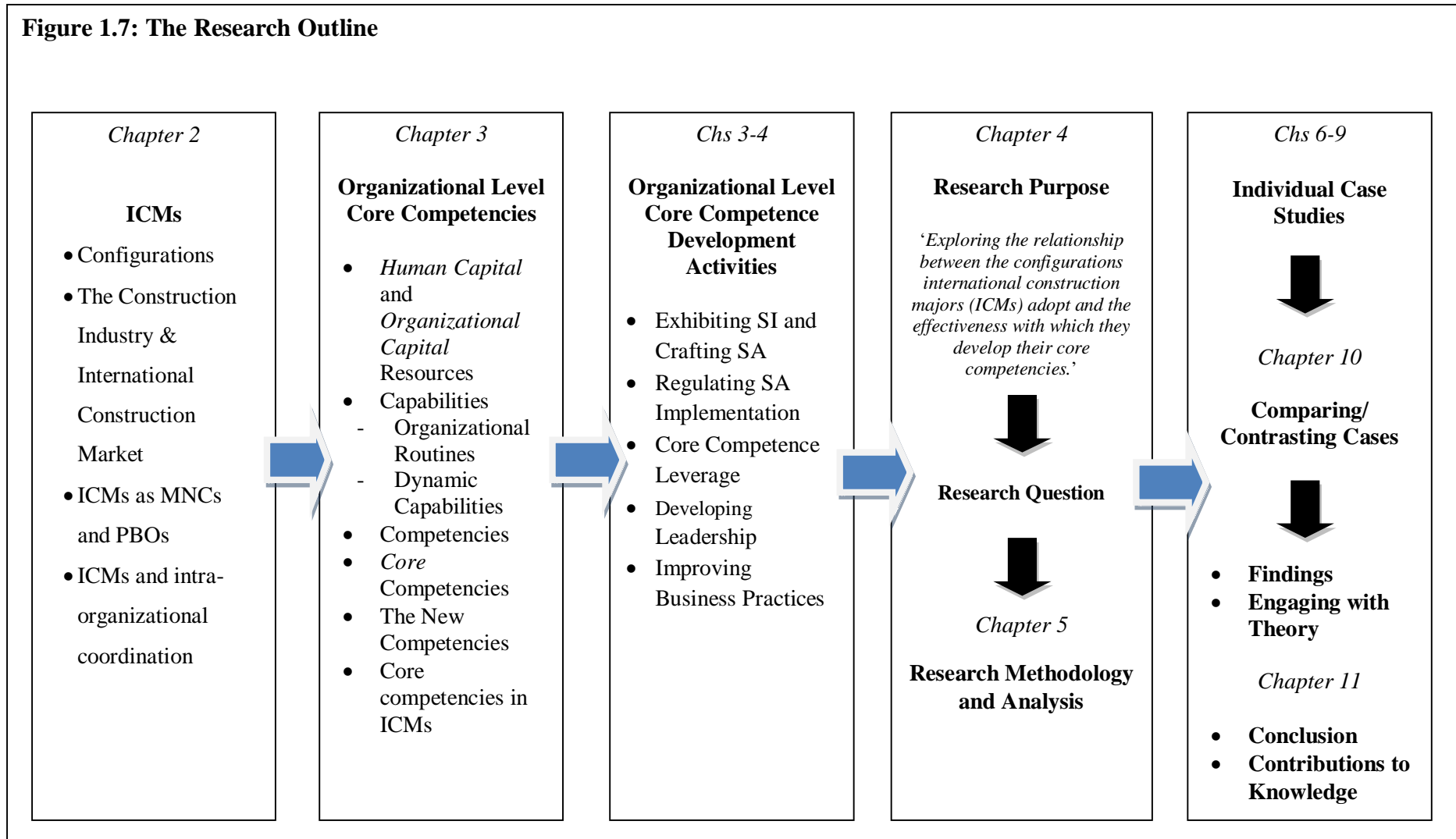
1.10 Thesis Outline

The research outline is presented on Figure 1.7. The thesis consists of 11 Chapters. In Chapter 1 the topic of this thesis is introduced and the scope of research defined. Chapter 2 starts by describing what the term ‘configuration’ refers to and continues by describing the characteristics of the construction industry, the international construction market and the participants in the production of the built environment. It then moves on to describe ICMs as well as their typical structures and strategies - focusing on diversification and internationalization - with the objective to highlight the issues such organizations face for intra-organizational (inter-BU) coordination. Project-based management concepts are used where necessary. The chapter resolves any confusion that may exist regarding the complexity of the issues ICMs face for effective intra-organizational integration and coordination.

In Chapter 3, resources, capabilities (‘operational’ and ‘dynamic’), competencies and core competencies are distinguished, described and defined. A theoretical model is developed to help position and describe core competencies within the context of multi-BU organizations in general and ICMs in particular. Issues related to the manifestation and deployment of core competencies are highlighted. The chapter resolves the confusion that existed among academics and practitioners alike, regarding ‘what’ core competencies are and ‘how’ they can be positioned within an organizational context.

Building on the theoretical developments from Chapters 2 and 3, Chapter 4 draws from ‘cybernetics’ and ‘management control’ theories, to propose five generic, corporate-level activities through which organisational agents could effectively control

Figure 1.7: The Research Outline



core competence development. Subsequently, these activities are linked back to this research's question. The chapter develops a framework which interrelates core competence development activities and allows the behaviour of ICMs to be examined in light of them.

Chapter 5 clarifies for the reader the methodology through which this research was undertaken. Chapters 6 to 9 present the four cases of the ICMs studied. All case study chapters have an identical structure, to allow for better comparability of findings. The purpose of the case studies is explanatory and contributes to demonstrating how the theoretical concepts developed earlier in this thesis apply to the case of each ICM.

Chapter 10 compares and contrasts cases in light of the extant literature and frameworks developed for the purpose of this research. This cross-case analysis allows generalizations to be made. These are evaluated, and suggestions are made as to the potential links between 'configuration' and 'effective core competence development' for the case of ICMs. Then, a number of organizational characteristics are proposed as enabling effective core competence development in ICMs. Generalizations from the context of ICMs to the context of multinational corporations (MNCs) and project-based organizations (PBOs) are proposed and discussed. Chapter 11 draws conclusions from the research as whole, discusses the contributions of this research to knowledge and outlines topics for future research.

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Chapter 2: The International Construction Majors (ICMs) in Theory

2.1 Introduction

As noted in Chapter 1 (viz. Section 1.6.1), international construction majors (ICMs) were chosen as the organizational context to be studied. In light of this, the purpose of this chapter is to describe - in theory - ICMs as organizations. To do this, the chapter will: first, briefly review the work of Mintzberg to describe what the term ‘configuration’ entails - as it is ‘the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies’ that this research studies; second, describe the characteristics of the construction industry and the international construction market; third, describe diversification and internationalization as corporate strategies; fourth, describe - in theory - the structural and functioning characteristics of ICMs; fifth, highlight issues they face regarding intra-organizational resource coordination.

The construction industry is project-based. Consequently, a description of the organizational characteristics of ICMs should draw upon the project-based management literature in addition to management literature per se. In light of this, project-based management concepts are used to enhance the discussion wherever possible.

2.2 Mintzberg’s Configurations

This research explores the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies (viz. Chapter 1, Section 1.7). In light of this, this section reviews the work of Mintzberg and describes to a greater extent what the use of the term configuration entails. The terminology discussed in this section provides a very useful collection of terms that is being used to describe the intra-organizational dynamics of ICMs throughout the thesis.

In Chapter 1 (viz. Section 1.5), it was also explained that the choice of the term ‘configuration’ in this research is not arbitrary, as it simultaneously captures both ‘structural’ and ‘functioning’ dimensions of organizations, while including descriptions of their ‘agency’ characteristics and linking them with the level of uncertainty and complexity of their environment. It is in line with the ‘contingency’ approach adopted in this research, which recognizes that there is no best structural form, but seeks to

identify the particular structural form that is most appropriate under a specific set of conditions (Lawrence and Lorsch, 1967; Galbraith, 1973).

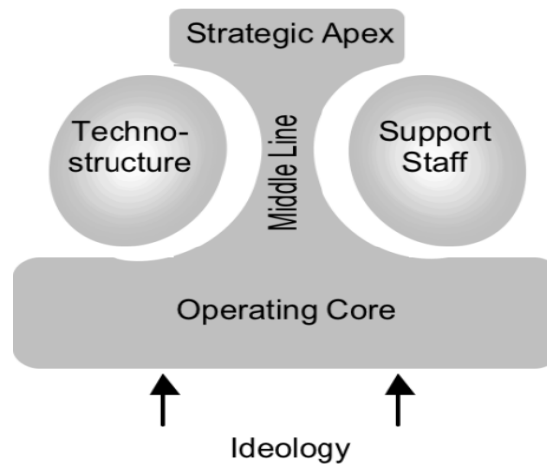
The work of Mintzberg (1979, 1983; 1989) rests on the branch of organization theory known as 'contingency theory' (viz. Chapter 1, Section 1.3.1). Drawing from Burns and Stalker (1961) and Lawrence and Lorsch (1967), Mintzberg described market environments as having four dimensions: i) stability (stable vs. dynamic), ii) complexity (complex vs. simple), iii) market diversity (integrated vs. diversified) and iv) hostility (munificent vs. hostile). He stressed that it is not the environment *per se* that is important, but the organization's ability to cope with it, predict it, comprehend it, deal with its diversity and respond quickly to it.

At the same time, he described organizations as consisting of five parts (Figure 2.1):

- The Operating Core: encompassing those organizational members who perform the basic work related directly to the production of products/services;
- The Strategic Apex: charged with ensuring that the organization serves its mission in an effective way and also serves the needs of those people who control or otherwise have power over the organization;
- The Middle Line: joining the strategic apex with the operating core through a chain of middle-line managers with formal authority;
- The Techno-structure: encompassing 'analysts' who may design, plan and change the work of others, but do not do the work themselves;
- The Support Staff: encompassing all specialized individuals (or units) of an organization that exist to provide support to the organization outside the operating work flow.

Building on the work of March and Simon (1958) and Galbraith (1973), Mintzberg proposed five 'coordinating mechanisms' as the fundamental ways through which organizations blend the contribution of each of their organizational parts to implement their work: i) mutual adjustment, ii) direct supervision, iii) standardization of work processes, iv) standardization of work outputs and v) standardization of worker skills. He argued that beyond some minimum size, organizations seem to rely on 'standardization' where they can. When they cannot, they use direct supervision or mutual adjustment, those two being partly interchangeable.

Fig 2.1: Mintzberg's Five Organizational Parts



Adapted from Mintzberg, (1989)

Mintzberg (1979; 1983; 1989) also discussed the issue of centralization vs. decentralization, albeit exclusively in terms of 'power over decisions' made in the organization, presenting centralization as the tightest means of coordinating decision making. He distinguished between three different types of decentralization:

- Vertical decentralization: as the dispersal of formal power down the organizational chain of authority, from the strategic apex to the middle line;
- Horizontal decentralization: as the extent to which non-managers control decision processes;
- Decentralization: related to the physical dispersal of services.

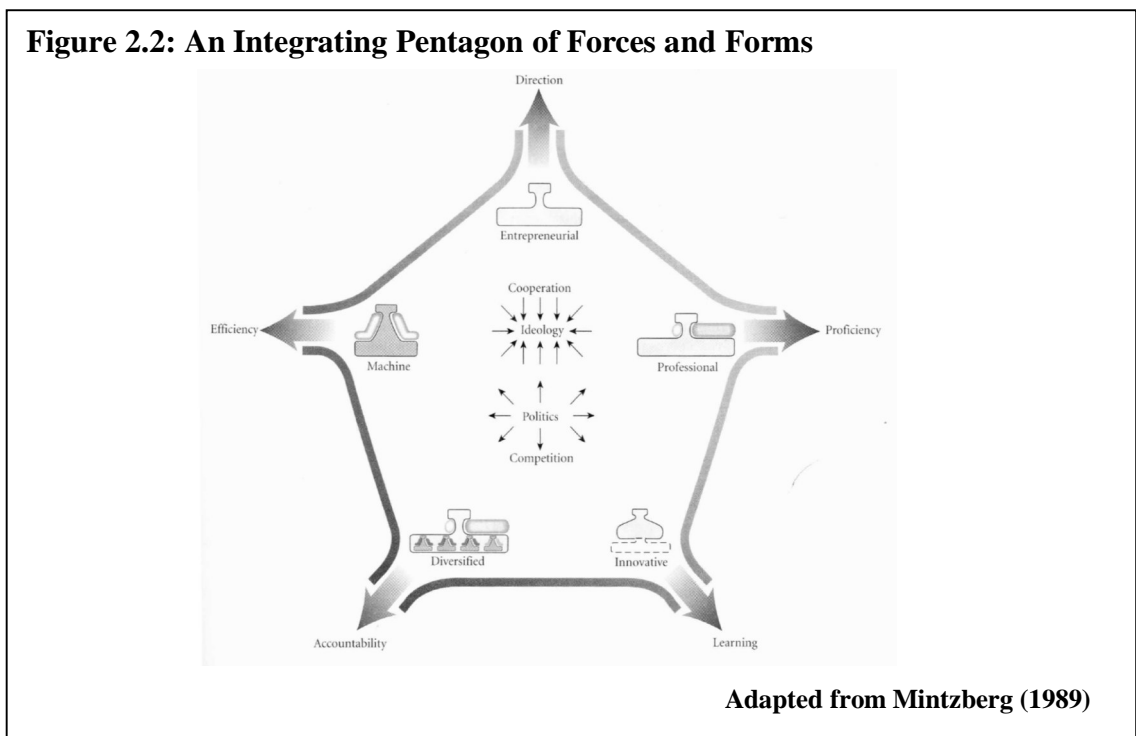
He argued organizations decentralize either because decisions cannot be understood at one centralized unit, or because decentralization allows the organization to respond quickly to local conditions.

Mintzberg's central theoretical argument is that, depending on the environmental conditions an organization faces, it has to adopt a specific configuration that aligns its internal degree of centralization and type of coordination mechanisms with the requirements of the market environment, while elevating the appropriate part of the organization to emerge as 'key'. Mintzberg (1979) initially identified five types of 'pure' organizational configurations: i) 'entrepreneurial', ii) 'machine', iii) 'professional', iv) 'diversified' and v) 'innovative', later (Mintzberg, 1989) adding two

more vi) 'missionary' and vii) 'political'. The type of decentralization, key organizational part and coordinating mechanism corresponding to each configuration are shown on Table 2.1.

Table 2.1: Configurations, Coordinating Mechanisms, Organizational Parts and Decentralization			
CONFIGURATION	COORDINATING MECHANISMS	KEY ORGANIZATIONAL PART	TYPE OF DECENTRALIZATION
Entrepreneurial	Direct Supervision	Strategic Apex	Vertical and Horizontal Centralization
Machine	Standardization of Work Processes	Techno-structure	Limited Horizontal Decentralization
Professional	Standardization of Skills	Operating Core	Horizontal Decentralization
Diversified	Standardization of Outputs	Middle Line	Limited Vertical Decentralization
Innovative	Mutual Adjustment	Support Staff	Selected Decentralization
Missionary	Standardization of Norms	-	Decentralization
Political	Internal Competition	-	Centralization

Mintzberg however acknowledged that in reality, most organizations exhibit characteristics that correspond to a combination of pure configuration forms and this is why it is better to refer to organizations as 'combinations of organizational configurations'. In trying to describe how combinations of configurations emerge, he argued that each configuration exerts a force towards a specific direction (Figure 2.2) and that when a single force dominates, the organization is drawn towards the associated configuration.



Mintzberg (1989) also identified two more forces not associated with any particular configuration, but being present in most organizations:

- ‘Cooperation’, which is represented by ‘ideology’ and is responsible for pulling the organization together.
- ‘Competition’, which is represented by ‘politics’ and is responsible for pulling the organization apart.

In reality, few organizations stay constantly in one configuration or structural arrangement. A significant change in strategy direction - such as the case of core competence development¹ - may force an organization to ‘convert’ from one combination of configurations to another and develop a new organizational structure (Lawrence and Lorsch, 1967; Mintzberg, 1979; 1983; 1989; Peters and Waterman, 1984; 2002).

Having described the organizational characteristics the terms ‘configuration’ refers to, the chapter will now proceed to describe - in theory - the configurations of ICMs, starting from a description of their industry/market environment and proceeding to describe their internal characteristics.

2.3 The Construction Industry and the International Construction Market

As noted in Chapter 1 (viz. Section 1.6), construction is this research’s industry context. Langford and Male (2001) divide the construction industry in four sectors: i) building, ii) civil engineering, iii) repair and maintenance and iv) material manufacturing, with each being sub-divided into separate market segments, such that, e.g., building is composed of housing, industrial and commercial markets. Morris (2004: 1350) describes the construction industry as ‘a conglomeration of sectors, ranging from house building, commercial property, institutional building (schools, hospitals, prisons, etc.) and other structures generally in the building sector; railways, roads, sewers, water containment, and other large civil engineering work (tunnels, bridges, etc.); and power, oil and gas, water treatment plants, food processing, pulp and paper, and other ‘process engineering’ sectors’. He argues that though they do indeed share many characteristics, there are significant differences between process engineering on the one hand and the civil and building sectors on the other, especially in the way projects are managed. In particular, he argues that in building and civil

¹ Viz. Chapter 1, Section 1.2.

engineering, there is not a tradition in project management - as a formal discipline, function, or even role - actively managing the integration of design and construction in the same way as there is in process engineering.

Irrespective of sector, a number of actors and roles are involved in the construction process and the production of the built environment, collectively referred to here as 'construction industry participants'. Construction industry participants can be divided into 'clients' (government/public and private), 'main contractors', 'subcontractors', 'designers' (architects, civil, structural and building services engineers) and other participants, such as financiers², material producers and merchants, each representing a role that needs to be played for the production of a built asset. The horizontal fragmentation in both design and the building processes, most evident in the 'building' and 'civil engineering' sectors (Morris, 2004), helps explain the existence of another group of construction industry participants (mainly in the form of professional practices) who play the role of 'coordinators'. This group encompasses project management, construction management, design management and management contracting organizations (Ive and Gruneberg, 2000; Morris, 2004).

The nature of the construction industry is such that the relationships between participants are mainly influenced by the manner in which they are 'contracted' to work together (when, under what terms and conditions and how) on a *project-basis*. This highlights for the case of construction the importance of the supply chain configuration and the way suppliers are engaged, procured and contracted (Male, 1991; Langford and Murray, 2004; Lowe, 2004; Morris, 2004). Supply chain configurations therefore, depend on the procurement route chosen by industry clients. Clients may decide to procure work related to different stages of the project's lifecycle (e.g. 'design' and 'construction') independently. Alternatively, they might choose turnkey solutions, such as 'design and build'. In addition, clients may choose different contractual agreements depending on the level of risk they wish to take on board, such as 'lump-sum' or 'cost-plus-fee' agreements. Some clients may procure services through competitive bidding based on the lowest cost; others may include 'quality' specification as criteria for contract award. On occasions, clients may choose to enter into partnering agreements with suppliers and service providers, to economize on the transaction costs involved in formulating and evaluating their supply base on a project-basis. In the last twenty years or so, governments have allowed greater participation of the private sector in the 'client'

² Those are usually banks or other financial institutions, which lend the actors involved directly with the production of the built environment, either in the form of corporate finance, or project finance.

role, with such devices as PFI and PPP in the UK³, other European countries and some states in the US (Hillebrandt, 2000; Ive and Gruneberg, 2000).

2.3.1 The International Construction Market

The characteristics of the construction industry are influenced by the fact that construction services - as in fact most activities involved in the production of the built environment - can be procured internationally. One could argue therefore for the existence of an 'international construction market'⁴.

International construction is a subject that has received the attention of many researchers (Strassman and Wells, 1988; Male, 1991; Linder, 1994; Langford and Rowland, 1995; Mawhinney, 2001; Crosthwaite, 2000; Langford and Male, 2001; Dikmen and Birgonul, 2006). General theories such as those of Porter (1980, 1985) and Dunning (1973, 1980, 1988) have been applied to international construction in an effort to explain the comparative forces acting on incumbent firms (Male, 1991; Pheng et al., 2004). Researchers (Strassman and Wells, 1988; Male, 1991) have found the international construction environment to have the following characteristics:

- A fragmented industry structure;
- Geographic dispersion;
- Decreasing demand with an accompanying 'buyer's' market;
- Prevalence of 'soft loans' (e.g. Export Credit Guarantee Department), in order to secure work;
- Requirements for agents with local knowledge and contacts;
- Risks, including: differing climatic conditions, exchange rate fluctuations and profit repatriation.

International competition in construction exists in many forms (Langford and Male, 2001). At one end of the spectrum it can take the form of 'multi-domestic' international competition, largely independent within each country. At this end of the spectrum, the international construction industry is essentially a collection of domestic industries, where companies compete locally. At the other end of the spectrum, large

³ Since the launch of PFI in 1992 by the UK government, contractors, usually in a consortium, are asked to bid in competition to finance, build and operate a facility, transferring it to Government ownership at the end of a period of years (Hillebrandt, 2000).

⁴ It should be emphasized however, that construction is of a 'local' nature, since, as an activity, it is undertaken in the local context of the built asset.

construction groups often find themselves in a dual position of ‘international’ and ‘multi-domestic’ competition. Companies such as Bechtel and Fluor compete for ‘oil and gas’ and ‘mining’ projects both at home and abroad. Similarly, companies like Balfour Beatty, Skanska and Vinci compete both at home and internationally for large civil engineering and PFI projects.

Although the international construction market is generally considered as fragmented, ‘project type’ and ‘location’ have an impact on the extent to which the industry is, in reality, fragmented (Langford and Rowland, 1995). Large, complex and high value contracts require, among other things, managerial expertise, technical know-how and financial stability as prerequisites. As project size and complexity increase technologically or organizationally, or both, ‘relational’ and ‘knowledge-based’ rather than ‘skill-based’ competitive assets become increasingly important and fragmentation reduces dramatically such that competition occurs between a much smaller number of firms (Male, 1991; Chinowsky and Meredith, 2000; Pryke and Smyth, 2006). Viewing international construction from that perspective, there are few organizations globally that are capable of undertaking big complex projects on an international basis⁵.

The segmentation of the construction industry provides the opportunity for main contractors to focus on one sector (e.g. civil engineering) or to diversify and compete in several sectors (e.g. building and civil engineering). In addition, the introduction of new procurement routes by governments (e.g. PFI) and the outsourcing of construction-related activities by large construction clients, provide the opportunity for large construction groups to integrate under a single organizational hierarchy more than one role involved in the production of the built environment (Ive and Gruneberg, 2000). For example, a company like Carillion, through its involvement with PFI projects, has integrated the roles of the ‘client’, ‘builder’ and often ‘operator’ of built assets. In addition, the nature of the international construction market allows construction companies to ‘internationalize’ and compete simultaneously in a number of countries. The issue of whether a company will diversify and/or internationalize, is a corporate strategy decision that will affect its organizational structure (Chandler, 1962; Peters and Waterman, 1984; 2002) and functions. ICMs were introduced in Chapter 1 (viz. Section

⁵ Such organizations will most likely be among the leaders in the industry and constitute ideal examples of international construction majors (ICMs) that this research intends to study. The reason for this is that it is such organizations that will have developed multi-BU structures, spread out in a number of countries. Hence, it is in these organizations that core competence theory recognizes the scope for intra-organizational coordination and collaboration exists and where core competence development can be more effectively examined.

1.6.1) as diversified and internationalized organizations operating within the construction industry. Consequently, ‘diversification’ and ‘internationalization’ as strategies need to be described, in order for the behaviour and configurations of ICMs to be better understood.

2.4 Diversification

‘Diversification’ is the process by which firms extend the range of their business operations outside those in which they are currently engaged (Rumelt, 1974; Wernerfelt, 1984, 1994 and in construction: Hillebrandt and Cannon, 1989). It is a risky process, which explains why it has been so widely examined (e.g. Pekar, 1985; Kogut, 1988; Porter, 1990; Wernerfelt, 1984; 1994 and Markides and Williamson, 1994) and why researchers have spent so much time and effort identifying key diversification success factors (Very, 1993). Diversification can be classified as ‘related’ or ‘unrelated’, with respect to the firm’s existing activities. The most extensively used method in strategic management research for measuring a firm’s diversification in terms of ‘relatedness’ is that of Rumelt’s (1974) ‘strategic categories’⁶ (e.g. Rumelt, 1982; Schmalensee, 1985; Markides and Williamson, 1994). Nayyar (1992) distinguished between ‘potential’ and ‘actual’ relatedness, stressing the role of managerial action in actualizing the latent economic potential of related diversification.

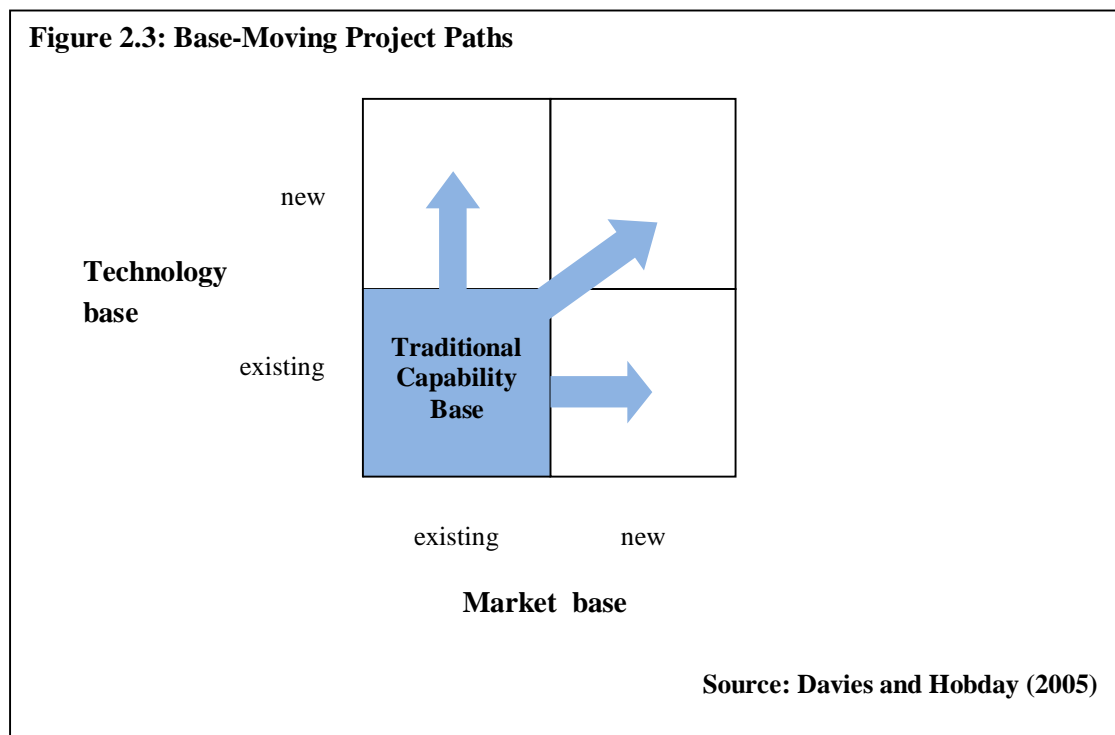
Diversification into a new market can happen either through ‘acquisition’ of a company already active in that market, ‘organic development’ of necessary skills, ‘organizational learning’ through joint ventures and strategic partnering agreements, or any combination of the above. In the case of construction where companies are project-based businesses, the role of projects as a vehicle for diversification is particularly relevant here. Applying and building on the ideas of Penrose (1959; 1995) and Wernerfelt (1984; 1994) in a project-based management context, Brady and Davies (2004) and Davies and Hobday (2005) argue that in order to move into new

⁶ Rumelt (1974) used a broad sample of large American firms to show that companies that had followed a strategy of related diversification by building on some particular strength, skill or resource associated with their original dominant activity were better performers compared with their counterparts. He classified organizations pursuing a strategy of related diversification to ‘dominant-constrained’ and ‘related-constrained’. The difference between the two is that the ‘dominant-constrained’ category refers to companies which conduct a single business (e.g. only electrical subcontracting), while the ‘related-constrained’ refers to companies which operate in a number of related businesses with close relationships between them, but perhaps different technologies (e.g. M&E subcontracting with road construction). His findings are echoed in core competence theory, where it is argued that companies will outperform others by focusing on what they do best (viz. Chapter 1, Section 1.2).

technologies and market positions, organizations can establish strategic projects to pursue one of three paths of diversification (Figure 2.3):

- Into new markets with new products based on a new technology base;
- Into a new market base with new products using an existing technology base;
- In existing markets with new products based on a new technology base.

Davies and Hobday (2005) describe that the initial step along one of these base-moving paths often begins with a project assigned to the unique task of gaining knowledge and experience that can inform senior management as to the viability of diversifying towards a specific direction. The ideas of Brady and Davies (2004) and Davies and Hobday (2005) regarding ‘projects’ as a vehicle for diversification find significant application in construction, where companies often use projects to form alliances, gain knowledge, enter new markets and offer new services.



2.4.1 Vertical and Horizontal Integration

As already explained, diversification can take place towards different directions. In construction (Hillebrandt and Cannon, 1989) - similarly to all other industries - related diversification can take the form of:

- ‘Vertical integration’, which can be either:

- Backward integration: the acquisition or development of businesses whose products/services are inputs to the firm's own main operations (e.g. a construction contractor integrating backwards activities like engineering, and materials supply).
- Forward integration: the extension of the firm's activities to those of the normal purchaser of its products/services (e.g. a construction contractor integrating forward to activities such as facilities management);
- Horizontal integration: entrance into other markets at the same stage of production (e.g. a 'civil engineering' contractor diversifying to 'building' contracting).

Davies and Lam (2001) argue that through vertical integration a company can achieve the continuous workflow that is so important in order to be able to achieve economies of scale and scope⁷. Ive (1995) argues that by integrating under a common ownership of the roles of the 'client', 'designer' and 'operator' of built assets, the 'opportunity', 'means' and 'motive' to make cost reducing and value adding innovations coexist. Ive and Gruneberg (2000) argue that common ownership of roles is a necessary prerequisite for achieving activity co-ordination that is necessary for materializing economies of scope.

In horizontal integration, there is the potential for 'managerial economies of scope' to arise between the different divisions or business units (BUs) of a company (Ansoff, 1964; 1988). In addition, horizontal integration allows the exploitation of both tangible and intangible interrelationships between a company's units (Porter,1985)⁸, which is relevant to core competence theory. Hillebrandt et al. (1989) suggest that horizontal integration can lead to economies of scale because of increasing market-share and thus market power. They further suggest that horizontal diversification can reduce risk, spreading across sectors the portfolio of projects managed by a company at any moment in time.

⁷ Zoiopoulos (2003) found evidence to suggest that economies of scale exist in construction and therefore there is scope for their exploitation, recognizing however that success in exploiting them depends on whether the internal market of the firm is more efficient in allocating resources than the external market.

⁸ Viz. Chapter 1, Section 1.3.2.

2.5 Internationalization

In addition to diversifying, a company may choose to engage in activities in a different country or region, following a strategy of internationalization. Internationalization is a strategy whereby a company expands its operations across national boundaries, spreading its geographical base. The motives behind 'internationalization' have been extensively examined in international economics (Hymer, 1976; Dunning, 1980; 1988; 1989). In construction, Male (1991) examined the issue of competitive advantage in the international construction industry, Langford and Rowland (1995) examined issues related to the management of overseas construction contracting and Pheng et al. (2004) built on the work of Dunning (1980; 1988; 1989) to develop a model that could be used to estimate the performance of international contractors in Singapore⁹.

In reality, the provision of 'international construction services' happens in any, or a combination, of the following situations, when a construction company:

- Offers construction services abroad to a local client/institution (government/private);
- Follows a client (government/private) to another country to provide its services in the country where the client is investing;
- Performs work in a foreign country as an agent of an international development institution (e.g. the World Bank, EBRD, USAID);
- As part of a consortium/SPV, will raise finance to develop, design, construct and either operate or sell a built asset in a foreign country.

The decision to internationalize and enter a foreign market requires evaluation of aspects concerning the socio-cultural, economic and political environments that affect corporate performance (Porter, 1980; 1985, Langford and Rowland, 1995; Dikmen and Birgonul, 2006). Howes and Tah (2003) pointed out different internationalization strategies may be utilized by different companies according to their specific corporate objectives. In any case, internationalized construction companies will have to face additional risks than non-internationalized ones (Langford and Rowland, 1995; Langford and Male, 2001; Orr, 2006), related to:

⁹ When combined with horizontal integration, internationalization allows firms to exploit interrelationships between different segments, geographic areas or related industries (Porter, 1985; and in construction Hillebrandt and Cannon, 1989; Langford and Rowland, 1995).

- ‘Exchange rates and controls’: included in the purchase of offshore services, import of project materials and procurement, the remitting of expatriate staff of any savings from salaries paid locally and the remitting of the contractor from its external earnings of a contribution to home overheads and of its profit;
- The uniqueness of the regional/local, cultural, political and social context;
- ‘Operating conditions’: arising from the uniqueness of each local construction industry.

In a non construction-specific context, Johanson and Vahlne (1977; 2003) observed that an internationalizing firm gradually acquires, integrates and uses knowledge about foreign markets and operations. They distinguished between two dimensions of internationalization:

- Increasing involvement of a firm in an individual foreign country;
- Successive establishment of operations in individual markets.

They argued that, for both dimensions, lack of foreign market knowledge is the basic obstacle for internationalization and that this can be overcome mainly through ‘experiential learning’¹⁰ from operations abroad. Furthermore, they argued that establishment and performance of a certain kind of operation or activity in a country requires both ‘general’ and ‘market-specific’ knowledge. Market-specific knowledge can be gained mainly through experience in the market, whereas knowledge of the operation can often be transferred from one country to another. It is the diffusion of this general knowledge which facilitates general growth; that is, the establishment of technically similar activities in dissimilar business environments. Finally, they argued that the better the market-specific knowledge, the more valuable are the resources and the stronger is the commitment to the market¹¹.

¹⁰ Since then, ‘experiential learning’ has become a critical concept in internationalization research (Kogut and Singh, 1988; Erramilli, 1991; Barkema et al., 1996; Erikson et al, 1997; Delios and Beamish, 2000; Luo and Peng, 2001). These studies have found that performance is closely related to experiential learning.

¹¹ What is presented in this section does not intend to suggest that construction companies wishing to enter and grow in different geographic locations of the same country/region face issues that are completely unrelated to the issues that internationalized construction companies face. Take for example two cases of construction firms, a US firm wishing to expand its operations from the state of Florida to the state of Texas and a French firm wishing to enter the Algerian market. Not only the latter, but also the former, will have to go through a process of ‘experiential learning’ and obtain ‘market-specific’ knowledge that will allow it to operate effectively in the uniqueness of the local cultural, political, legal/regulatory and social context. Similarly to the French firm, the US firm will also have to mobilize resources and rely on the knowledge of its employees to successfully pursue and execute projects. This example goes to show that there are clear similarities in the actions construction companies have to take if

2.6 The Structure of Diversified and Internationalized Construction Companies

Strategies for diversification and internationalization affect organizational structure. The ICMs this research studies are diversified and internationalized organizations operating in a number of countries and sectors, often undertaking more than one role involved in the production of the built environment. This means that they operate simultaneously in heterogeneous task environments. Thompson (1967:70) proposed that: 'organisations facing heterogeneous task environments seek to identify homogeneous segments and establish 'structural' units to deal with each'¹².

Large diversified and internationalized construction groups are usually structured in distinct - yet often related - business units (BUs), which focus on projects within a specific sector of the construction industry (e.g. building, civil engineering or process engineering)¹³, or projects situated in a specific geographic location (e.g. domestic vs. international), or a combination of the two. Each BU can have an organizational form of its own, of a unique type and with a unique culture. To deal with risks arising from diversification and internationalization more effectively, ICMs often decentralize decision-making to BUs, market- or region/country-focused (Male, 1991). In construction, a regionalized structure in particular is recognized as being able to bring managers in closer contact with the marketplace: the less centralization, the greater the autonomy and decision-making authority of regional senior managers (Male, 1991; Langford and Male, 2001)¹⁴. Male (1991) identified two issues construction organizations decentralizing decision-making face:

- The corporate-centre is managing a 'loose-tight' organizational structure, where there is considerable autonomy for the senior managements of regional subsidiaries but where the centre has to retain a degree of control in order to maintain an overall corporate direction;

they wish to pursue and execute projects in different geographic locations, which may be within or outside their country of origin.

¹² Chandler (1962), who examined the evolution of large corporations from the United States (US), reached the conclusion that companies being driven by market growth to develop greater diversity in their markets were able to manage their new strategies by adopting a multidivisional organisational structure (M-Form). He showed how the management processes created, allowed companies to apply their resources more efficiently to opportunities created by 'changing markets' and 'developing technologies'.

¹³ Lawrence and Lorsch (1967) described market-based grouping as a way for a company to set-up relatively self-contained units to deal with particular workflows. Mintzberg brought forward three criteria for 'market-based' grouping: i) product/service, ii) client and iii) region.

¹⁴ Robbins (1983; 1990) argued that decentralization is also an identification of trust the organization is prepared to place in individuals for making decisions.

- ‘Procedural inappropriateness’, i.e. the centre attempting to apply uniform systems and procedures across all regional units regardless of the size and circumstances facing the unit. The consequences for the smaller regional units, is that they are being swamped with systems and procedures more appropriate to larger units.

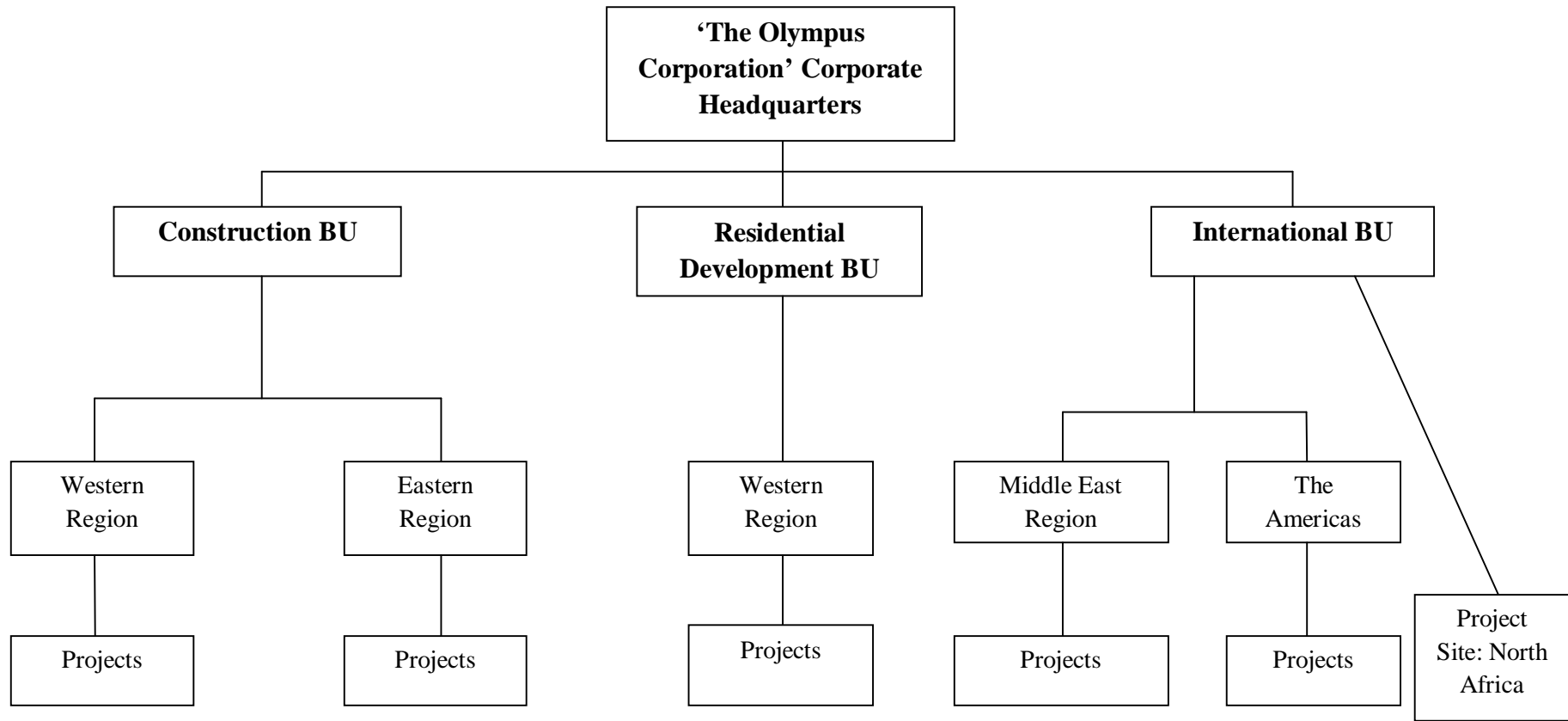
Sometimes, ICMs are configured as divisional silos defined by procurement routes, services offered, or regions, to minimize transaction costs, although international operations may constitute a separate silo (Male, 1991; Langford and Male, 2001; Smyth, 2006). On occasions, projects exist outside of the organization’s mainstream structure, an experience found in some international divisions of construction companies. In such cases however, support is not always focused and consistent (Smyth and Stockerl, 1998).

In project-based organizations, such as the case of construction companies, market-based units reflect the way projects are grouped. In the case of ICMs, divisions/BUs correspond to market/client-focused project groupings and/or portfolio groupings (Artto and Dietrich, 2002; 2004; Crawford et al., 2006). Appropriate project-grouping assists in providing greater:

- ‘Comparability’ between projects, enabled because of some standardization of language, which assists in:
 - Ensuring understanding among project participants belonging to the same company who work in different projects.
 - Moving individuals between projects without them having to learn new terminology.
 - Drawing lessons learned from similar projects, by facilitating knowledge management and transfer;
- ‘Visibility’: as there is clearer focus on which projects fall under the same category;
- ‘Control’: as appropriate project grouping allows better control focus.

How market-based project grouping leads to the creation of organizational units in construction can be better understood with the help of Figure 2.4. The figure shows a diversified and internationalized construction organization whose ‘units’ demonstrate

Figure 2.4: A Model of Organizational Structure for a Diversified and Internationalized Construction Firm



Adapted from Langford and Male (2001)

'groupings' based on market-sector ('construction' and 'residential development' BUs) as well as regional ('international' BU) criteria. Within each 'market-sector' unit, projects are grouped on a regional basis, reflecting the importance of a regionalized structure in being able to bring managers closer to their markets (Male, 1991).

Flanagan (1994) argued that successful construction companies in the international construction market have followed the rule of 'thinking globally but acting locally', because construction is generally a 'local' activity. ICMs who operate in numerous countries, often set-up 'national' subsidiaries, which become local centres of coordination for the projects they undertake. Through this, they can be closer and adapt quicker to changes in their market. Along those lines, ICMs may share characteristics with what organization theory scholars (e.g. Ghoshal and Nohria, 1989; Ghoshal and Bartlett, 1990; Bartlett and Ghoshal, 1993; Malnight, 1995; Tsai and Ghoshal, 1998; Gupta and Govindarajan, 2000) have described as the 'multinational corporation' (MNC)¹⁵. In the MNC, each national subsidiary may be embedded in different historical circumstances (Stopford and Turner, 1985). From a 'contingency' point of view therefore, one can expect that the internal structure of MNCs is not homogeneous throughout the organisation, but is 'systematically' differentiated so as to comply with the different 'environmental' and 'resource' contingencies faced by the different national subsidiaries (Lawrence and Lorsch, 1967; Ghoshal and Nohria, 1989). Ghoshal and Nohria (1993) envisioned MNC structures in terms of four patterns:

- Structural uniformity: where there is little variance in how the different subsidiaries are managed, and a common 'company way' is adopted for the governance of the organization;
- Differentiated fit: where different governance modes are adopted to fit each subsidiary's local context;
- Integrated variety: where the logic of differentiated fit is adopted but overlaid by a dominant overall integrative mechanism - whether through strong centralisation, formalisation, or normative integration;
- Ad-hoc variation: where there is neither a dominant integrative mechanism nor an explicit pattern for differentiation to match local contexts.

¹⁵ The philosophy behind the MNC is similar to Chandler's M-Form, where national subsidiaries correspond to the M-Form's market-focused operating divisions. To some extent, the MNC must be responsive to the different 'contingencies' presented by the different environments in which its national subsidiaries operate.

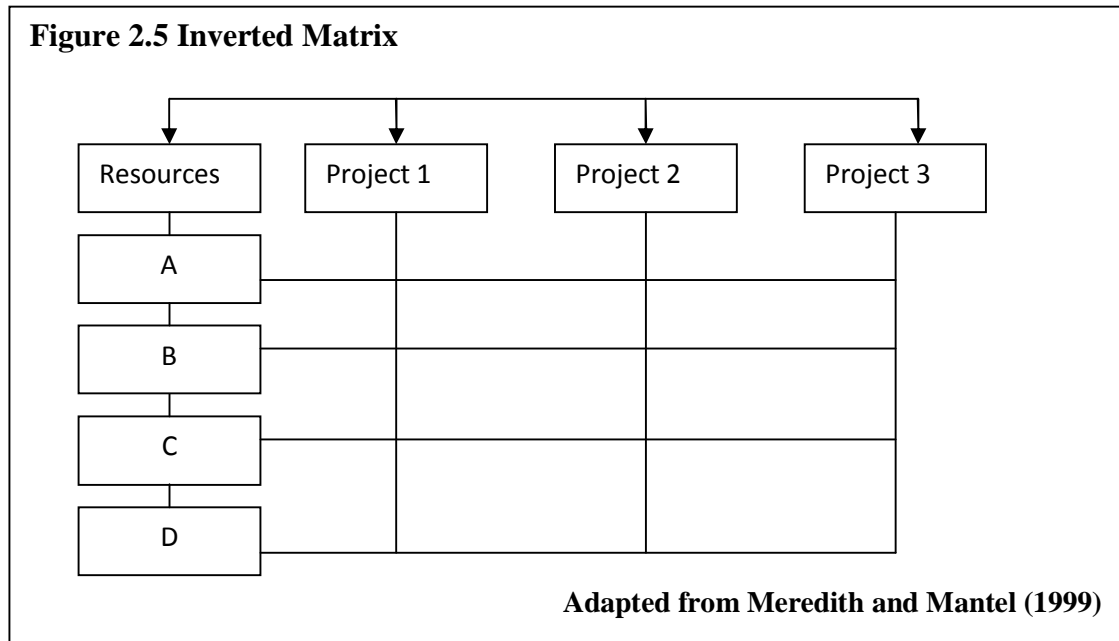
Parsons (1960) suggested that organizations operate at three levels: a ‘technical core’, a buffering and coordinating middle ‘managerial’ level and a top ‘institutional’ level, concerned with ensuring the organization is effectively embedded in its milieu to ensure its long-term survival. Although theory reviewed in this section helps in understanding how ICMs structure at the ‘institutional’ level, it does not contribute to our understanding about their structure at the managerial and technical level. Consequently, it is not adequate to describe issues that organizations operating in project-based environments - such as ICMs - face regarding project resources allocation and management, and providing an interface between each project and the rest of the organization (Hamilton, 1999).

2.7 Project-Based Structures

As noted in Section 2.3, construction is a project-based industry where relationships between participants are determined by the manner in which they are contracted to work on a project-basis. Construction companies therefore, have to conduct project resources coordination, and provide an interface between each project and the rest of the organization (Hamilton, 1999). In theory, Meredith et al. (2003) distinguish between the following project accommodation options:

- ‘Functional’: where the project is allocated within a functional department, which may be within the organizational structure (if the structure is functionally organized);
- ‘Project’: where the project exists outside of the organization’s mainstream structure. It can be effective for projects requiring a ‘focused’ relatively small full time team¹⁶ or for commencing diversification;
- ‘Matrix’: which aims to harness multiple inputs from across the organization, by mobilizing employees across organizational units and geographic locations on a project basis;
- ‘Inverted Matrix’: which aims to overcome the problem of lack of authority for the project manager vertically, whilst retaining the ability to access a mix of skills horizontally - used by organizations that regularly conduct project work (Figure 2.5).

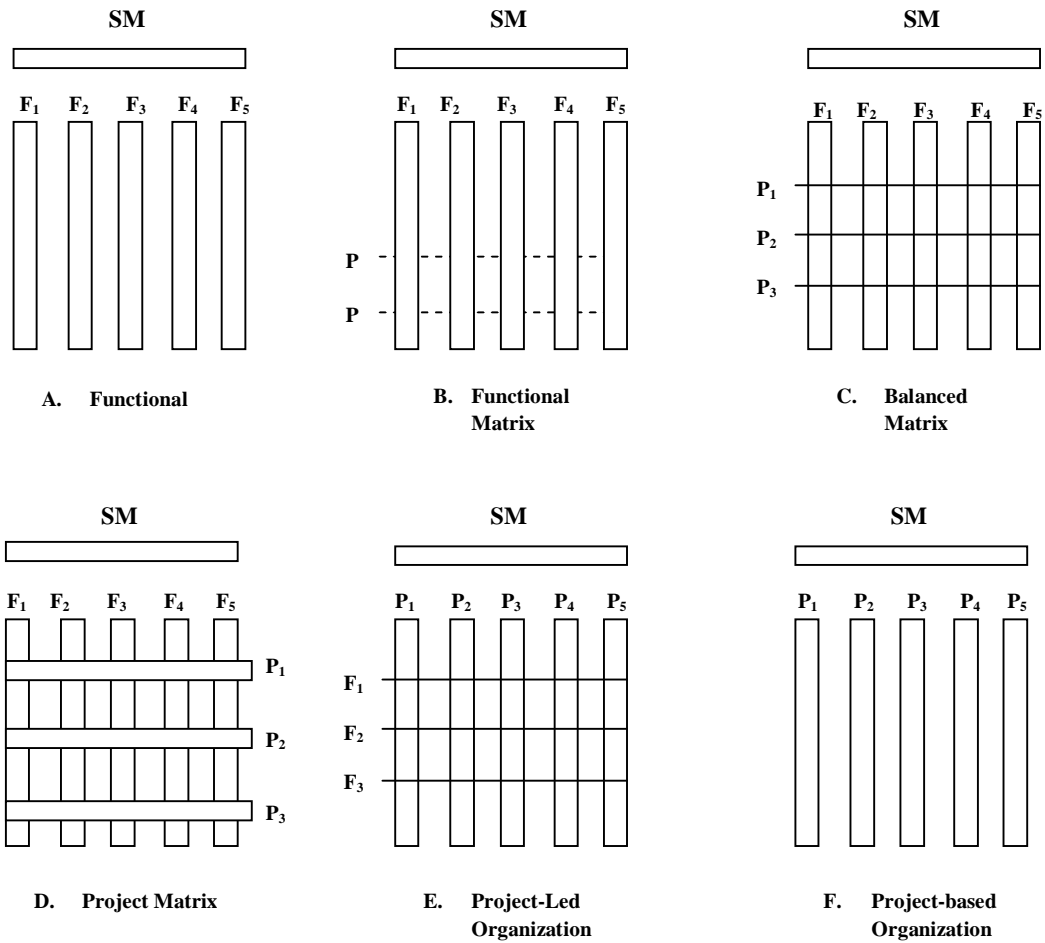
¹⁶Such as the experience found in some international divisions (Smyth and Stockerl, 1998).



Building on the work of Galbraith (1973) and Larson and Gobeli (1987; 1989), Hobday (2000) described six organizational forms ranging from the pure functional (A) to the pure project form (F), as shown on Figure 2.6. In the ‘project-based organization’ matrix (type F), project managers/directors have higher status regarding resource coordination - the equivalent of functional directors in the ‘functional’ matrix (type A) - and direct control over business function, personnel and other resources. Types B, C, D and E represent sequential stages of increasing project manager/director status regarding resource coordination. Hobday (2000) found the project-based organization to be weaker in performing routine tasks, achieving economies of scale, coordinating cross-project resources, facilitating company-wide technical development and promoting organizational-wide learning. In addition, he stated that the project-based organization can work potentially against the wider interests of corporate strategy and business coordination. As a solution, he proposed the deployment of coordinators across functional lines cutting across project interests and incentives as a strategy that can stimulate organizational learning and technical leadership, highlighting the importance of some coordination mechanisms across project lines.

The theoretical concepts discussed so far have been useful in describing the organizational structure that diversified and internationalized construction organizations develop. However, they have not adequately addressed the issues ICMs face regarding intra-organizational coordination and how these could be. This is an area which links to core competence theory and the issues this research explores (viz. Chapter 1, Section 1.5) and will be the subject of the following section.

Figure 2.6: Matrix Organizational Forms



Where: F₁-F₅: various functional departments of the organizations (e.g. Sales, Marketing, Procurement, Logistics, Construction)
 P₁-P₅: major projects within the organizations (e.g. CoPS)
 SM: Strategic Management

Adapted from Hobday, 2000

2.8 Intra-Organizational Coordination

Diversification and internationalization raise issues of intra-organizational integration and coordination. Organizations like ICMs increasingly confront the need for ‘leveraging’ the resources and capabilities (viz. Chapter 1, Sections 1.2 and 1.3.4) of their distinct units. However, because of ‘tacitness’ of knowledge and causal ambiguity (Lipmann and Rumelt, 1982), effective resource exchange and knowledge transfer can be difficult to achieve.

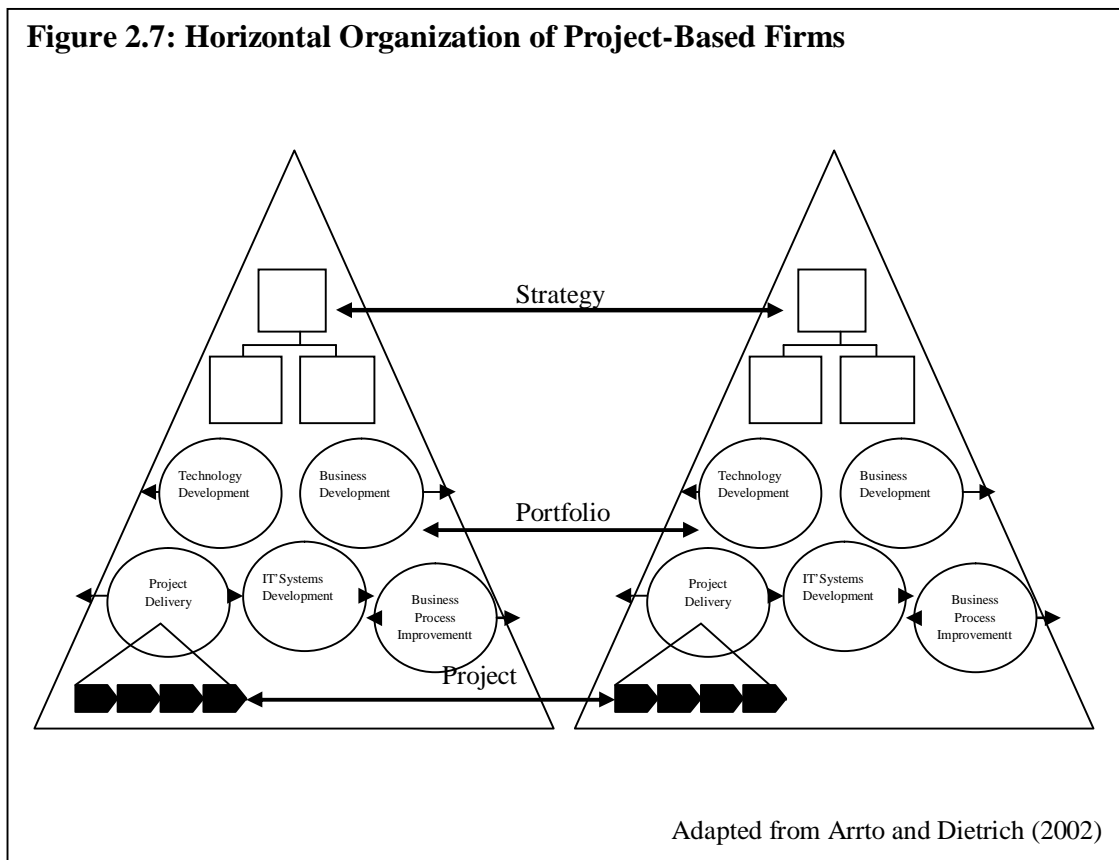
The fact that the interest in this research lies on the intra-organizational dynamics of multi-BU organizations, such as ICMs, highlights the importance of relations between individuals and/or groups of agents who often do not exist in the same ‘localities’¹⁷ and are therefore faced by different ‘contextualities’. Giddens (1984) argues that this issue points the direction of focus towards the ‘lateral’ aspect of the structuring of organizations and is linked to the reproduction of organizational social practices across space/time. Large, diversified and internationalized construction organizations tend to favour the market-basis for grouping in order to encourage mutual adjustment and direct supervision as coordination mechanisms in the lower hierarchical tiers of the organization (Shirazi et al., 1996). This enables them to manage important workflow interdependencies, at the expense however of process and scale specialization. As Mintzberg (1979; 1983; 1989) explained, with the necessary mutual adjustment and direct supervision contained inside each market-based unit, the organization as a whole needs to rely less on formalization for coordination and so tends to emerge as less bureaucratic. However, with less focus on coordination across markets, there is less scope for process specialization. This means that although the market-based structure is less formalized, it is less able to do a repetitive or specialized task well. Consequently, the market-based structure offers less scope for ‘replicating’ effective routines (Nelson and Winter, 1982) and effectively harnessing the tacit knowledge of individual employees (Grant, 1996a,b) across different organizational ‘localities’¹⁸.

As noted in Chapter 1 (viz. Section 1.3.2), companies pursuing a strategy of related diversification can create value by exploiting ‘interrelationships’ that exist between their BUs (Porter, 1985). Tsai (2000) suggested that it takes the existence of active social networks realized by people working together across business units (BUs) for real value to be extracted from related diversification. Markides (2002) argued that managerial relationships between related BUs need to be managed and renewed if they are not to decay. In a project-based management context - such as the one ICMs operate in - these issues relate to the coordination of portfolios and networks of portfolios of

¹⁷ Giddens (1984: 118) describes ‘localities’ as referring to the use of space to provide the settings on interaction, the settings of interaction in turn being essential to specifying its contextuality’.

¹⁸ In Giddens’ (1984) terms, pursuing related diversification and/or internationalization involves the reproduction of (organizational) social practices across time and space. This is an issue of great significance to core competence development, as it is related to how resources and core competencies are stretched and leveraged across distinct, yet related organizational units, an issue that will be further explained in Chapter 3, Section 3.4 and Chapter 4, Sections 4.3.2 and 4.3.4).

projects (Artto and Dietrich, 2002; 2004) grouped under market-based units (Crawford et al., 2006) (Figure 2.7).

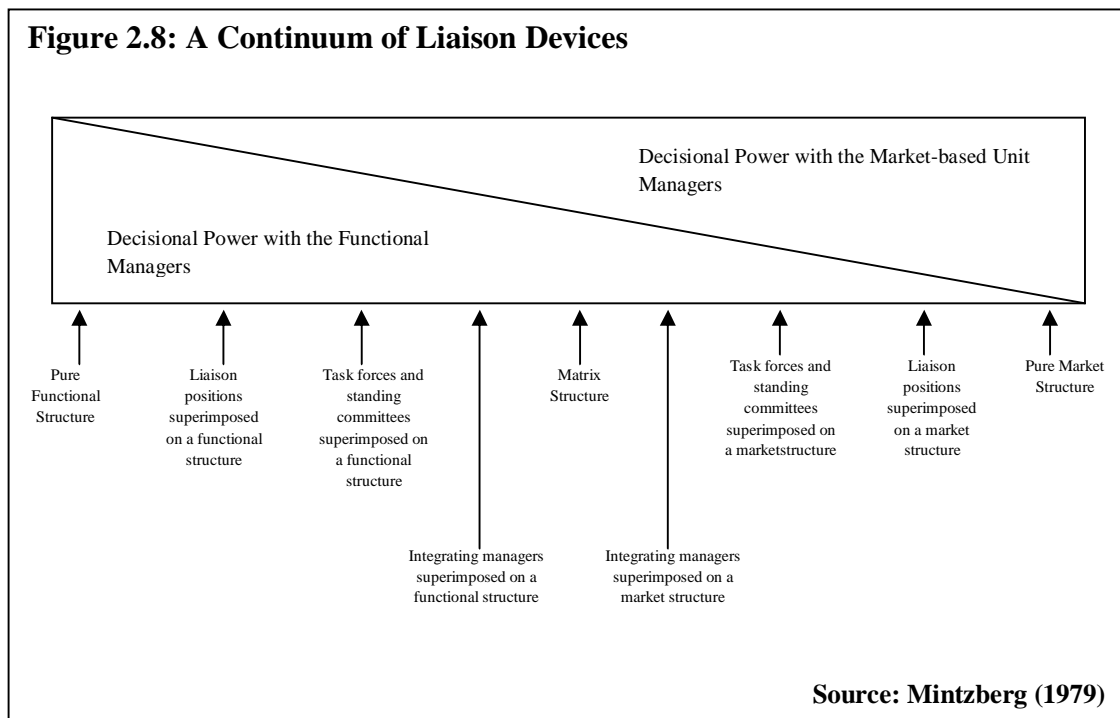


Exploiting interrelationships requires BUs to share activities in their value chains with other BUs, or to be able to transfer know-how with other units, while remaining a separate entity that acts independently in other value activities and maintains profit responsibility. To do this, Porter (1985) advocates that corporate strategy must focus on establishing and maintaining a 'horizontal organization' that facilitates systematic mechanisms for inter-BU coordination. He describes the 'horizontal organization' as consisting of:

- A horizontal structure: the organizational devices that cut across BUs, such as inter-divisional task forces and market-focus committees;
- Horizontal systems: management systems with an inter-BU dimension in areas such as planning, control, incentives and capital budgeting;
- Horizontal human resource practices: that facilitate BU cooperation, such as employee rotation, management forums and training;

- Horizontal conflict resolution processes: among BUs, distinguished from horizontal structure and systems.

On the same subject, and building on the work of Galbraith (1973), Mintzberg (1979; 1989) proposed a continuum of ‘liaison devices’, through which an organization can create lateral linkages across organizational units (Figure 2.8)¹⁹.



Within a multi-BU organization pursuing a strategy of related diversification, the purpose of these liaison devices is to support the role of managerial action in actively managing interrelationships between BUs (Nayyar, 1992; Tsai, 2000; Markides, 2002).

Drawing from the ‘contingency’, ‘network’ and ‘relational’ branches of organization theory (viz. Chapter 1, Section 1.3.1), scholars (e.g. Ghoshal and Bartlett, 1990; Malnight, 1995; Nohria and Ghoshal, 1997; Tsai and Ghoshal, 1998; Tsai, 2000; Gupta and Govindarajan, 2000; Brass et al., 2004) have proposed that the structure of MNCs can be conceptualised as a ‘network’ arrangement consisting of a set of ‘relational’ ties (both formal and informal) linking together dispersed organisational units²⁰. Moving towards a more ‘network-based’ structure, horizontal linkages between

¹⁹ Galbraith (1973) argued that the efficacy of informal lateral links between BUs can be substantially improved by designing them into the formal organization.

²⁰ The traditional approach to managing MNCs builds on the notion that each national market is different and that the best strategy for operating internationally is through autonomous BUs in major world

dispersed operating units can be established through an array of organizational mechanisms. Whereas ‘decentralized’ firms focus operations within autonomous BUs, network-based firms emphasize an integrated strategy and organization associated with a gradual introduction of interdependence across operations.

The work of organization theory scholars highlights the importance of employee networks across BUs, as well as the ‘structural’ mechanisms to facilitate these²¹. Ghoshal et al. (1994) showed that a high level of networking among managers in the different units of the company will have a positive effect on social interactions across BUs. Tsai and Ghoshal (1998) found that inter-BU ‘social interaction’ and ‘trust’ were significant determinants of resource exchange/coordination. They also found that a ‘shared’ vision between BUs had a positive effect on ‘trustworthiness’ between them. They found that ‘social capital’ developed in inter-BU networks, facilitates ‘value creation’ and suggested from their findings that investing in the creation of ‘social capital’ inside a firm eventually creates value. Social capital within multi-BU organizations - such as ICMs - could create the motivational disposition in BUs to both ‘share’ and ‘acquire’ knowledge from other BUs to apply it in their own context (Gupta and Govindarajan, 2000).

In a project-based management context, Prencipe and Tell (2001) argued that, project-based firms often lack the organisational mechanisms for the knowledge acquired in one project to be transferred and used by other projects, mainly for two reasons: first, the unique and temporary nature of projects - and the temporary constellation of people projects entail. New human encounters and relationships take place whenever a new project is started, which may increase the barriers to learning from the previous experience of others; second, projects may be characterized by relatively long life-cycles, requiring similar project activities to be retrieved and repeated after long-time intervals.

Market-based structures that diversified and internationalized organizations develop to deal with the complexity of their environment often lead to divisionalization (Mintzberg, 1979; 1989). This can negatively affect inter-BU resource exchange, a particularly important issue for organizations that want to deploy and develop their core

markets, with little flows of exchanges among them. The work of these scholars called for a move towards a more network-based structure.

²¹ Wenger and Snyder (2000) argued that in companies organized in team-based structures - such as all project-based business and the ICMs this research studies - communities of practice can assist employees of a functional/discipline expertise to maintain cross-BU relations with peers.

competencies (Prahalad and Hamel, 1990). Along those lines, investigating the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies can go a long way in identifying intra-organizational mechanisms through which these organizations can overcome the coordination problems of their (potentially) divisionalized structure and improve their competitiveness.

2.9 The Configurations of ICMs and the Effectiveness with which they Develop their Core Competencies

In Chapter 1 (viz. Section 1.6.1), it was explained why ICMs constitute an appropriate organizational context within which the relationship between ‘organizational configuration’ and ‘effective core competence development’ can be examined.

This chapter has so far described ICMs - and the industry context they operate in - in theory, establishing their similarities with MNCs and PBOs. It becomes clearer therefore that - on top of contributing to our knowledge of strategic management of construction organizations - any findings from the context of ICMs:

- Are comparable to findings from production-oriented MNCs;
- Can be applicable - following contextual modifications - to production-oriented MNCs;
- Can contribute to our knowledge of the management of PBOs.

Consequently, it becomes clearer at this stage, how the study of ICMs is appropriate for the exploratory purpose of this study, as it allows comparing conclusions drawn and making generalizations across organizational and industry contexts.

This Chapter has described the ‘structural’ and ‘functioning’ characteristics of ICMs in theory, particularly emphasizing issues related to their intra-organizational integration and coordination. Therefore, it has contributed to developing an understanding of intra-organizational dynamics at ICMs. The purpose of the next chapter is to develop a better understanding of ‘core competencies’ and position them within an organizational context such as the one of the ICMs.

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Chapter 3: Core Competencies in Organizations

'The beginning of wisdom is the definition of terms'

Socrates

3.1 Introduction

In Chapter 2, the 'structural' and 'functioning' characteristics of international construction majors (ICMs) and the issues they face regarding intra-organizational coordination were discussed. The purpose of Chapter 3 is first, to introduce and describe the hierarchical relationship between resources, capabilities, competencies and non-core competencies; second, to distinguish between core competencies referring to individuals and those referring to organizations; third, to critically review existing theory and propose a new model deconstructing and describing core competencies; fourth, to fuse the theory reviewed in Chapter 2 with that reviewed and developed in this chapter in order to position and describe core competencies within the context of a multi-business unit (BU) organization, such as that of the ICMs this research studies.

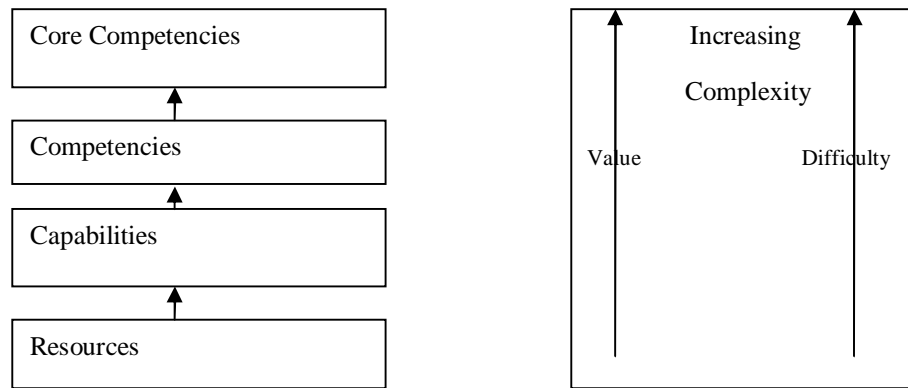
3.2 Defining the Terms

Chapter 1 (viz. Section 1.2) noted the term 'core competence' in industry and academia often results in confusion, since it is being used in a variety of contexts and derived from different meanings (Hamel and Prahalad, 1994; Lahti, 1999) with no universally agreed definition and description of core competence characteristics. In addition, the terms capabilities, competencies, core competencies and critical/strategic resources are often used interchangeably to mean the same thing. In light of this, the primary objective of this chapter is to resolve this confusion by developing a definition of core competencies fit for these research purposes, and clarifying their relationships with resources, capabilities and competencies, while distinguishing between those referring to individuals and those referring to organizations¹.

The most comprehensive model to date linking resources, capabilities, competencies and core competencies, is the one proposed by Javidan (1998). Javidan used the 'Competencies Hierarchy' (Figure 3.1) to explain that each 'level' results from

¹ Viz. Chapter 1, Section 1.9.

Figure 3.1: The Competencies Hierarchy



Source: Javidan (1998)

the integration of the elements at the lower level. The model presents ‘resources’ as the building blocks of capabilities, competencies and core competencies. ‘Capabilities’ are the second level in the hierarchy and refer to the corporation’s ability to exploit its resources. An ‘organizational competence’, the third layer in the hierarchy, still retains the same relationship with resources that capabilities do and on top of that represents an organizational state whereby the activity it relates to is consistently performed with results superior to competition. ‘Core competencies’, the highest level in the hierarchy, represent an intra-organizational coordination and integration of resources, capabilities and competencies that exist in distinct, yet related business units (BUs) of the same organization. Javidan used this model to argue that the higher the level in the hierarchy, the greater its complexity (hence the greater the difficulty for competitors to imitate) and the greater the value added. This scheme will be critiqued later in this chapter (viz. Section 3.3).

The ‘Competencies Hierarchy’ demonstrates that resources, capabilities, competencies and core competencies are interdependent. As a result, to better understand the nature of core competencies, it is imperative to better understand resources, capabilities and competencies, as well as the interrelationships between them and with non-core competencies. In light of this, the following four sections (3.2.1 to 3.2.5) and their subsections will analyze each of those terms.

3.2.1 Resources

As mentioned in Chapter 1 (viz. Section 1.3.3), Penrose (1959: 15) was the first to define the firm as a ‘pool’ of resources ‘whose general purpose is to organize the use of its own resources together with other resources acquired outside the firm for the production and sale of goods and services for a profit’. Barney (1991; p.101) defined resources as including ‘all assets, organizational processes, attributes, information, knowledge controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness’, clearly demonstrating the broad application of the term. He classified resources into three categories:

- ‘Physical Capital Resources’ (e.g. physical technology, plant, equipment, location, access to raw materials);
- ‘Human Capital Resources’ (e.g. knowledge², training, experience, judgment, intelligence, relationships and individual insight);
- ‘Organizational Capital Resources’ (e.g. formal reporting structure, formal and informal planning, controlling and coordinating systems as well as informal relations among groups within a firm and those in its environment).

In addition, resources are often referred to in literature as ‘strategic’ or ‘critical’, when they are considered as being a source of sustainable competitive advantage for the firm that possesses them and exploits them (Barney, 1991; 2001; Collis, 1994; Collis and Montgomery, 1995; Foss and Foss, 2005).

3.2.2 Capabilities

The concept of ‘organizational capability’ was first introduced in Chapter 1 (viz. Section 1.3.4). Building on the work of Schumpeter (1942), Nelson and Winter (1982) developed the concept of organizational capability on the concept of the ‘organizational routine’. Later, using the concept of organizational routines, Helfat and Peteraf (2003: 999) described an organizational capability as ‘a high level routine (or collection of routines, particularly formal ones) that, together with its implementing input flows,

² As noted in Chapter 1 (viz. Section 1.3.6), the importance of ‘knowledge’ has been widely recognized in the resource-based view of the firm (Penrose, 1959; 1995). Grant (1996a,b) viewed the primary role of the organization as knowledge ‘application’ and ‘integration’. He viewed knowledge as residing with the ‘individual’ and argued that this was the most important resource of the firm.

confers upon an organization's management a set of decision options for producing significant outputs of a particular type'.

Organizational capabilities exist in the form of company-specific routines, processes, and culture built up over time (Nelson and Winter, 1982; Collis and Montgomery, 1995). Linking capabilities with resources, Helfat and Peteraf (2003: 999) defined an organizational capability as 'the ability of an organization to perform a coordinated set of tasks utilizing organizational resources, for the purpose of achieving a particular end result'. This definition suggests that capabilities are higher level resources of an 'intangible' nature (Hall, 1992; 1993) and go beyond the categories identified by Barney (1991), in that they are 'functionally-gearred' towards the implementation of a specific activity³.

Nelson and Winter (1982) proposed that an organization's capabilities require the exercise of skills of individuals who are aware of their firm's resources and may involve a large component of 'tacit' knowledge⁴. They argued that this characteristic of organizational capabilities sets the limits on the extent to which the capabilities themselves can be articulated and therefore 'replicated' across different organizational contexts. Organizational capabilities also depend on the way individuals or organizations have learned to work with each other. Developing and maintaining those ways requires the establishment and maintenance of relationships between all groups involved in critical processes for product/service delivery, both inside and outside the firm⁵.

Amit and Schoemaker (1993: 35) distinguished between resources and capabilities, by stating that 'capabilities refer to a firm's capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end. They are information-based processes that are firm-specific and are developed over time through complex interactions among the firm's resources. They can abstractly be thought of as 'intermediate goods' generated by the firm to provide enhanced productivity of its resources, as well as strategic flexibility and protection for its final product or service'.

³ It can be argued that there is some theoretical overlap between 'organizational capital resources' (Barney, 1991) and 'organizational routines' (Nelson and Winter, 1982), the building blocks of organizational capabilities.

⁴ As noted in Chapter 1 (viz. Section 1.3.4) Grant (1996b) argued that the essence of organizational capability is the 'integration' of individuals' specialized knowledge. Within that context, he attributed superior performance to how productive firms are in utilizing the knowledge 'stored' within individual employees, which in turn depends upon the ability of firms to 'access' and 'harness' the specialized knowledge of its members. He found the structure of the organization to be an important factor and argued that 'networks' of individuals are well suited to the transfer and integrate knowledge.

⁵ An issue identified in Chapter 2, Sections 2.6 and 2.8 as particularly important to the management of interrelationships between BUs of a diversified organization.

Building on this distinction, Makadok (2001) argued that a capability is embedded in the organization's processes and because of this embeddedness, a capability cannot be easily transferred from one organization to another without also transferring ownership of the organization itself, or some reasonably self-contained subunit of the organization, within which the capability is contained.

The arguments developed in the previous paragraph assist in understanding that capabilities emerge from the co-evolution of 'human' and 'organizational' capital resources into what Helfat and Peteraf (2003) referred to as 'higher order' routines. Therefore, though distinct, they are interdependent. The value of organizational capabilities depends on the ease with which resources and organizational routines constituting them can be imitated or substituted (Nelson and Winter, 1982; Collis and Montgomery, 1995; Makadok, 2001; Helfat and Peteraf, 2003). Hence, it can be argued that 'critical' or 'strategic' capabilities exhibit characteristics similar to the ones Barney (1991) has attributed to 'critical' or 'strategic' resources, as those have been described in Chapter 1 (viz. Section 1.3.3).

3.2.2.1 Operational vs. Dynamic Capabilities

Moving from a stationary position to a position of organizational change, capabilities can be distinguished between those that are 'operational' and those that are 'dynamic'. There is a broad consensus in the literature that dynamic capabilities contrast with operational capabilities by being concerned with change and that dynamic capabilities govern the rate of change of ordinary capabilities (Teece et al., 1997; Winter, 2003). Winter described operational capabilities as those that permit a firm to 'make a living' in the short term and dynamic capabilities as those that operate to 'extend', 'modify' or 'create' operational capabilities. Within that context, Teece et al. (1997) described the organizational routines related to dynamic capabilities as 'patterns of learning'.

Providing a clearer link between the evolutionary perspective of 'dynamic' capabilities and the positional approach put forward by the market-power view (MPV) of the firm, Eisenhardt and Martin (2000) describe dynamic capabilities as comprising organizational routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die. In addition, Teece et al. (1997) argued that dynamic capabilities can be deployed to 'alter' managerial and organizational processes, gear evolutionary paths and hence alter market positions. It becomes clear therefore

that dynamic capabilities represent the ‘backbone’ of an organization’s ability to successfully adapt to changing environments and integrate emerging with intended strategies (Mintzberg, 1978;1979).

Since dynamic capabilities consist of routines which are themselves an organization’s patterns for learning (Teece et al., 1997; Zolo and Winter, 2002), it could be argued that they enable explicit organizational learning and tacit adjustment to take place, which can then lead to ‘reconfigurations’ of business processes and eventually of market positions⁶. Hence, it could be argued that dynamic capabilities can be deployed towards the co-development of ‘human’ and ‘organizational’ capital resources and lead to the development of organizational capabilities. This argument supports the widely accepted notion that organizational learning is the main way in which organizations interact with, and are changed by, their environment (Penrose, 1959; Cyert and March, 1964; Johanson and Vahlne, 1977; Nelson and Winter, 1982; Nelson, 1991; Nonaka, 1991; Nonaka and Takeuchi; 1995).

3.2.2.2 Project Capability

It was not until the 1990s that the importance of an additional set of organizational capabilities - relevant to project-based firms such as ICMs - located at the project level, was recognized (Davies and Brady, 2000; Brady and Davies, 2004; Davies and Hobday, 2005)⁷. Davies and Hobday (2005: 62-63) define ‘project capabilities’, from a supplier’s perspective, as ‘the appropriate knowledge, experience and skills necessary to perform pre-bid, bid, project and post-project activities’. They argue that project capability is essential both to the ‘operational effectiveness’ and ‘strategic positioning’ of the project-based firm. In other words, it is essential to the development and deployment of operational as well as dynamic capabilities. An interesting issue that the works of Davies and Hobday (2005) highlights, is that in project-based firms, projects are temporary organizations during the life-cycles of which both the operational as well as the dynamic capabilities of the firms are exercised. So in essence, the project-based firm has the inherent potential to extend, modify and create capabilities as it operates⁸.

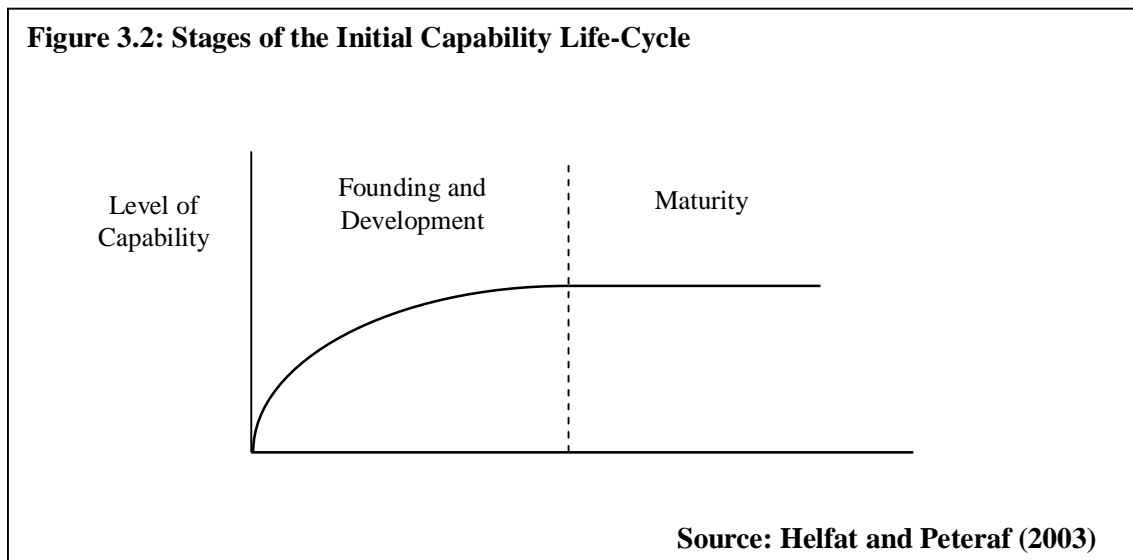
⁶ Or, in Giddens’s (1979; 1984) terms, reconfigurations of ‘social practices’ and ‘structural properties’

⁷ Davies and Hobday (2005) site the work of Morris (1994), Amsden and Hikino (1994) and Cusumano and Nobeoka (1998), as having contributed to theory developed in that field.

⁸ This point also links back to the work of Davies and Hobday (2005) - viz. Chapter 2, Section 2.4 - who described that project-based firms, such as ICMs, often use projects to diversify from their traditional capability base to a new technology base, capability base or both.

3.2.2.3 Capability Evolution and Development

In an attempt to explain how capabilities evolve (and can be developed) over time, Helfat and Peteraf (2003) introduced the concept of the ‘Capability Life-Cycle’ (Figure 3.2). They distinguished three stages of capability evolution: ‘founding’, ‘development’ and ‘maturity’.



At the founding stage, an organized group/team with some type of leadership will work towards a central objective, the achievement of which entails the creation of a new capability (Levinthal and Myatt, 1994). It is evident that due to ‘path dependency’ (Teece et al., 1997; Eisenhardt and Martin, 2000), resources ‘inherited’ at any moment in time set the stage for further capability development. The notion of path dependency recognizes that history matters and thus, that a firm’s previous repertoire of resources and routines, (its history) constrains its future behaviour and its specific options within its overall path direction (Nelson and Winter, 1982; Helfat and Peteraf, 2003). Due to ‘path dependency’ issues, each company will start the process of capability development with different types of resources and capabilities in its arsenal. Furthermore, particular individuals may play a role in capability development (Helfat and Peteraf, 2003)⁹.

⁹ Teams with similar objectives but different initial configurations make different choices. For example, consider two construction companies that want to grow their capacity as general contractors. The leadership of one company might decide to acquire another company that is active in general contracting, the leadership of the other might decide to hire executives or promote middle management to positions of greater responsibility and invest in bidding for more work that would increase its turnover and market share. Both actions have the same objective but are different, the choice between them depending on the perception each company’s senior management team has on what is the right thing to do for their business.

Therefore, ‘choices’ regarding capability development will vary from company to company, mostly because of the differences between decision-makers with respect to their:

- Human Capital (their knowledge, skills and experience);
- Social capital (their social ties within and outside the team)¹⁰.

During the ‘development’ stage, the organization (or team within the organization) is set around capability development. ‘Capability’ develops through team searches and knowledge that is being acquired. Whether the team decides to ‘imitate’ or ‘develop’ a capability, organizational learning is required. This involves a team performing an activity and learning the capability through experience. This follows because ‘learning’ and ‘adjustment’ are often a process of trial, feedback and evaluation (Teece, 1988; Teece et al., 1997; Chang, 1996).

In the ‘maturity’ stage, how well the capability is maintained depends on how often and how consistently an organization exercises it¹¹. A capability has reached maturity when it has reached a state of being implemented through ‘a regular and predictable pattern of routines’ (Nelson and Winter, 1982; Teece et al., 1997). Once a capability reaches maturity, the organization is presented with the following options for managing it (Figure 3.3):

- Recombination
- Redeployment
- Replication
- Renewal
- Retrenchment

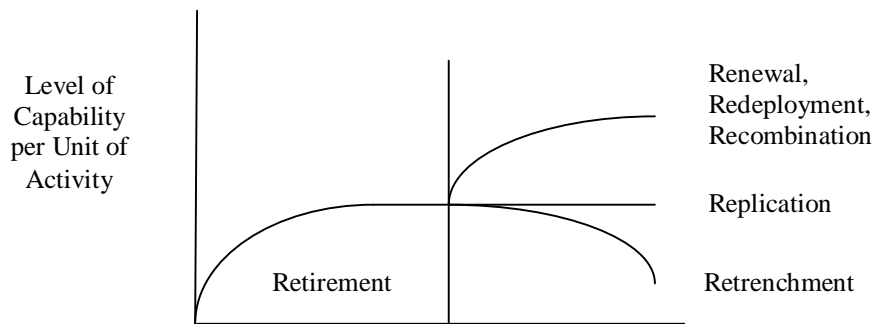
The ability to replicate indicates that a firm has the foundations in place for routine development across organizational settings in addition to ‘capability development’ through organizational learning and improvement¹². At the same time, it has to be recognized that in reality tacit capabilities can evolve but then it is luck or the

¹⁰ The social capital and ties that the individual team members bring with them are important at this stage for obtaining resources.

¹¹ In a project-based context, Davies and Brady (2000) argued that the greatest challenge that maintaining capability represents is learning from project to project, as there is a constant risk that learning will be dissipated and lost to future projects and the same mistakes will be repeated.

¹² In Giddens’ (1984) terms, it indicates it has the ability to replicate its social practices across time/place, in addition to re-configuration and improvement of these social practices.

Figure 3.3: Branches of the Capability Life-Cycle



Source: Helfat and Peteraf (2003)

intuitive negotiation within the culture and organizational norms that steer things in a valuable way. Davies and Brady (2000) examined capability development for the case of project-based businesses. They argued that opportunities for learning exist, especially for firms that undertake similar categories of projects (e.g. turnkey, design and build, build-operate-transfer for the case of construction firms), which involve repeated cycles of activity as, when projects are repeated, recognizable patterns of organizational behaviour tend to occur. Brady and Davies (2004) went on to propose a model of 'project capability building', consisting of two interactive levels of learning. The first level consists of three bottom-up, 'project-led' phases of learning that occur when a firm moves into a new technology or market base:

- An exploratory vanguard project phase to capture lessons learned;
- A project-to-project phase to disseminate lessons learned across projects;
- A 'project-to-organization' phase when the organization builds on lessons learned to develop capabilities it can apply to deliver many projects.

The second level is that of 'business-led' learning (within which the project-led learning is embedded) that occurs when top-down strategic decisions are taken to create and exploit company-wide resources and capabilities required to perform increasingly predictable and routine project activities.

The work of Prencipe and Tell (2001) is also relevant here. Drawing from Zolo and Winter (2002) while their work was still in print, they developed a framework to

analyze the learning abilities of project-based firms¹³. They proposed that mechanisms for inter-project learning draw upon learning processes and can be found at various levels of the project-based firm. Subsequently, they studied whether and how project-based firms are able to capitalize on knowledge that is acquired during the execution of one project and, by transferring it to other projects or parts of the organization. They concluded that personal relationships, possibly developed through participation in formal and informal networks, contribute to knowledge being more effectively deployed across projects.

Having described resources and capabilities and established their relationship and distinguishing features, the next section introduces the concept of ‘competence’.

3.2.3 The Concept of Competence

A number of efforts have been made to define the concept of *competence* both in reference to individuals and to organizations. At the level of the individual, Boyatzis (1982: 21) defined competence as ‘an underlying characteristic of a person, which results in effective and/or superior performance in a job’. He also explained that those underlying characteristics might be motives, traits, skills, aspects of one’s self-image or social role, or a body of knowledge that an individual uses, further adding that the existence and possession of such characteristics may or may not be known to the individual. At the level of the organization, McGrath et al. (1995: 251) defined competence as ‘the degree to which a firm or its sub-units can reliably and consistently meet or exceed objectives’. They further showed that an important correlation exists between organizational competence and the ‘comprehension’ of the organization’s management team of the objectives related to their efforts, as well as the ‘deftness’ of the organizational environment in which they operate. Building on the work of Weick and Roberts (1993), McGrath et al. (1995) described ‘comprehension’ as that organizational state that results from the process by which those individuals or teams pursuing an initiative come to adequately understand what combinations of resources

¹³ Zolo and Winter (2002) investigated the mechanisms through which organizations develop ‘dynamic capabilities’. They addressed the role of i) experience accumulation, ii) knowledge articulation and iii) knowledge codification processes in the evolution of dynamic capabilities, as well as operational routines. They argued that ‘dynamic capabilities’ are shaped by the co-evolution of these three learning mechanisms. They also argued that regarding codification, there is a need for some supporting structure. Significant departures from the guidance should not be entirely at the discretion of the task team, but should be subject to review and approval by a body that can assess the case in the light of the longer term interest in capability-building.

will allow them to achieve objectives¹⁴. In addition, they described ‘deftness’ as involving the creation of working relationships that allow those responsible for the initiative to execute effectively in light of comprehension. In particular, McGrath et al. (1995) advocated that ‘deftness’ allows an organization to perform - in the face of complexity - beyond the ability of any individual in the organization to grasp¹⁵.

3.2.3.1 Capability vs. Competence

There is not much agreement about the definitions of capabilities and competencies and the differences between them are not obvious from the literature developed in the field (Boyatzis, 1982; Prahalad and Hamel, 1990; Hamel and Prahalad, 1994; Teece et al., 1994; McGrath et al., 1995; Sanchez and Heene, 1997, Chinowsky et al., 2000). The terms are often used interchangeably, creating confusion both to scholars and practitioners. The confusion is worsened by the fact that those terms are almost never used in isolation but are always preceded by different adjectives (e.g. dynamic, functional, threshold, operational, organizational, strategic and core). However, there *is* a difference between the two, which can be understood if the words ‘capability’ and ‘competence’ are examined through a number of lenses (Zoiopoulos et al., 2006). First, we see that the Oxford English Dictionary defines the terms as follows:

- ‘Capability’ as the power or ability to do something;
- ‘Competence’ as having the necessary ability or knowledge to do something successfully.

Based now on the common origin of the words ‘competence’ and ‘competition’, it can be observed that the word capability has as a constituent the word ‘ability’, whereas the word competence has the word ‘petition’, which, combined with ‘com’ - meaning ‘comes with’ - suggests that a ‘competence’ is something which comes through the intentional realization of a process towards specific objectives. In strategic management theory however, capabilities are *also* linked with the achievement of a particular end result. The definitions, in combination with the brief etymological

¹⁴ McGrath et al. (1995) stressed that processes by which seldom-occurring events are treated (March, Sproull and Tamuz, 1991), by which newcomers are socialized (Burgelman, 1988) and by which the kinds of information regarded as legitimate are decided (Daft and Lengel, 1986) are examples of processes through which comprehension is either fostered or inhibited.

¹⁵ Weick and Roberts (1993) describe ‘group deftness’ as the emergence of a ‘collective mind’ in which activities performed by a group are interrelated so that desirable outcomes may be achieved and undesirable outcomes avoided.

analysis of the words ‘capability’ and ‘competence’, suggest that the difference between capabilities and competencies does not only lie in the fact that competence comes from the intentional process towards the realization of specific objectives, but that it is also related to the success of the end result. Along those lines, what truly makes the difference between a competence and a capability is the ‘consistency’ in successfully achieving that end result (Boyatzis, 1982; McGrath et al. 1996)¹⁶.

Although distinct, both capabilities and competencies exhibit ‘equifinality’ (Eisenhardt et al. 2000, Helfat and Peteraf, 2003), in that similar capabilities and competencies required in addressing market demands can be obtained by different competitors through various ways. It is the competence (McGrath et al., 1995), however, with which they are being developed and deployed that distinguishes one competitor from another. In the words of Helfat and Peteraf (2003: 999): ‘Simply because a capability may have reached a threshold level of reliability, does not imply that the capability has attained the highest possible level of functionality. Organizations may differ in the efficiency or effectiveness of a particular type of capability. To say that an organization has a capability means only that it has reached a minimum level of functionality that permits repeated, reliable performance of an activity. Some versions of capability are better than others’.

3.2.4 From Resources, to Capabilities, to Competencies

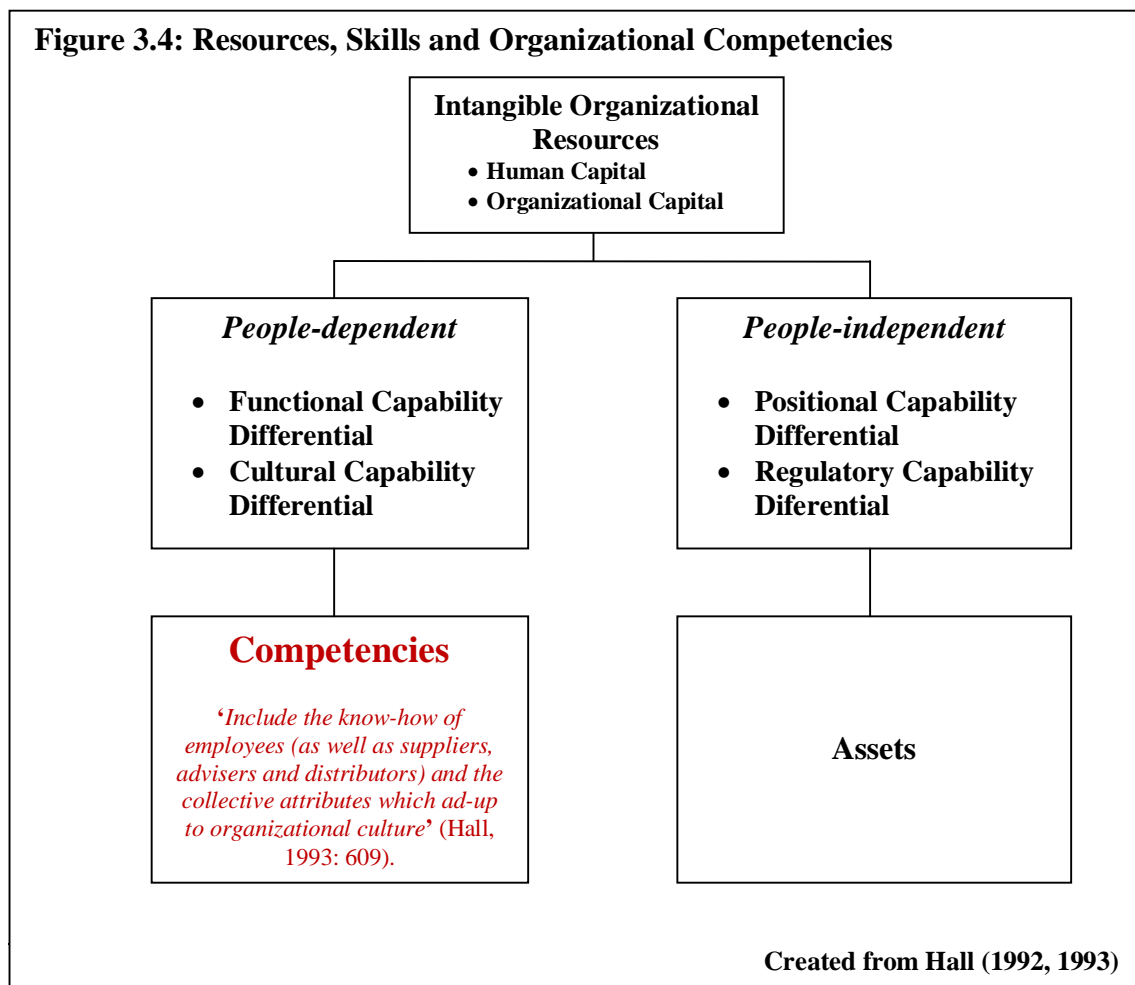
Coyne (1986) was the first to argue that superior performance of organizations is based on ‘capability differentials’ they possess over their competitors, with respect to how they coordinate their critical resources. Building on the work of Coyne (1986), Hall (1992, 1993) distinguished four types of capability differentials:

- ‘Functional Capability Differential’: relating to the ability of the organization to do specific things and resulting from the knowledge, skills and experience of employees and others in the value chain such as suppliers and distributors;
- ‘Cultural Capability Differential’: applying to the organization as a whole and incorporating the habits, attitudes beliefs and values, which permeate the individuals and groups which comprise the organization;

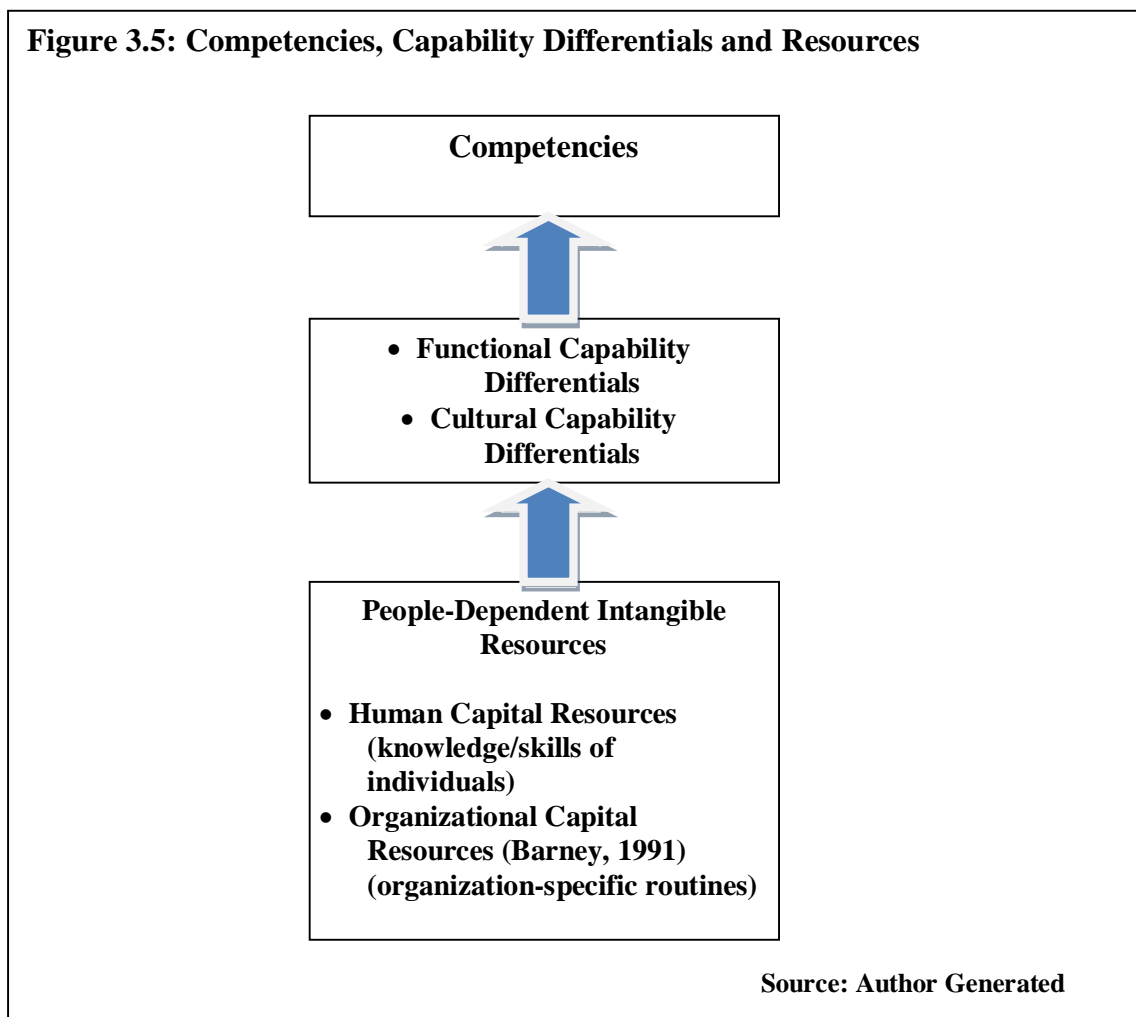
¹⁶ Boyatzis (1982), who examined competencies at the level of the individual, advocates they have characteristics that are *causally* related to effective and or superior performance in a job. This means that there is evidence that indicates that possession of such characteristics precedes competence and is responsible for effective and/or superior performance in that job. A capability is (a person’s) generic knowledge or skill which is essential to perform a job but is not causally related to superior job performance.

- ‘Positional Capability Differential’: resulting from past actions which have created for example a certain reputation with customers and/or certain configuration of the value chain;
- ‘Regulatory Capability Differential’: resulting from the possession of legal entities such as intellectual property rights, contracts and trade secrets.

Hall (1992; 1993) further explained that the last two are based on physical capital resources, whereas the first two are based on human and organizational capital resources¹⁷ and that they form part of an organization’s competencies. Hall (1992) referred to Barney’s (1991) physical capital resources as ‘tangible’ resources and to ‘human’ and ‘organizational capital resources’ as ‘intangible’ resources. Along those lines, he described organizational competencies as ‘intangible’, ‘people dependent’ organizational resources and further stated that ‘competencies include the know-how of employees (as well as suppliers, advisers and distributors) and the collective attributes which add up to organizational culture’ (Hall, 1993: 609). Subsequently, he linked competencies with capability differentials, people dependent skills and intangible organizational resources (Figure 3.4).



This line of argument assists in understanding that organizational-level competencies are supported by ‘functional’ and ‘cultural’ capability differentials over competitors, which in turn are constituted of bundles of ‘human’ and ‘organizational capital’ resources, which represent the collective learning of the organization (Prahalad and Hamel, 1990; Hamel and Prahalad 1994). So, it follows from Hall (1992, 1993) that competencies are based on people-dependent intangible resources that support a company’s functional and cultural capability differential over its competitors (Figure 3.5). Therefore, ‘human capital’ and ‘organizational capital’ resources (Barney, 1991) are the building blocks of organizational level competencies.



Later, Gorman and Thomas (1997) complemented Hall’s argument by pointing out that competencies are actually ‘value-adding combinations’ of resources and capabilities, concluding therefore that a competence is much more valuable than a capability and more difficult for competitors to detect or replicate¹⁸.

¹⁸ Similarly to ‘capabilities’, ‘competencies’ are value adding co-ordinations of resources (and capabilities) of an ‘intangible’ nature that go beyond the categories identified by Barney (1991; 2001) in that they are functionally-g geared towards the implementation of a specific activity.

In his attempt to describe and explain ‘competence development’, Hall (1992; 1993) argued that competitiveness could be achieved to the extent and speed that companies could build and exploit functional and cultural capability differentials. This means that sustainable competitive advantage depends on the ‘effectiveness’ with which companies (ICMs in this research) are deploying their dynamic capabilities (Nelson and Winter, 1982; Teece et al., 1997; Helfat et al., 2003; Winter, 2003) to develop their human and organizational capital resources.

This section has built on the theory reviewed in the previous sections to examine the relationships between resources, capabilities and competencies. As noted in Chapter 1 (viz. section 1.7), this research is interested in examining issues related to organizational level core competence (OLCC) development, not individual level core competence (ILCC) development, except insofar as how the latter influences the development of the former. Before describing the distinguishing features of ‘core competencies’ and positioning them within an organizational context, the following section briefly distinguishes between ‘individual-level core competencies’ (ILCCs) and ‘organizational-level’ core competencies (OLCCs).

3.2.5 The Level of the Individual and the Level of the Organization

At the level of the individual, the focus is on human capital resources as those have been defined by Barney (1991). At the level of the organization, the terms refer to social constructs (Nelson and Winter, 1982; Giddens, 1984; Prahalad and Hamel, 1990; Hall, 1992; 1993) and the focus is essentially on the combination and integration of ‘human’ and ‘organizational capital resources’ in the form of ‘bundles of human skills, knowledge and attributes and organizational processes’ respectively.

ILCCs relate to the work of Boyatzis (1982), Holmes and Joyce (1993), Iles (1993), Spenser and Spenser (1993) and Stewart and Page (1992) on job and managerial competencies along with training and development. With respect to ILCCs, there have been two major conceptualizations (Lahti, 1999). The first, resulted mainly from the work of the McBer consultancy in the US in the 1970s, in an ‘American Management Association’ initiative to determine the performance characteristics which differentiate superior managers from average managers. The research was recorded and published by Boyatzis (1982) in ‘The Competent Manager’. The second was brought forward by the work of the Management Charter Initiative in the late 1980s in the United Kingdom,

while establishing a national system for certifying or accrediting competence in relation to managerial education.

OLCCs relate to the work of Bettis and Prahalad (1986), Coyne (1986; Hamel and Prahalad (1989; 1994), Prahalad and Hamel (1990), Hall (1992; 1993), Prahalad (1993), Markides and Williamson (1994), Coyne et al., 1997; Sanchez and Heene (1997) and in construction Chinowsky, (2000), Lampel (2001) and Haan et al., (2003). They refer to the organization as a whole and have been described by the core competence theory's main proponents (viz. Chapter 1, Section 1.2) as a collection of desired skills, which are part of the collective learning of the organization and/or collective aptitudes that add-up to organizational culture.

Since core competencies are the collective learning of the organization, especially that related to the coordination of diverse production skills and the integration of multiple streams of technology (Prahalad and Hamel, 1990), it can be understood that the skills and competencies of individuals are an inextricable part of an organization's core competencies. In addition to often being tacit, the ILCCs employees have developed, have evolved along with the core competencies of the company they belong to, being shaped by them and shaping them at the same time¹⁹. This argument goes to show that, although not the same, ILCCs and OLCCs are interdependent.

Having distinguished between core competencies referring to individuals (ILCCs) and core competencies referring to organizations (OLCCs), further separating ILCCs to firm-specific and profession-specific, the purpose of the next section is to distinguish 'organizational-level' core competencies from non-core competencies. From this point onwards, the terms 'core competencies' will be used to refer to OLCCs, except when indicated otherwise.

3.2.6 Core Competencies

To grasp the distinguishing features of core competencies, one must consider their 'integrative' and 'coordinating' nature (Prahalad and Hamel, 1990; Hall, 1992; 1993; Hamel and Prahalad, 1994 and Markides and Williamson, 1994). Prahalad and Hamel (1990) and Hamel and Prahalad (1994) described core competencies as the collective learning in the organization, especially that related to the 'coordination' of

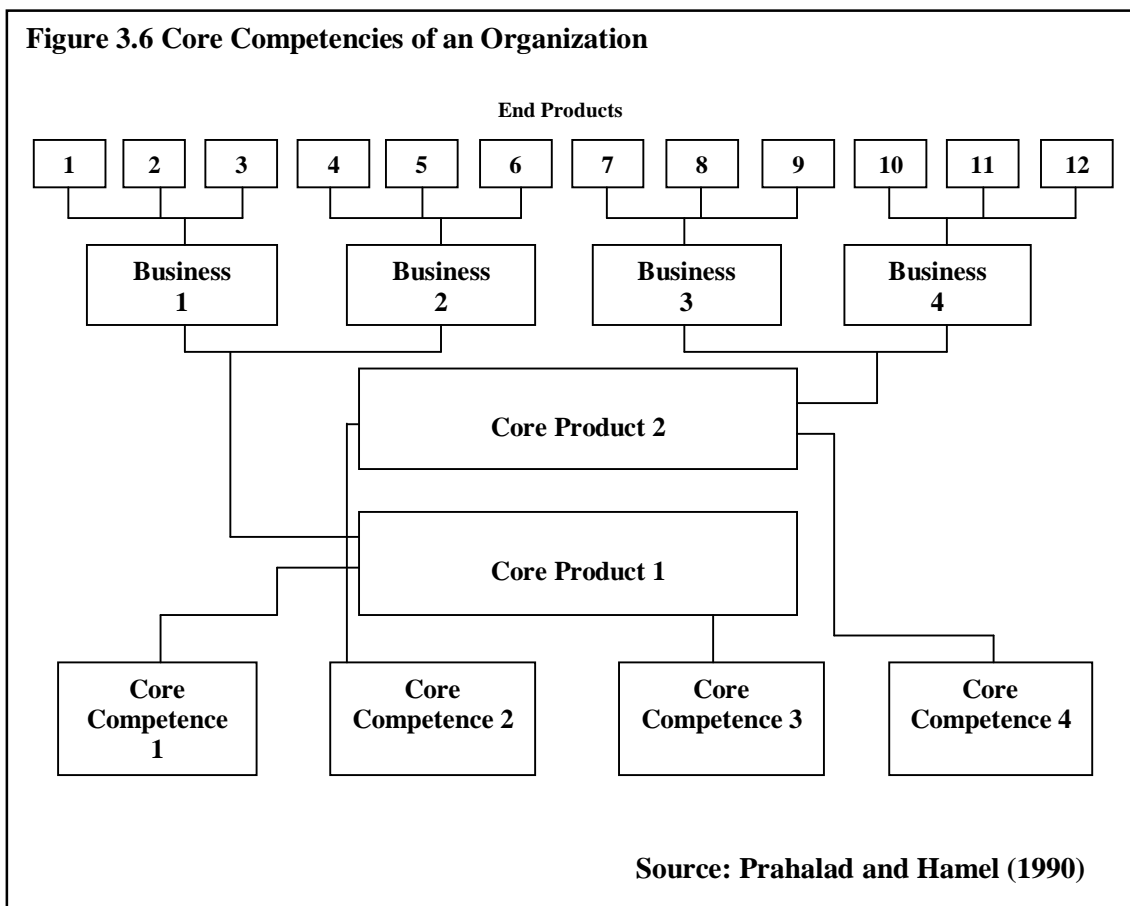
¹⁹ Penrose (1959; 1995) referred to such individuals as 'inherited managers', who she described as individuals with years of experience within their firm, holding senior positions, whose experience lies in their knowledge of their firm's specific resources (and core competencies) and the potential of using them in different ways.

diverse production skills and ‘integration’ of multiple streams of technology. In other words, they argued that core competencies manifest themselves through the integration and coordination of skills (potentially competencies) that exist within and are spread across the distinct, yet related units of the organizations they belong to. Hall (1992; 1993) went a step further and described core competencies as ‘social constructs’ constituting of skills of individuals and organizational routines through which those skills are being deployed. These descriptions recognize the importance of the skills (potentially competencies) of individuals in managing intra-organizational integration and coordination through company-specific organizational routines. Markides and Williamson’s (1994: 155) definition of core competencies as ‘the pool of experience, knowledge and systems that exist elsewhere in the same corporation, which can be deployed to reduce the cost or time required either to create a new strategic asset or expand the stock of an existing one’ further supports the argument for their coordinating and integrative nature. Consequently, it becomes clear that core competencies are a function of the knowledge/skills (potentially competencies) of individual organizational members and organization-specific routines that cut across organizational units, bringing together technologies and skills related to delivering services to the company’s end customers.

According to the core competence theory’s proponents (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994; Sanchez and Heene, 1996; 1997) an additional unique feature of core competencies is that they:

- Provide potential access to a wide variety of markets;
- Make a significant contribution to the perceived customer benefits of the end product;
- Are difficult for competitors to imitate.

Prahalad and Hamel (1990) positioned core competencies in an organizational context, distinguishing between ‘core competencies’, ‘core products’, ‘core businesses’ and ‘end products’ (Figure 3.6). They used the metaphor of a ‘tree’ to describe core competencies in diversified, multi-business unit (BU) organizations, describing the trunk and major limbs as ‘core products’, smaller branches as ‘business units’, leaves and fruits as ‘end products’ and core competencies as the ‘roots’ that keep the tree alive. Building on the ‘interdependence’ between the parts of a living organization (the tree), they further argued that by focusing on core competencies, organizations can create unique, integrated systems that reinforce the ‘fit’ among diverse production and



technology skills - a systemic advantage that competitors cannot easily copy²⁰. They described ‘core products’ as the tangible link between identified core competencies and ‘end products’, characterizing them as the physical embodiments of core competencies. To illustrate this with a construction-specific example, where a core competence may be ‘managing subcontractors’, the core product would be ‘concrete frames’, the BUs ‘residential construction’ and ‘commercial construction’ and the end products ‘residential buildings’ and ‘commercial offices’.

After conducting research on engineering-procurement-construction (EPC)²¹ firms from a number of countries including the United States, Canada, the United Kingdom, France, Malaysia and Japan, Lampel (2001) concluded that they base their operations on essentially four types of core competencies:

- ‘Entrepreneurial’: which are directly related to capturing contracts. Those are experience-based and depend on detecting opportunities as they emerge, or even better, on stimulating the emergence of opportunities by bringing project ideas to the attention of potential clients;

²⁰ For a competitor that may acquire some of the technologies that constitute specific core competencies, it will be more difficult to duplicate the more or less ‘comprehensive’ patterns of internal coordination and learning that support them.

²¹ Those are the types of firms that are most common in the ‘process engineering’ sector (Morris, 2004) - viz. Chapter 2, Section 2.3.

- ‘Technical’: which relate first and foremost to the effective use of technological knowledge and engineering know-how²²;
- ‘Evaluative’: which relate to transforming opportunities to contracts at a profit. Those core competencies are invariably a mixture of formal and informal processes. An evaluation of a project’s cost relies on the tacit expertise and experience of engineers and managers²³;
- ‘Relational’: which are created by the fact that projects are relational systems that bring together a wide range of actors and institutions with different roles and different amount of influence to facilitate or hinder the development of the project. The most important interaction at which relational core competencies are deployed is that between EPC firms and their clients.

He argued that in the case of project-based service firms, where final products are defined by the unique requirements of individual clients/end consumers, there are no core products or core technologies to link final products with core competencies. Instead, there are core processes that describe the life-cycle of most - if not all - projects, from an exploratory formulation of the basic project concept - usually involving contacts with potential clients - to detailed technical studies and costing estimates, bid preparation and project execution²⁴.

Building on Hamel and Prahalad (1994) and Lampel (2001), it is worth noting that the word ‘core’, apart from being used to describe competencies with the distinctive ‘integrating’, ‘coordinating’ and ‘value-adding’ features described in this section, is also used to describe the relativity of ‘competencies’ with the ‘core businesses’ of the company that possesses them. In construction, Langford and Male (2001) describe core businesses as those that possess some or all of the following characteristics:

- Where the company has a long standing interest and has built-up a considerable expertise;
- Where a fairly substantial turnover is generated;

²² As opposed to entrepreneurial competencies, those are programmable, in that they can be broken down, analyzed and described in detail. In addition, they are relatively accessible, as their knowledge base can be obtained through traditional education methods.

²³ Evaluative core competencies are based on the two elements of judgment and memory. Judgment is based on the tacit knowledge of employees whereas memory, has both a tacit and explicit element. Tacit in the case of the memory of individuals who have worked in the past in similar projects and explicit in the case of organizations who analyze and record data on the projects with which they have been involved.

²⁴ This point links back to Davies and Hobday’s (2005) concept of ‘project capability’ and could be used to argue that in a project-based management context, there is room for the existence of ‘project core competencies’.

- Where reasonable market growth can be expected or where the firm has a captive market;
- Where there are low capital requirements.

So, for example, for a company that has been involved in the last fifty years with ‘building’ and ‘civil’ engineering general contracting, ‘managing sub-contractors’ may well be a core competence, whereas ‘secretarial support’ at the head office may not, even though secretarial support may indeed be provided ‘competently’ to the company’s staff and executives.

Prahalad and Hamel (1990) argued that the ‘decentralization’ that often accompanies diversified/divisionalized organizations - such as ICMs (viz. Chapter 2, Sections 2.6 and 2.8) - makes it difficult to focus on core competencies. Instead, individual BUs become increasingly dependent on outsiders for critical skills and critical components. Hence, they forego the core competencies to develop core products that contribute to the competitiveness of a wide range of end products/services. They advocate that the manifestation and deployment of core competencies necessitates communication across BUs, involvement and a deep commitment to working across organizational boundaries, as these tasks involve many levels of people and all functions. Finally, they argue organizational leadership often fails to develop core competencies, because it fails to escape the ‘BU’ mindset and develop an understanding of its organization as a portfolio of core competencies. They summarize the implications of the two mindsets on the following table (Table 3.1).

Table 3.1: BU-Mindset vs. Core Competence Mindset		
	BU	Core Competence
Basis for competition	Competitiveness of today’s products	Inter-firm competition to build competencies
Corporate structure	Portfolio of business related in product-market terms	Portfolio of competencies, core products and businesses
Status of the business unit	Autonomy is sacrosanct; the BU ‘owns’ all resources other than cash	BU is a potential reservoir of core competencies
Resource allocation	Discrete businesses are the unit of analysis; Capital is allocated business by business	Businesses and competencies are the unit of analysis top management allocates capital and talent.
Value added of top managers	Optimizing corporate returns through capital allocation trade-offs among businesses	Enunciating strategic architecture and building competencies to secure the future.

Being captured in a ‘BU’ mindset, organizational leadership often lacks the vision to build core competencies, as well as the means to ‘assemble’ resources, capabilities

and competencies spread across multiple BUs. A BU mindset can lead to the ‘imprisonment’ of resources. As a BU evolves, it often develops unique competencies. Typically, the people who embody these competencies are seen as the sole property of the BU in which they ‘grew’. Often, BU managers are reluctant - or even refuse - to give them to another BU’s manager who may ask to borrow them. This problem is also present regarding innovation. Individual BUs will pursue only those innovation opportunities that are close at hand. Conceiving the corporation in terms of core competencies widens the domain of innovation.

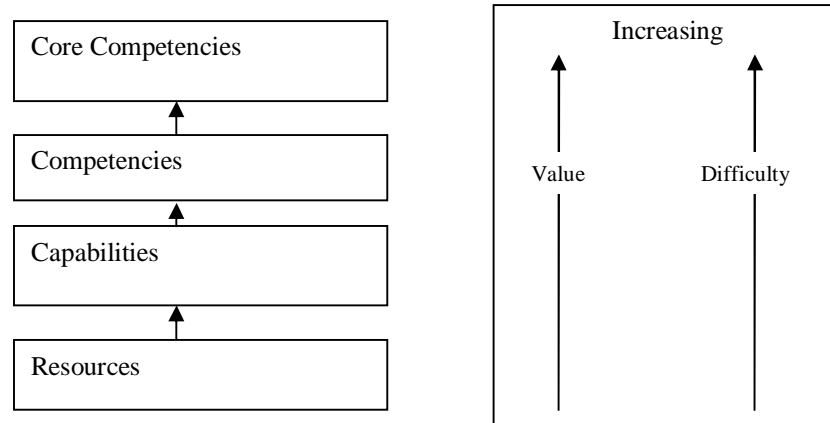
Core competence theory postulates that competition for the future is unlikely to fit neatly within single BU boundaries, but will most likely require the contribution of numerous organizational BUs and functions. This is why the theory’s main proponents (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994) advocated that competing for the future must be a corporate responsibility - not just the responsibility of individual BU heads - noting that this responsibility may be ‘exercised by a group of corporate officers or, preferably, a cohort of BU heads working horizontally across the organization’ (Hamel and Prahalad, 1994: 32). The core competencies needed to access the new opportunities may be spread across a number of BUs and it is up to the enterprise to bring these competencies together at the appropriate point and time within the corporation (Hamel and Prahalad, 1990).

Sections 3.2.1 to 3.2.5 have described the relationships between resources, capabilities, competencies and core competencies, while distinguishing between those referring to organizations and those referring to individuals. The purpose of the following section is to build on the theory reviewed in this chapter so far, to develop a model that can capture the relationship between resources, capabilities, competencies and core competencies, while positioning and describing them within an organizational context, such as the diversified context of the ICMs studied in this research and described in theory in Chapter 2.

3.3 The Competence Hierarchy, its Critical Review and a New Model

As already introduced at an earlier stage of this chapter (viz. Section 3.2), the first attempt to describe the relationships between resources, capabilities, competencies and core competencies within a single coherent framework was made by Javidan (1998) (Figure 3.1 also shown here as Figure 3.7). The model presents resources as the building blocks of capabilities, competencies and core competencies.

Figure 3.7: The Competencies Hierarchy



Source: Javidan (1998)

The theory reviewed in this chapter so far has made clear the existence of such a ‘hierarchical’ relationship but has also demonstrated the interrelationships between the different hierarchical levels. The competence hierarchy developed by Javidan (1998) does assist in developing an understanding of the relationship between resources, capabilities, competencies and core competencies. However, it does not provide a framework that can be used to adequately address, identify and examine in parallel their interrelationships and those of their constituting elements. First and foremost, it does not distinguish between the different types of resources (physical, human and organizational) (Barney, 1991) that the firm exploits through the deployment of capabilities, competencies and core competencies. Consequently, it does not address that the manifestation of organizational capabilities involves the integration of multiple knowledge bases (Grant, 1996a,b). Second, it does not directly link different types of resources with the elements of capabilities they correspond to. In other words, it does not provide a link to explain that it is the ‘human capital resources’ which embody the knowledge, skills, attributes and other characteristics of individuals needed to coordinate other types of resources and that it is the ‘organizational capital resources’ that constitute the organizational routines, which dictate the norms through which individuals conduct a company-specific activity. This brings us to the third limitation of Javidan’s existing model, the fact that it is not inclusive enough of terms that can distinguish between the level of the individual and the level of the organization, when addressing the distinction between capabilities, competencies and core competencies.

Fourth, Javidan's model does not demonstrate that core competencies are manifested through the inter-BU integration and coordination of resources, capabilities and competencies. Finally, the model is not inclusive enough to be used as a theoretical platform in explaining the evolutionary and transformatory processes taking place from the lowest level of the competencies hierarchy to the highest²⁵.

Considering therefore the five points outlined above, it became evident that a more 'inclusive' and 'holistic' competencies hierarchy should be developed to position and describe core competencies within the context of multi-BU organizations, such as the ICMs that this research studies.

3.3.1 The New Competence Hierarchy

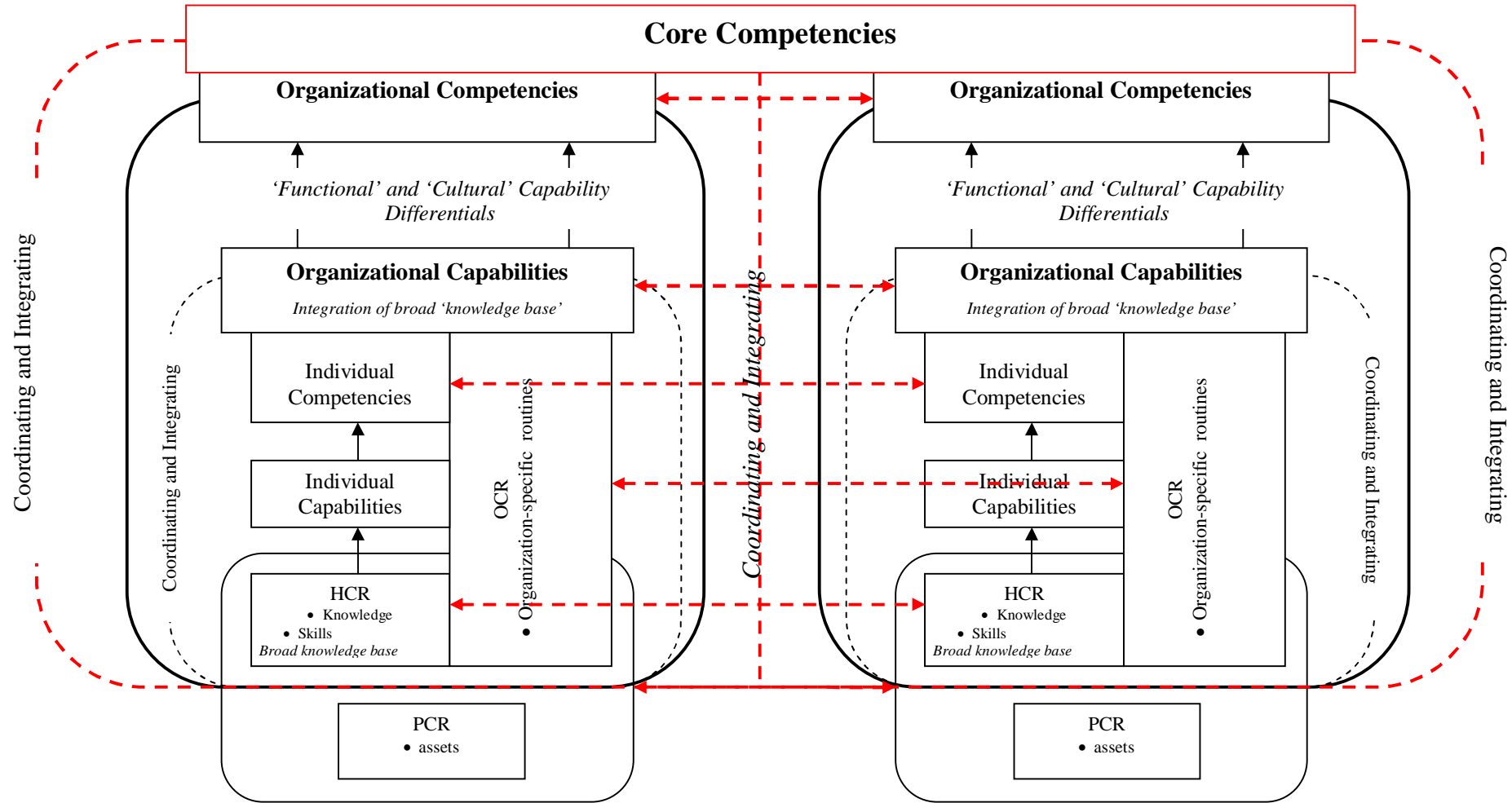
The theory reviewed in this chapter so far has demonstrated that core competencies are complex 'social constructs', created from the intra-organizational 'integration' and 'coordination' of resources, capabilities and competencies, while at the same time they are supported by 'functional' and 'cultural' capability differentials that the organization possesses over its competitors. In order to better understand their nature and 'positioning' within an organization-specific context, a new model is brought forward in this section, developed for the purpose of this study (Figure 3.8).

The 'new competence hierarchy' is not a hierarchy of authority and control, but a hierarchy of 'integration' and 'coordination' - both in the horizontal and vertical dimensions. At the base of the hierarchy are i) human capital resources (HCRs) - and more importantly the broad base of specialized knowledge, skills and other attributes held by individual organizational members, ii) organizational capital resources (OCRs), in the form of formal and informal processes and routines and iii) physical capital resources (PCRs), in the form of assets (fixed and financial). At the first level of integration are organizational capabilities, which deal with specialized tasks. Competencies are organizational capabilities that exhibit a 'functional' and 'cultural' capability differential over the capabilities of competitors and which, when deployed, consistently deliver desired results. Core competencies are at a higher level of integration, requiring wide-range, cross-functional and cross-BU integration.

To highlight their 'integrative' and 'coordinating' nature, Figure 3.8 shows core competencies as spread across more than one organizational unit and demonstrates with the use of arrows the interrelationships that may exist between them. Since core

²⁵ The arguments developed in sections 3.3.1-3.3.2 are based on Zoiopoulos et al., 2008a.b.

Figure 3.8: The New Competencies Hierarchy



Source: Author Generated

competencies are spread across distinct, yet related, BUs of an organization, Figure 3.8 highlights the importance of the ‘horizontal organization’ (viz. Chapter 2, Section 2.8) across BUs in deploying and developing them. The figure also demonstrates that the inter-BU integration and coordination necessary for core competencies to be deployed can take place at different levels of the organizational hierarchy, which in turn helps explain that different types of ‘horizontal organization’ devices are required to leverage core competence elements that belong to different levels of the competence hierarchy.

Along those lines, the new competencies hierarchy can help in identifying different levels of inter-BU coordination and collaboration through which core competencies are manifested and deployed. Specifically:

- Individual level core competence (ILCC) leverage, including:
 - Knowledge transfer: in practice through knowledge management systems and inter-BU employee networks.
 - Employee mobilization: implemented in practice when individuals who have been recognized as ‘embodying’ elements of their organization’s core competencies are mobilized across BUs to positions of authority/responsibility;
- Process/routine replication across BUs: in practice often accompanied by ‘employee mobilization’, since it is individuals who possess the knowledge of how ‘routines’ operate in different organizational settings and their tacit knowledge is paramount for the routines’ successful replication;
- Organizational-level competence leverage which, in practice, refers to a situation during which two distinct BUs will ‘coordinate’ at a high-level to ‘integrate’ their ‘outputs’, without having integrated or coordinated at lower levels of the hierarchy.

All these levels of intra-organizational integration and coordination are implemented through ‘horizontal organization devices’ and should - according to core competence theory proponents - form part of the corporate responsibilities ‘exercised by a group of corporate officers, or preferably, a cohort of BU heads working horizontally across the organization’ (Hamel and Prahalad, 1994: 32), for core competencies to be effectively deployed and developed.

In addition, Figure 3.8 demonstrates that both ‘operational’ and ‘dynamic’ mechanisms of core competence development are ultimately based on the coordination and integration of ‘human’ and ‘organizational’ capital resources (Barney, 1991; Hall, 1992, 1993) through organization-specific routines. Hence, it can be used to address how the development of human and organizational capital resources that support companies’ functional and cultural capability differentials over their competitors relate to the development of core competencies. It could also be used to identify the mechanisms organizations have in place to transform capabilities to competencies and core competencies (Zoiopoulos et al., 2008).

It is argued here that this model overcomes the limitations of the one proposed by Javidan (1998) (Figure 3.1 and 3.8), by being more inclusive of related work in the field and hence more appropriate to address the complexities that the issues related to core competence development pose. It is in itself a theoretical contribution to knowledge, as it is much more inclusive of core competence dimensions and can therefore facilitate a more rigorous and detailed examination of core competence development in an organizational context - necessary to investigate this research.

Finally, Figure 3.8 helps in being able to propose a more accurate definition of core competencies, which is in itself a contribution to knowledge in the field, and for this research in particular, it enables to operationalize the concept and examine it within this research’s scope. Along those lines, the following definition is proposed:

‘Core competencies are the skills, knowledge and behavioural attributes of individual organizational members and the organization-specific routines through which they are being deployed, manifested through mechanisms for their intra-organizational ‘integration’ and ‘coordination’ that provide the organization they belong to with the competence (functional and cultural differential) to obtain and retain access to a wide variety of markets and add value to end products/services in a manner recognizable by end users/clients as superior to alternative providers of similar products/services.’

From this definition it can be understood that core competencies are simultaneously part of and deployed through, the ‘structural properties’ and ‘social practices’ of an organization, and supports the approach adopted in this research (viz. Chapter 1, Section 1.5), that the issue of how the combinations of organizational configurations influence the effectiveness of ICMs’ core competence development can

be viewed through the lens of ‘structuration’ (Giddens, 1979; 1984) within organizational social systems.

Having developed a model that can be used to identify the relationships between the different types of resources, capabilities, competencies and core competencies, the purpose of the next section is to position and describe those within the context of an organization, such as the ICMs this research studies.

3.4 Core Competencies in Organizations

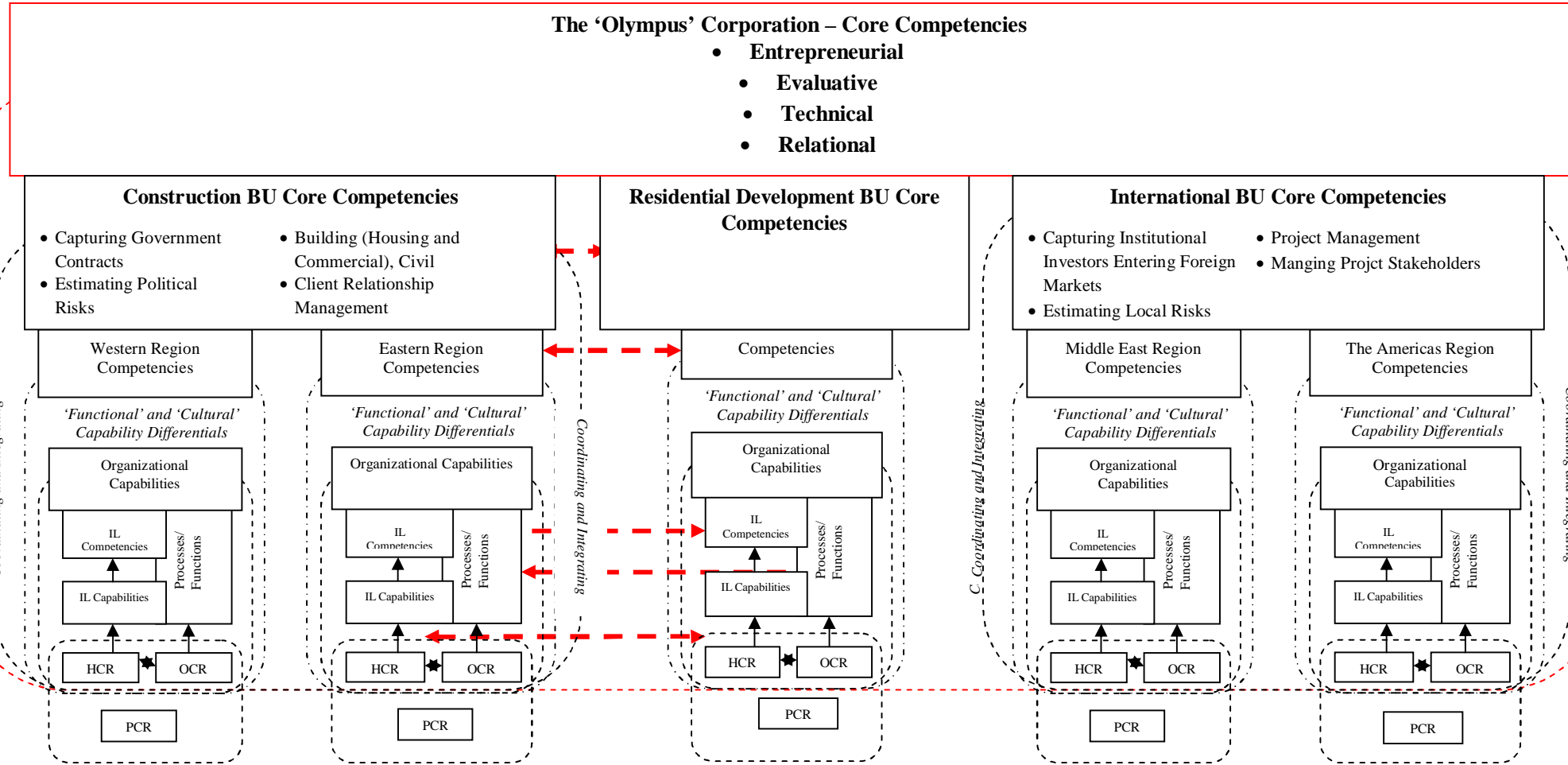
The purpose of this section is to fuse theory from Chapter 2 (viz. Section 2.6 to 2.9) with the theory reviewed and developed in this chapter so far, to demonstrate how ICMs could be perceived as a ‘portfolio of competencies’ (Hamel and Prahalad, 1994) rather than a portfolio of BUs. Such a fusion will enable the reader to visualize simultaneously the structural, functioning and core competence characteristics of ICMs. Towards that end, the new competencies hierarchy developed in the previous section is deployed.

On Figure 3.9²⁶, the ‘Olympus Corporation’ is portrayed as a portfolio of core competencies instead of a portfolio of BUs. Each BU (International, Construction and Housing) is shown as a competence hierarchy on its own, and the corporation as a whole as coordinating and integrating these competencies to deploy and develop its existing core competencies. Core competencies are shared by Olympus’ BUs since they are all related to the corporation’s core businesses.

Figure 3.9 highlights with red arrows the importance of a ‘horizontal organization’ (Galbraith, 1973; Mintzberg, 1979; 1989; Porter, 1985) in the deployment and consequently development of core competencies. In Chapter 2 (viz. Section 2.8), it was proposed that this horizontal organization should contain mechanisms that could facilitate and develop inter-BU employee networks, fostering thus the development of ‘trust’ and ‘social capital’ within the organization - which has been associated with effective inter-BU resource (knowledge) exchange (Ghoshal et al., 1994; Malnight, 1995; Grant, 1996a,b; Tsai and Ghoshal, 1998). Therefore, it could also lead to effective stretching and leveraging of resources and core competencies.

²⁶ Essentially the fusion of Figure 2.6 from Chapter 2 and Figure 3.8 from this chapter.

Figure 3.9: Core Competencies of the ‘Olympus Corporation’



Source: Author Generated

Such a horizontal organization could allow resources, capabilities, competencies and core competencies to be leveraged across distinct, yet related organizational units. It can allow, for example, tapping tacit expertise and experience of engineers and managers in ‘evaluating’ projects that pose similarities but are undertaken by different BUs, or tapping ‘technical’ core competencies (e.g. ‘Building’ from the construction BU on Figure 3.9) that would be required by another BU of the corporation (e.g. when the ‘Housing Development’ BU might wish to diversify towards commercial development).

In light of the argument developed in this section so far, it can also be understood that ‘structural’ and ‘functioning’ characteristics of organizations - particularly related to the horizontal organization between their BUs - have to be considered by their leadership when ‘exhibiting strategic intent’ and ‘crafting strategic architecture’, to be able to proactively develop plans to overcome obstacles that may arise during core competence development. In such a way, ideas for solutions on these issues will be ‘integrated’ within an organization’s core competence development strategy execution (viz. Chapter 1, Figure 1.2) maximizing thus the potential for its effective implementation.

Through Figures 3.8 and 3.9, it becomes clearer now how issues of inter-BU coordination and integration reviewed in Chapter 2, relate to core competence manifestation and development within multi-BU organizations. Examining the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies will explore these issues for the case of ICMs. Consequently, insights could be developed that will contribute to our knowledge and allow suggestions to be made in order to improve the performance of such organizations.

3.5 Concluding Remarks

Chapter 3 has defined and described key terms related to the resource-based view of the firm, evolutionary economics, organizational behaviour and organizational learning within the context of core competence theory. With the ‘new competencies hierarchy’ (Figure 3.8), the first step was taken in describing core competencies within ICMs (Figure 3.9). Chapter 4 will build on the analogy drawn between the execution of a core competence development strategy and Mintzberg’s (1978) strategy process, as well as the issues this chapter has identified regarding the nature of core competencies, to propose five, generic, corporate-level activities as the most influential to effective core competence development.

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Chapter 4: Core Competence Development and the Research Question

4.1 Introduction

The purpose of this Chapter is twofold. First, to review and link management control theory with the theory reviewed and developed in Chapters 1-3, to propose a number of generic, corporate-level activities through which core competence development can be effectively controlled. Second, to link these activities, in conceptual terms, back to the primary research question (viz. Chapter 1, Section 1.7) in order to set the stage for its ‘operationalization’ in the following chapter.

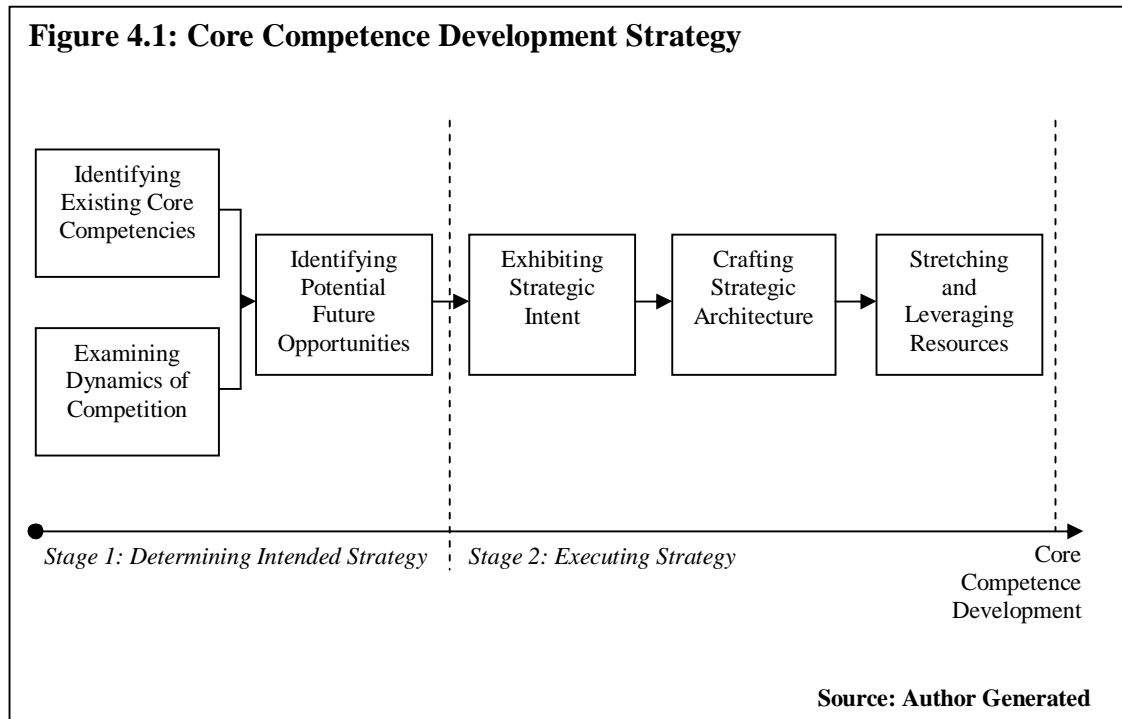
4.2 Core Competence Development and Management Control

In Chapter 1 (viz. Section 1.7), it was noted that this research is *an exploratory study to understand the relationship between the organizational configurations that international construction majors (ICMs) adopt and the effectiveness with which they develop their core competencies*. It was also explained that ‘configuration’ is a term referring both to the ‘structural’ and ‘functioning’ characteristics of organizations and that this research would focus on examining issues related to ‘organizational-level’ core competence development, not ‘individual-level’ core competence development, except insofar as how the later influences the development of the former. Building on the analogy drawn between core competence development and Mintzberg’s (1978) strategy process, it was then proposed that this research’s purpose would be fulfilled by addressing the following research question:

‘How do the configurations that ICMs adopt influence the effectiveness with which they execute a core competence development strategy?’

Having described ICMs as project-based, diversified and internationalized multi-BU organizations (viz. Chapter 2) and having defined and positioned core competencies within the context of ICMs (viz. Chapter 3, Section 3.4), the purpose now becomes one of describing - in theory - what it is exactly that the execution of a core competence development strategy entails.

Hamel and Prahalad (1994: 32) described core competence development as ‘a corporate responsibility, exercised by a group of corporate officers, or preferably, a cohort of business unit (BU) heads working horizontally across the organization’. To develop therefore a better understanding of the organizational activities the undertaking of this corporate responsibility involves, it would be helpful to initially revert to the description of the competing for the future, core competence theory ‘philosophy’ first introduced in Chapter 1. Figure 1.2 from Chapter 1 is reproduced here (Figure 4.1) to assist towards that end.



As shown, Stage 1 of a core competence development strategy involves:

- Identifying existing core competencies¹;
- Examining dynamics of competition²;

¹ A number of methods have been brought forward in the strategic management literature to identify the core competencies of an organization. Although outside the scope of this research, they are outlined here as they are helpful in understanding the perception that exists regarding the nature of core competencies and their development, in practice and within the academic community:

- Tampoe (1994) proposed a reverse engineering approach which starts with end products and decomposes them to identify the core competencies.
- Galon et al. (1995) outlined a modular approach for the identification of core technical competencies which starts by constructing an inventory of capabilities.
- Coates (1996) proposed a top-down method which picks the core competencies intuitively and then de-aggregates them into critical capabilities.
- Marino (1996) described a two phase method for developing consensus on a firm’s core competencies and capabilities which starts by profiling the current product/market situation and then assesses capabilities in terms of future market opportunities.
- Bakker et al. (1994) proposed a process which begins internally interviewing individuals; the potential core competencies are then evaluated after interviews with customers, competitors and industry experts.

- Identifying future potential opportunities.

As clarified in Chapter 1 (viz. Section 1.7), the focus of this research is on the ‘execution stage’ (Stage 2) of core competence development. Adopting the notion of core competence development as an intentional effort of organizations in a changing environment (Barnard, 1938; Mintzberg, 1978), core competence development ‘execution’ can be described from theory as consisting of the following activities:

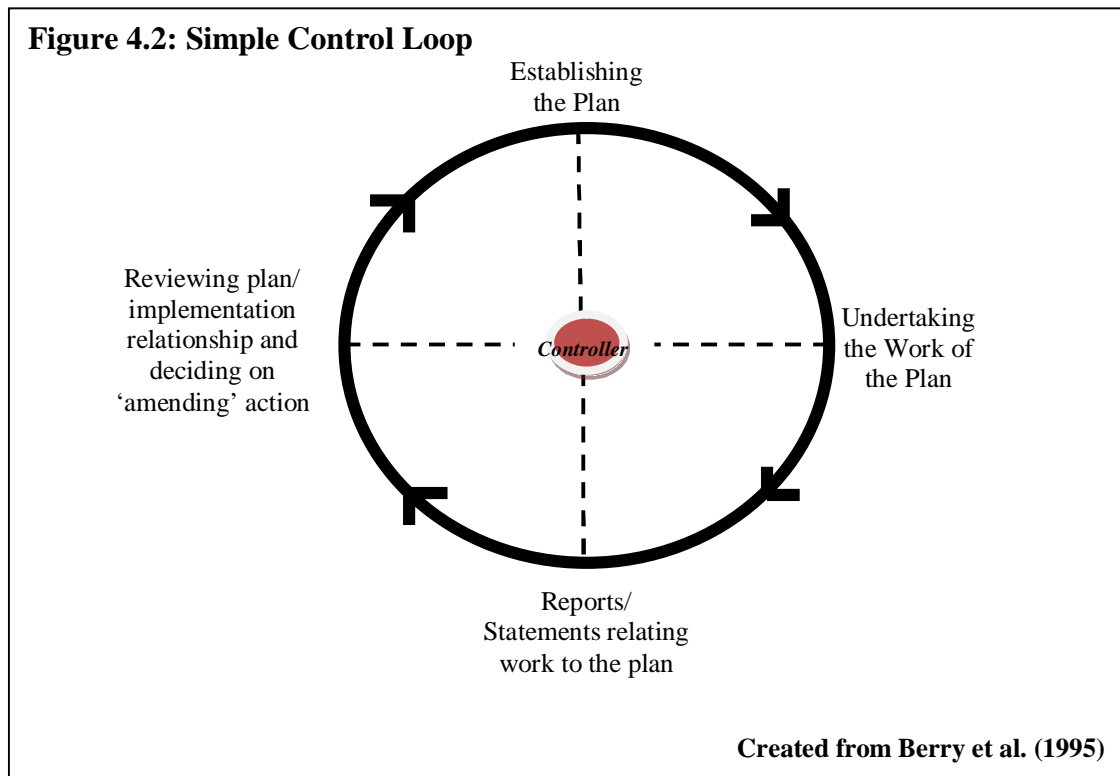
- Exhibiting strategic intent (SI);
- Crafting strategic architecture (SA);
- Stretching and leveraging resources and core competencies.

Building on the analogy drawn between ‘core competence development’ and Mintzberg’s (1978) ‘strategy process’ (viz. Chapter 1, Section 1.5 and 1.7), it can be understood that, from a management theory point of view, the effectiveness with which a core competence development strategy can be ‘executed’, is an issue of ‘management control’. Adopting Barnard’s (1938) point of view of organizations as ‘purposive’ entities and Beer’s (1959) point of view of organizations as ‘exceedingly complex probabilistic systems’ - in line with core competence theory’s notion of organizations ‘exhibiting strategic intent’ - Berry et al. (1995: 4) defined management control as ‘the process of guiding organizations into viable patterns of activity in a changing environment’. In that sense, they argued that control includes both regulating the process of formulation of ‘purpose’ (i.e. exhibiting strategic intent and crafting strategic architecture) and regulating the processes of ‘purpose achievement’ (i.e. stretching and leveraging resources and core competencies). Subsequently, they argued that without some control mechanisms, purposive organisational behaviour would degenerate into a composite of uncoordinated activities that are unlikely to possess the cohesion necessary for continued organisational survival and development³.

² Though outside the scope of this research, it is worth mentioning some techniques available to decision makers, for them to analyze market environments and determine how those are related to their company’s strengths. The most relevant to the core competence approach is SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis, which can be used to identify strengths and weaknesses of a company with respect to the opportunities and threats it faces in the markets it competes or wishes to compete in. Additional tools and techniques are Porter’s (1985) five-forces and competitor analysis (Chen, 1996).

³ The theory of management control links back to the theory of ‘cybernetics’. Cybernetics was coined by Wiener (1948) to denote an area of study which covered the entire field of control and communication theory, whether in the machine or the animal. Beer (1959; 1966) attempted to adapt the principles of ‘cybernetics’ to organizations. He described ‘cybernetics’ as the scientific study of the nature of control, not in the narrow sense of command and giving orders, but in the subtle sense of ‘self-regulation’ and ‘adaptability’. He argued that the principles of cybernetics can be applied to ‘exceedingly complex probabilistic systems’, which he described as ones that have become so complicated that they cannot be

According to Beer (1959), one of the key ideas that underlie ‘control’ is the mechanism of ‘feedback’. Through feedback mechanisms, a ‘controller’ will take care of disturbances to the system, whose causes may be external and unknown. In ‘cybernetic’ terms therefore, feedback mechanisms are crucial to the system’s ability to ‘self-regulate’. Building on Beer (1959), Berry et al. (1995) described management control using a ‘simple control loop’ scheme (Figure 4.2), consisting of the following



elements. First is a process of establishing the patterns of activities to be undertaken in the future, which constitutes the ‘plan’. Second is a process for undertaking the work that is contained in the plan and measuring the work that is done in relation to the plan. Third concerns creating reports and statements relating the work done to the work specified in the plan. Fourth concerns reviewing the relationship between the expected and actual pattern of activities and deciding what, if anything, should be done about it. Echoing Beer (1959), Berry et al. (1995) also argued that in any control loop, there is a requirement for a ‘controller’ or ‘decision-maker’ to make decisions that would change either the ‘input mix’ or the ‘transformation process’ to achieve the desired end result. They considered controllers to be managers or groups of managers, such as a company’s organizational leadership. Along those lines, it can be argued that in the context of the

described in a precise and detailed fashion, and therefore, no precisely detailed prediction can be given about their behavior. Beer considered companies to be cybernetic systems and argued that they should be designed and controlled as such.

ICMs this research intends to study, ‘controllers’ are the ICMs’ management and organizational leadership⁴.

4.3 Generic, Corporate-Level, Core Competence Development Activities

From the previous section, it emerges that the activities explicitly proposed by core competence theory (i.e. ‘exhibiting SI’, ‘crafting SA’ and ‘stretching and leveraging resources and core competencies’) fall short when wishing to address:

- The ‘regulative’ processes necessary to integrate emerging with intended strategies;
- The qualities and availability of ‘controllers’ responsible for making decisions for ‘regulating’ and potentially ‘reinventing’ their organization’s strategies.

For the exploratory purpose of this research to be adequately fulfilled, these last two points have to be incorporated in the study. Consequently, two more generic, corporate-level activities are proposed as effectively shaping core competence development:

- Regulating SA implementation;
- Developing managerial and organizational leadership capacity.

Even if the corporate-level activities identified so far appear to be adequate to describe core competence development, they still fall short in addressing the ‘transformation’ that ICMs - and organizations in general - go through during core competence development⁵. What is missing are feedback mechanisms, in addition to those of ‘regulating SA implementation’, through which knowledge created as the system operates can be captured through organizational learning mechanisms⁶ and utilized by the system’s controllers, potentially leading to decisions about changes/improvements in social practices, structural properties and organisational

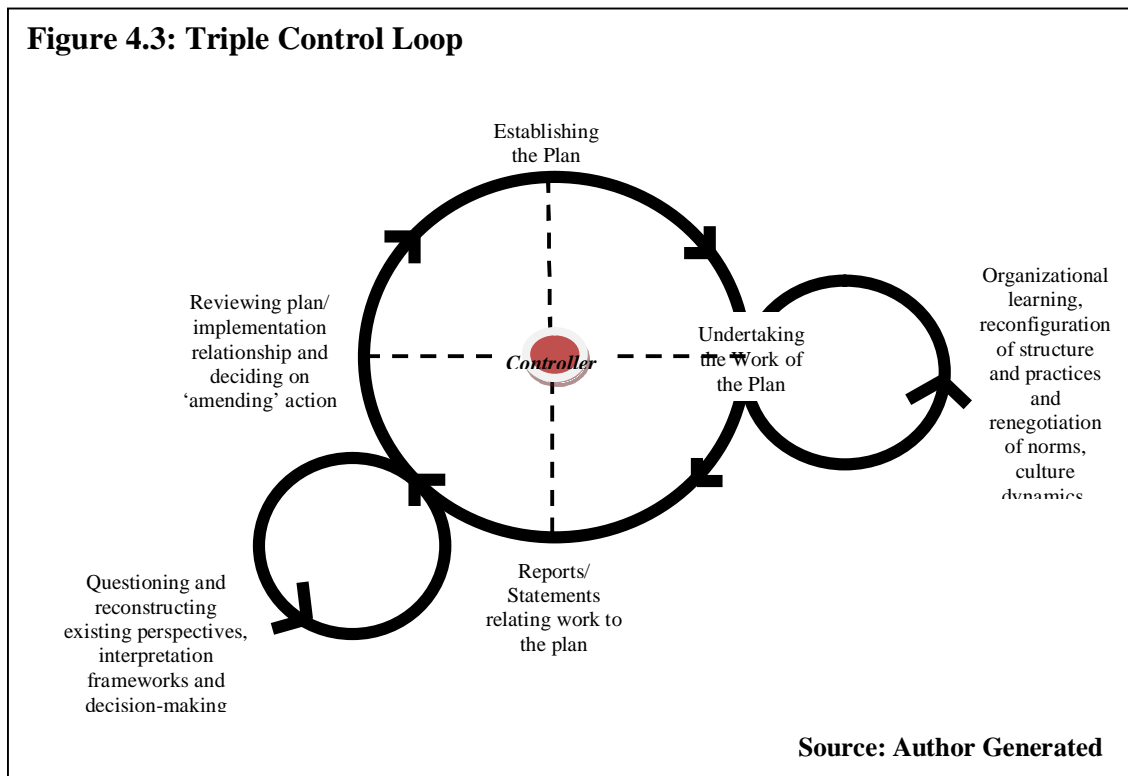
⁴ Kotter (1990: 1996) distinguishes between management and leadership by putting forward the thesis that management is about dealing with complexity, whereas leadership is about coping with change. In addition, he argues that leadership is responsible for creating organizations in the first place, or, adapting them to significantly changing circumstances. In that capacity, organizational leadership is the ‘designer’ of its organization (in cybernetic terms) and a ‘feedback controller’ that acts as the system’s self-regulator.

⁵ Giddens (1979) argued that models of systems, especially those tied to the notion of ‘homeostasis’ (such as cybernetic systems), will not suffice to illuminate some of the key issues posed by the analysis of social systems. Bringing back the ‘system’ simply in a state of ‘homeostasis’ - as is the purpose of controllers acting on feedback mechanisms in cybernetic systems (Beer, 1959) - does not suffice.

⁶ Viz. Chapter 1, Section 1.3.6

norms. Re-negotiation of organisational norms has to do with culture and politics within the organization and may or may not involve any learning. Indeed, on occasions it could stifle it. Along those lines, ‘management control’ - as described by Berry et al. (1995) - can take the form of a ‘triple control loop’ (Figure 4.3).

The argument developed so far, demonstrates that for a holistic examination of core competence development, the mechanisms through which ICMs ‘learn’ from their experience as well as the mechanisms through which this knowledge is transferred, integrated and diffused corporate-wide need to be considered.



Such a ‘feedback’ mechanism is, in combination with regulating strategic architecture implementation, an integral component of the organization’s dynamic capability (Teece et al., 1997). It will be referred to for the purpose of this research as: ‘improving business practices’.

Having proposed five generic, corporate-level activities, through which core competence development can be effectively controlled, the next five sections will review them and link them back to core competence theory issues and the research question.

4.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture⁷

Prahalad and Hamel (1990) argue that exhibiting SI and crafting SA, forces the organization to identify and commit to the linkages across business units (BUs) that will provide a basis for value to be created. They argue that it is consistency in resource allocation and the development of an ‘administrative infrastructure’ that links laterally organizational units, that creates a managerial culture of teamwork, a capacity to change and a willingness to share resources across BUs. In construction, Chinowsky and Meredith (2000) argue that the way strategic intent (SI) is exhibited and strategic architecture (SA) is crafted has important implications, because it establishes a roadmap that employees, managers and executives can each look to for guidance in daily and long-term decisions. Along those lines, it could be argued that when exhibiting SI and crafting SA, organizational leadership should make provisions for:

- Recognition to be given to BU directors who implement their work with an inter-BU collaborative spirit;
- Rotating employees across BUs from early on in their career;
- Tracking and guiding competent managers;
- Creating ‘communities’ transcending BUs, for individuals whose ‘competencies’ are closely related to the ‘core competencies’ of the organization.

The importance therefore is ‘exhibiting SI and crafting SA’ to establish a ‘core competence mind-set’ (viz. Chapter 3, Section 3.2.6), that will foster inter-BU coordination and collaboration at later stages of strategy execution.

SA should make resource allocation priorities transparent to the entire organization, as it is critical for management not only to ‘comprehend’ the objectives emanating from the SI exhibited, but also to develop a clear understanding of where the resources it will utilize towards that end exist within their organization and how they can be obtained. This will create a ‘deft’ environment⁸ in which organizational leadership, management and other employees can pursue corporate objectives in light of comprehension (McGrath et al., 1995).

⁷ Although presented in theory as two distinct activities, in reality, exhibiting strategic intent and crafting the strategic architecture to realize it occur simultaneously. Therefore, from now on in the thesis they will be considered interdependently.

⁸ Which, as already explained, is a ‘prerequisite’ of organizational competence (viz. Chapter 3, Section 3.2.3.1)

In addition, alignment of ‘individual’ with ‘organizational’ objectives is necessary to ensure the alignment of individual-level and organizational-level core competencies so that corporate strategies - such as core competence development - can be effectively pursued (Kaplan and Norton, 1992; 1996; Harari, 1994; Lahti, 1998). Consequently, SI and SA have to be exhibited and crafted in a way that ensures the objectives of individual employees are aligned with organizational objectives and strategies, to create a more co-operative organizational environment in which employees can collectively work towards strategy execution. Numerous techniques have been developed to link individual with corporate objectives, such as appropriate reward systems, clarity of career progression paths and, at more senior management levels, leadership development and succession planning programs. The most prominent approach is Kaplan and Norton’s (1992, 1996) ‘Balanced Scorecard’, a structured method through which organizational objectives are communicated in a way that ensures corporate strategy is translated to strategies for individual employees, creating personal goals against which the performance of individuals can be monitored.

In the light of this research’s question, what has been reviewed so far highlights that examining ‘the relationship between the configurations ICMs adopt and the effectiveness with which they develop their core competencies, requires examining the relationship between their configuration and the effectiveness with which they ‘exhibit SI and craft SA’. This involves investigating whether:

- A core competence mindset is developed during that stage of the strategy process;
- Alignment is achieved between corporate objectives and the objectives of individual employees;

4.3.2 Regulating Strategic Architecture Implementation

‘Regulating SA implementation’ is inextricably linked with ‘exhibiting SI and crafting SA’. Often, in the context of unintended outcomes (Giddens, 1979) emerging issues may require an organization to alter its intended strategies (Mintzberg, 1978), both on a regular and irregular basis. New strategies might emerge out of necessity to respond to external forces acting on the company, or internal efforts of managers to adapt in a continuously changing market environment (Lawrence and Lorsch, 1967; Galbraith, 1973; Peters and Waterman, 1984). In construction, Langford and Male (2001) argued that companies demonstrating good strategic management processes have

mechanisms that permit strategies to be changed if external or internal circumstances necessitate this. Linking this point back to ‘management control’ and ‘cybernetics’ theory (viz. Section 4.2), it can be understood that ‘feedback’ mechanisms must exist to provide a link between ‘exhibiting strategic intent and crafting strategic architecture’ and strategy execution.

Mintzberg (1979; 1989) observed that companies often set-up management information systems (MIS) as a way of gathering, integrating and reporting information up the hierarchy. He observed that as information passes through each hierarchical level, it is aggregated until finally, it reaches the strategic apex as a broad summary of overall organizational performance. In reality, managers at different ‘hierarchical’ levels can (and often do) interrupt these flows to make decisions appropriate to their own level. Information on exceptional situations that cannot be handled at a given level is passed up the hierarchy until it reaches a manager with the necessary formal authority to handle them. These information systems serve the purpose of ‘feedback’ mechanisms, which allow management to review information and decide on whether and how to integrate ‘emerging’ with ‘intended’ strategies, or, abandon intended strategies in favour of new ones. In practice, these reviews can range from more ‘strategic’ ones (e.g. strategic reviews, annual reviews, investment decisions) to more ‘operational’ ones (e.g. monthly reporting and management review processes, project reporting, project selection) and from more ‘reflexive’ to more ‘reflective’ ones (Giddens, 1984).

The issue this section highlights as worthy of examination within the context of this research is that of ‘the relationship between the combinations of configurations that ICMs adopt and their ability to ‘regulate’ strategic architecture implementation in a manner that permits them to change strategies if internal or external circumstances necessitate this. In the absence of knowledge about the above, the relationship between the combinations of configurations that ICM adopt and the effectiveness with which they execute a core competence development strategy - and consequently develop their core competencies - cannot be adequately understood.

4.3.3 Stretching and Leveraging Resources and Core Competencies

As noted in Chapter 1 (viz. Section 1.2), core competence theory stipulates that organizations stretching and leveraging their existing resources and core competencies, will manage to develop them quicker and more cost effectively than their competitors that do not (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994). Javidan (1998)

argues that successful stretch and leverage requires an organizational culture that fosters and values collaboration and joint thinking, learning and decision making across intra-organizational boundaries, as well as an organizational environment of ‘trust’ and ‘respect’, where employees are prepared to learn from each other.

In Chapter 2 (viz. Sections 2.6 and 2.8), issues related to intra-organizational (inter-BU) coordination and resource exchange within ICMs were discussed. It was identified that:

- Inter-BU employee networking leads to greater ‘social interaction’, which could lead to greater ‘trust’ and ‘social capital’, leading to better inter-BU collaboration (Tsai and Ghoshal, 1998; Tsai, 2000);
- A ‘horizontal organization’ is required for intra-organizational collaboration to take place in the context of multi-BU organizations, such as ICMs (Galbraith, 1973; Mintzberg, 1979; 1983; 1989; Porter, 1985);
- Inter-BU employee networks are effective for sourcing and transferring knowledge (Ghoshal and Bartlett, 1990; Tsai, 2000) and critical competencies.
- Shared ‘vision’, ‘values’ and ‘norms’ between BUs are positively related to resource exchange and combination across BUs (Tsai and Ghoshal, 1998);

In addition, the project-based management literature reviewed (e.g. Davies and Brady, 2000; Brady and Davies, 2004 and Prencipe and Tell, 2001), highlighted (viz. Chapter 2, Section 2.7 and Chapter 3, Section 3.2.2.3 and 3.4) that project-based organizations, such as ICMs, require ‘knowledge management’ and ‘organizational learning’ routines to be effective in leveraging resources and core competencies across projects - and potentially BUs. Such routines could allow ICMs to ‘redeploy’ knowledge across different projects/organizational contexts. This would enable ICMs to overcome the obstacles created by the ‘divisionalization’ inherent in diversified configurations, and leverage intra-organizationally the human-dependent, intangible element of their core competencies, embedded in the tacit knowledge of their individual organizational members.

In the light of this research’s question, what has been reviewed in this thesis so far indicates that examining the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies, requires an examination of the relationship between the configurations they adopt and the effectiveness with which they stretch and leverage their resources and core competencies. Having defined and described core competencies within the context of a

multi-BU organization (viz. Chapter 3, Section 3.4), this would involve investigating the relationship between the configurations ICMs adopt, and the effectiveness with which they:

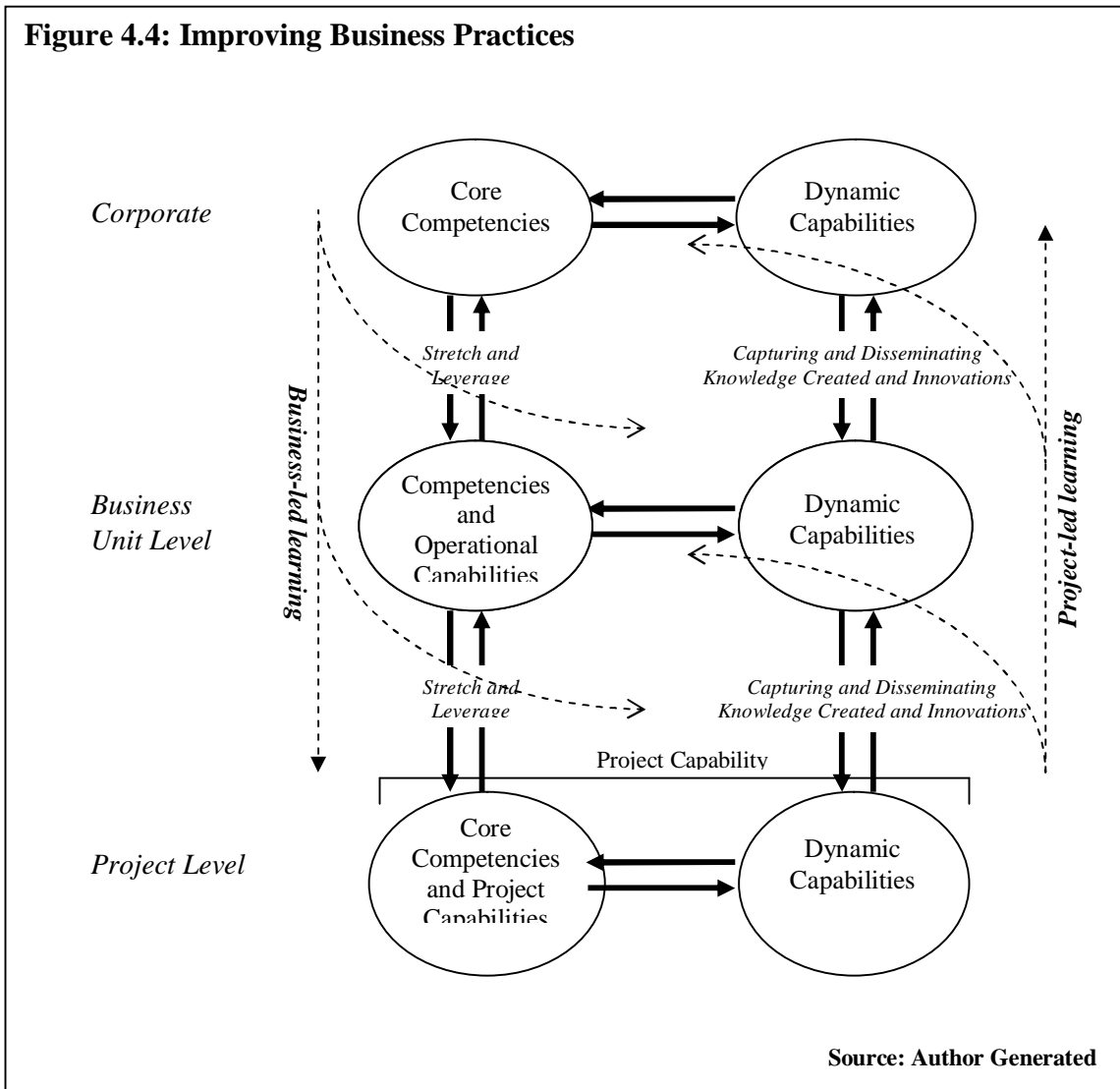
- Transfer knowledge across BUs;
- Mobilize employees across BUs;
- Replicate routines across BUs;
- Integrate organizational-level BU-specific competencies.

4.3.4 Improving Business Practices

In the process of developing its core competencies a company will inevitably have to re-engineer critical business processes to improve their effectiveness (Hamel and Prahalad, 1994 and in construction, Chinowsky and Meredith, 2000). As noted in Chapter 1 (viz. Sections 1.3.5 and 1.3.6), organizational learning could lead to changes in norms, standard operating procedures, structures and cultures (Lipschitz et al., 2002). In a project-based business environment - as the one in which ICMs operate - Brady and Davies (2004) recognized that learning through projects is one of the main ways through which organizations interact with, and are changed by, their environment. In their attempt to capture knowledge and experience gained through projects, some firms establish organizational learning mechanisms to systematically collect, analyze, store, disseminate and use information (Popper and Lipschitz, 2002). In the absence of such mechanisms 'there is a risk that the knowledge and experience gained is lost when projects finish, teams dissolve, and their members move on to other projects or are reabsorbed into the organization (Davies and Brady, 2004).

Beginning with 'project-based learning' (Brady and Davies, 2004; Davies and Hobday, 2005), knowledge captured at projects can be effectively evaluated by management at a BU and corporate levels, leading to reconfigurations of structure and practices and re-negotiation of norms. Depending on the relationship between BUs, the corporate-centre and other BUs, these changes could be applied corporate-wide through 'business led learning' (viz. Chapter 3, Section 3.2.3.1). Consequently, for an organization to effectively develop its core competencies, organizational routines have to exist that capture innovations and knowledge created at the project level, as well as an organizational structure with 'functioning' characteristics that allow these innovations and knowledge to be evaluated, disseminated and redeployed corporate-wide (Figure 4.4).

Figure 4.4: Improving Business Practices



In the case of ICMs, which exhibit structural properties of project-based organizations, understanding how changes in business processes, management practices and organizational routines takes place is made particularly complex by the uniqueness of projects (Hobday, 2000; Davies and Hobday, 2005). Although the development of effective routines can lead to the development of long-term project capabilities, embedding change is difficult (Bresnen et al., 2005). As it often interferes with (or is seen to interfere with) project management practices and can potentially disrupt the existing organizational power/knowledge balance. As a result, the examination of the influence configurations ICMs adopt exerts on the organizational routines through which they improve their business practices could provide insights related to the influence their configurations exert on the effectiveness with which they develop their core competencies.

4.3.5 Developing Managerial and Organizational Leadership Capacity

Prahalad (1993) argued that the critical role of management and organizational leadership in core competence development, is to create the capacity to stretch and leverage corporate resources. It becomes therefore evident that the role of organizational leadership to act upon multiple responsibilities, as entrepreneur and resource allocator (Chandler, 1962), creator of structural context (Bower, 1970), establisher of standard operating procedures and resolver of conflict (Cyert and March, 1963; 1992) and finally, creator of purpose and challenger of status-quo (Bartlett and Ghoshal, 1993), is crucial to the effective execution of a core competence development strategy. To do this in the context of ICMs, management and organizational leadership should be competent in managing inter-BU 'relationships', to actualize the latent economic potential of related diversification⁹. Leadership therefore should comprehend inter-BU 'social network' relationships and utilize the social capital of the organisation by putting personal social networks of individuals to work for the organisation's benefit (Burt, 1992; Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998)¹⁰.

Along those lines, Nahapiet and Ghoshal (1998) proposed that leadership development needs to evolve to a level of contribution whereby it is considered an investment in the 'social capital' of the organisation. Mehra, Dixon, Brass and Robertson (2006) found that differences in leaders' social networks were related to differences in the economic performance of their organizations¹¹.

Availability of such individuals could reduce 'instability', and lead to higher organizational performance, highlighting the value of managerial and leadership availability in smooth leadership transitions (Rothwell, 2006). This brings forward the significance of professional development, succession planning and leadership development programs, which apart from being formal training functions, could also be informal functions facilitating the socialisation of promising managers across BUs and into the corporate upper echelons, by¹²:

⁹ Viz. Chapter 2, Section 2.8

¹⁰ The importance of organizational leadership's social capital links back to the work of Helfat and Peteraf (2003) on 'capability development' (viz. Chapter 3, Section 3.2.2.3)

¹¹ This brings forward the importance of a 'relational' model of leadership (Drath and Palus, 1994), at the heart of which are commitments in the form of 'mutual obligations', which are supported by reciprocated trust and respect (Brower, Schoorman and Tan, 2000).

¹² In a cross-case comparison of four international construction majors, Zoiopoulos et al. (2008) compared the systems four ICMs have in place for leadership development and observed that the earlier their involvement in an employee's career and the more centralized the strategy for the coordination across BUs, the greater the social capital developed between employees and the greater the level of trust between employees from different BUs.

- Assuring intra-organizational mix of management and leadership;
- Focusing on ‘social capital’ component formation, critical in the global team-based mechanisms that need to enable and coordinate the influence of specific ‘relational’ capabilities (potentially competencies and core competencies).

Within the context of this research therefore, managerial and leadership development emphasizes ‘social capital’ development resting on a foundation of ‘interpersonal’ competencies, built in social networks’, on a foundation of ‘mutual trust and respect’ (Drath, 2000; McCawley, 2000).

The focus of this research is on ‘organizational-level’ core competence development, not ‘individual-level core competence’ (ILCC) development, except insofar as how the latter influences the development of the former. Thus, this research is not interested in investigating how ICMs develop the ILCCs of their employees, but rather how they maintain and increase the capacity of a specific ‘pool’ of human resources within their organization, containing the individuals capable of shaping organizational strategy and influencing the development and deployment of core competencies. Along those lines, addressing this research’s question requires investigating the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their managerial and organizational leadership capacity.

4.4 Controlling Core Competence Development: Issues and the Research Question

This chapter has so far proposed that core competence development can be effectively controlled through the following five generic, corporate-level activities:

- Exhibiting strategic intent and crafting strategic architecture;
- Regulating strategic architecture implementation;
- Stretching and leveraging resources and core competencies;
- Improving business practices;
- Developing managerial and organizational leadership capacity.

To address this research’s question - that is, ‘*how do the configurations that ICMs adopt influence the effectiveness with which they execute a core competence development strategy*’ - the influence of the ICMs’ configuration on the effectiveness with which they conduct each of the activities should be examined. However, effective

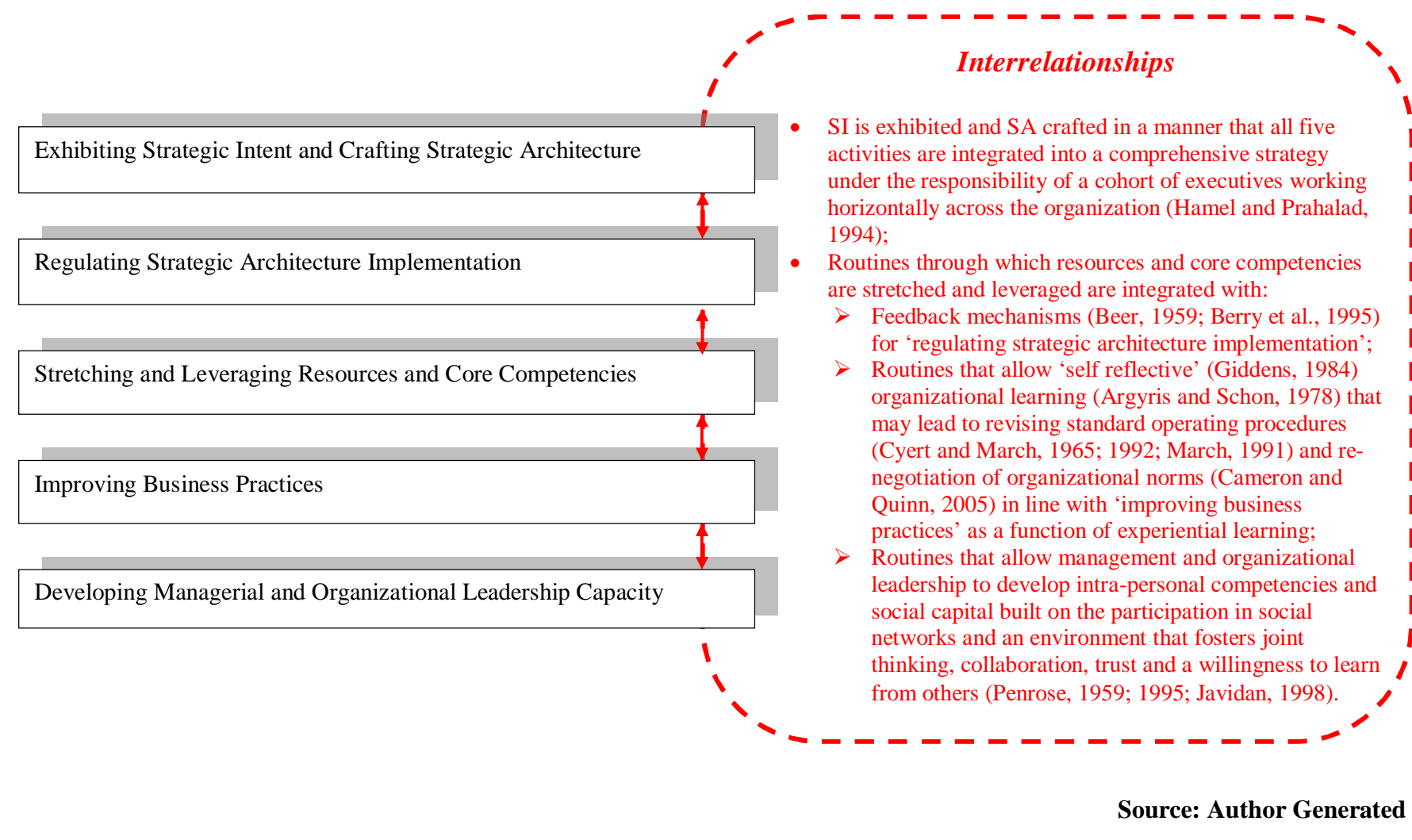
core competence development does not only depend on the effectiveness with which the corporate-level activities are conducted in isolation, but also on the effectiveness with which they are conducted collectively. This is related to the extent that ‘interrelationships’ between them are actively managed, which in turn determines the extent to which they are integrated into a comprehensive corporate strategy, under the responsibility of a cohort of BU heads working horizontally across the organisation (Hamel and Prahalad, 1994)¹³. What this entails regarding their interdependencies can be better understood with the help of Figure 4.5.

In light of the above, it is proposed that in order to address this research’s question, an appropriate methodology to collect and analyze data should be developed to examine how the combinations of configurations that ICMs adopt influence the effectiveness with which they conduct the five, corporate-level, core competence development activities and manage their interrelationships. Such a methodology will also produce results that will contribute to our knowledge regarding the following issues:

- What is the relationship between the configurations that ICMs adopt and:
 - The development of corporate strategies with optimal potential for effective implementation;
 - The effectiveness with which they integrate emerging with intended strategies when externally or internally generated circumstances necessitate this;
 - The effective intra-organisational (inter-BU) stretching and leveraging of resources and core competencies;
 - Effective organizational learning, which may lead to the reconfiguration of their social practices, structural properties and the re-negotiation of their organizational norms;
 - The effectiveness with which they can develop their managerial and organisational leadership capacity;
 - The effectiveness with which core competence development can be controlled by a cohort of BU heads working horizontally across the organization.

¹³ ‘Interrelationships’, within that context, refer to how integrated the core competence development activities are, not how ‘integrated’ the distinct BUs of the ICM are. Therefore, interrelationships relate with how ICMs economize on resources when implementing the corporate-level, core competence development activities, by ensuring that they are individually conducted in line with corporate objectives set-out in the SI exhibited and the SA crafted.

Figure 4.5: Interrelationships between Activities



In the absence of knowledge about these issues, the relationship between the ICM's configurations on the one hand, and effective core competence development on the other, cannot be adequately understood. Therefore, no suggestions could be made to improve their performance. Addressing these issues will contribute to our knowledge regarding the 'gaps' in core competence theory identified in Chapter 1, Sections 1.5-1.6.1.

4.5 Concluding Remarks

This chapter has fused 'cybernetics' and 'management control' theories with the theory reviewed and developed at earlier parts of this thesis, to propose five generic, corporate-level activities through which the development of core competencies is effectively controlled. The purpose from this point on becomes one of developing and implementing a research methodology to collect and analyze data from ICMs related to the routines through which they conduct each of these activities, linking them back to the ICMs' configuration. In light of this, the following chapter will present and describe the methodology through which this research was conducted.

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Chapter 5: Research Methodology

‘One must learn how to distinguish the unintelligible truth behind the observable illusion’

Milan Kundera

5.1 Introduction

This chapter describes the methodology through which this research was undertaken. First, why critical realism was adopted as an epistemological approach is explained. This is followed by an explanation of why it was decided to use a qualitative research method and a case-study strategy. Subsequently, the process through which the research was conducted will be described, starting from how the companies were chosen, the techniques used to collect and analyze data and the display formats constructed to present them at the case studies and their cross-case comparison. The Chapter will conclude by explaining why the methodology is appropriate for this research’s explanatory and exploratory nature.

5.2 Choosing the Epistemological Approach

A number of philosophical approaches exist regarding what constitutes knowledge, its value and the validity of how it has been created. The most widely used in management research are positivism, empiricism and realism (Griseri, 2002). Positivism claims to be objective yet embodies an underlying ‘normative’ approach in the form of values and idealised models that are conceptually or theoretically ‘value-laden’ (Krige, 1979; Sayer, 1992; Smyth et al., 2006). Empiricism has been argued as being inappropriate in clearly identifying causal processes and hence provide explanations (May, 2003). Causes can be identified inductively if that is recognized as possible, but identification tends to be linear. Recognising other factors (usually contextual) can inhibit identification of causes where context is not seen as a legitimate

research object. Both positivism and empiricism therefore, are not appropriate for the purpose of this research¹.

‘Realism’ has as one of its major objectives to identify the underlying structural mechanisms of everyday social life, such as the interactions between people and the mechanisms that make those possible in the first place (Collier 1994, Sayer, 1999; May, 2003). Explanations depend on identifying local mechanisms and how they work in practice, and discovering if they have been activated and under what conditions. It also recognizes processes and context (Sayer, 1999). Thus, realism is more appropriate to ‘recognize the complexity of reality’ (Smyth et al., 2006) and facilitate an analysis of causation (Sayer, 1999).

A branch of realism - the two are frequently, and wrongly, conflated (Smyth et al., 2006) - that has enjoyed a particular boost in social sciences with the works of Bhaskar (1975) is ‘critical realism’. Critical realism distinguishes not only the world and our experience of it, but between the ‘real’, the ‘actual’ and the ‘empirical’, defining these in a special way (Bhaskar, 1975). When the critical realists refers to the real this is not in order to claim privileged knowledge of it, but to note two things. First, the real is whatever exists, be it natural or social, regardless of whether it is an empirical object and whether we happen to have an adequate understanding of its nature. Second, the real contains the realm of ‘objects’, their ‘structures’ and ‘powers’. Whether the objects are ‘physical’, like minerals, or ‘social’, like bureaucracies, they have certain structures and causal powers, that is, capacities to behave in particular ways, and causal liabilities or passive powers, that is, specific susceptibilities to certain kinds of change. Critical realism emphasizes the importance of identifying and examining these ‘structures’ and ‘powers’ (Bhaskar, 1975; Sayer, 1999; Smyth et al., 2006).

The strength of the critical realist approach is its ability to deal with causality and complexity in context (Smyth and Morris, 2007). This aligns with the path dependent nature of core competencies, their evolutionary nature and the evolutionary

¹ In addition to ‘positivism’ and ‘empiricism’, two more approaches were briefly considered but rejected, namely ‘subjectivism’ and ‘constructivism’. Subjectivism is the doctrine that all knowledge is limited to experiences by the self and that transcendent knowledge is impossible. As a result, adopting such an approach here would not allow making generalizations and drawing conclusions applicable across different contexts. Constructivism holds that knowledge comprises ‘mental’ constructs that have emerged in the attempt to explain sensory experience and - similarly to subjectivism - that ‘meaning’ and ‘knowledge’ are human constructions. However, this approach holds that concepts stemming from two different social formations are entirely different and incommensurate. Along those lines, it is impossible to make comparative judgments from two different contexts. This approach is at odds with the objectives of this research and therefore inappropriate to be applied here. The argument developed here does not insinuate that subjectivism and constructivism are epistemological approaches of lesser significance than positivism, empiricism and realism. On the contrary, they constitute major streams of human reasoning. However, they are not appropriate to examine the issues that this research addresses.

change of ICMs as organizations, as well as with the ‘contingency’ notion that is inherent in the concept of the organizational configuration. Consequently, it was decided that critical realism is the most closely aligned with this research’s demands. The ICMs are organizational social systems with ‘structures’ and ‘powers’, that is, capacities to behave in different ways. The purpose of this research is to collect data in order to identify their structures and their particular behaviour, manifested in their organization-specific routines. From these, it aspires to draw conclusions, as to their capacity to allow core competencies to emerge. Critical realism will facilitate the development of a methodology that will assist in identifying these organizational issues.

5.3 Choosing Between a Quantitative and a Qualitative Research Method

There has been an extensive debate over the use of research methods in social science, with the two opposing views being quantitative and qualitative methods. This debate has also heated up among construction management researchers (Seymour and Rooke, 1995; Seymour et al., 1997; Rooke et al., 1997; Runeson, 1997; Harris, 1998; Wing et al., 1998; Raftery et al., 1997) but has not been conclusive. The approach adopted in this research is that the choice of method should be determined depending on the type of research question to be answered.

Quantitative research is characterised by the development of hypotheses drawn out of a literature review and are subsequently tested. Typically, statistical analysis is used to produce research findings (Fellows and Liu, 1997; Amaratunga et al., 2001). This research method is popular in positivism and for some empiricist approaches.

Qualitative research is often used for the exploration of a subject area in which only a limited amount of ‘objective’ knowledge exists. Therefore, the nature of qualitative research is often ‘explanatory’ and ‘exploratory’, with the aim to gather and analyse information from which new knowledge can be produced. Qualitative research is sometimes referred to as ‘hypothesis generating’ as it often needs to precede quantitative research (Fellows and Liu, 1997; Amaratunga et al., 2001).

This research was of an exploratory and complex nature. Consequently, the use of quantitative research methods would not make it possible to significantly further the knowledge already existing in the domain. Qualitative research fits well with the study of areas where little knowledge exists. This is the case in this research, which aspires to gather and investigate data from a construction context, from which we can further our

knowledge in unexplored and under-developed areas of core competence theory. It was decided therefore that a ‘qualitative research’ method would be adopted.

5.4 Choosing a Research Strategy

Critical realism is compatible with a relatively wide range of research strategies but implies particular choices should depend on the nature of the study object and what is to be learnt about it (Sayer, 1999; Smyth et al., 2006). An in-depth examination of organizations such as ICMs calls for a research strategy that allows in-depth examination of ‘contexts’, as well as their comparison for any potential replication of findings. Case studies provide such an in-depth, longitudinal examination of a single context, as they rely on multiple sources of evidence to add breadth and depth to data collection (Yin, 2003). As a result, a case study strategy enables the researcher to gain a sharpened understanding of why an ‘instance’ or ‘event’ happened as it did, and what might be important to look at more extensively in future research. The case study strategy has a particular advantage when ‘a *how* or *why* question is being asked about a contemporary set of events over which the investigator has little or no control’ (Yin, 1994: 9). Such was the case of this research.

In addition, this research’s exploratory character requires contrasting and comparing across cases to take place, for generalizations to be made and conclusions to be drawn that can be potentially theory-building, contributing thus to our knowledge regarding the gaps in core competence theory and the construction strategic management domain, which have been identified in Chapter 1 (viz. Sections 1.5-1.6.1). Consequently, a ‘multiple case study’ strategy was considered to be the most appropriate. Multiple case studies have been extensively used in management research (Chandler, 1962; Mintzberg, 1978; Peters and Waterman, 1984; Pettigrew, 1988), as well as research related to project-based management (e.g. Morris and Hough, 1987; Miller and Lessard, 2000; Flyvbjerg, 2006). They can simultaneously involve ‘multiple sources of data’ with highly synergistic effects (Yin, 1994; Eisenhardt, 1989) and assist in addressing a broader range of ‘historical’, ‘attitudinal’ and ‘behavioural’ issues to achieve the development of a converging line of inquiry (Eisenhardt, 1989).

This research is of an ‘exploratory’ and ‘explanatory’ nature and has elements of theory building (cf. Glazer and Strauss, 1967) from case-based fieldwork, in addition to theory building from the literature and conceptual analysis. The literature and conceptual analysis has led to the creation and development of integrative theoretical

frameworks, which allow new conceptualizations regarding core competencies and their development to be made - within the context of ICMs in particular and multi-BU organizations in general. The fieldwork's intent is to test this conceptualization, which may or may not be overthrown or refined. Within that context, the purpose of the individual case studies is more 'explanatory', as its purpose is to describe the ICMs' 'structural' and 'functioning' characteristics and organizational routines through which core competence development activities (viz. Chapter 4) take place. The cross-case comparison is of a more detailed-level theory-building nature, as it is the part of the research where the potential 'causal links' between the ICMs' configurations and the effectiveness with which they execute core competence development can be identified.

5.5 Case Study Design

This section sets the boundaries for the cases studied and describes the process of their selection. Exploratory research projects are often theory building, relying on theoretical sampling where cases are chosen for theoretical not statistical reasons (Glaser and Strauss, 1967; Corbin and Strauss, 1990). For example, Chandler (1962) conducted case studies of four major US companies to identify how their structure evolved as they diversified. In the 'management of projects' field, Morris and Hough (1987) chose one mega-project representative from each of a number of industries, to infer conclusions on the management of projects in general.

This research's sampling 'logic' draws from Grounded Theory and particularly the methods of Corbin and Strauss (1990). They argue that when a research project begins, the researcher brings to it some ideas of the phenomenon s/he wants to study. Based on these ideas, organizations - as in the case of this research - representative of that phenomenon can be selected for study. In this research, the intent was to choose and study companies that would constitute an adequately diverse sample of ICMs to allow the review and comparison of their practices, in order to infer useful conclusions about i) how they conduct specific, corporate-level activities related to core competence development, ii) why they do so and iii) how is their behaviour related to the organizational configuration each has adopted. Consequently, defining the boundaries of a 'case' becomes necessary.

5.5.1 Case Study Boundaries

Defining the case study boundaries brings to the forefront the importance of defining the ‘unit of analysis’ of this research. Precise definition at this stage would streamline efforts of collecting and analyzing data during research implementation (Miles and Huberman, 1994; Yin, 1994). Since this thesis is interested in how organizational configurations of ICMs effectively ‘execute’ a core competence development strategy, the unit of analysis becomes the generic, corporate-level activities for strategy execution. These have been identified in Chapter 4 as i) exhibiting strategic intent and crafting strategic architecture, ii) regulating strategic architecture implementation, iii) stretching and leveraging resources and core competencies, iv) improving business practices and v) developing managerial and organizational leadership capacity.

These generic, corporate-level activities are implemented - in practice - within a contextual ‘setting’. Each organizational setting refers to one ICM. The unit of analysis being the ‘execution of a core competence development strategy’ and the ‘setting’ the organization executing that strategy within its environment, an additional parameter had to be used to describe the type of organizational setting that this research studied. Along these lines, it was decided that the ICMs studied here would be large, internationally diversified construction groups, with characteristics - in theory - as those have been described in Chapter 2².

5.5.2 Data Collection

Two methods for this type of research were considered and rejected. The first was ‘participant observation’. This method was rejected because - within the scope of this research - it was unlikely that the researcher would have been able to gain any adequate insight or overview of the processes studied across a number of ICMs. The second method rejected was ‘pure observation’. This method was rejected due to the perceived commercial sensitivity of strategic management related issues of ICMs. It was identified early on during the effort made to contact ICMs that they were unwilling to reveal information that may reduce market competitiveness (misguidedly because of difficulty of emulating core competencies).

² Viz. also Chapter 1, Section 1.6.1, regarding the choice of organizational context to be studied.

It was decided to collect data on ICMs primarily through interviews, in which the main issues to be discussed would be drawn from the theoretical constructs developed during the literature review stages of this research. In addition, the intent existed to be able to examine the behaviour of ICMs within their own historical and evolutionary context. For that reason, it was decided that prior to conducting interviews with ICM employees, a desk-study would be undertaken for each ICM, whose purpose would be to map its evolutionary profile for a number of years prior to the beginning of this research³.

Multiple data sources were used to increase reliability and internal validity (Sayer, 1999; Yin, 2003) of the study. In addition, a ‘case study protocol’ was created to control the process⁴. The protocol is desirable under all circumstances, but it is essential when conducting a multiple case study because it helps target on the subject and foresee problems (Yin, 2003).

5.5.3 Case Selection

For exploratory and potentially theory-building research projects, Eisenhardt (1989) suggests that while there is no ideal number of cases, a number between 4 and 10 usually works well. She argued that with fewer than four cases it is often difficult to generate theory with much complexity and its empirical grounding is likely to be unconvincing, unless each case has several mini-cases within it, whereas with more than 10 cases it quickly becomes difficult to cope with the complexity and volume of the data. Due to the exploratory nature of this research and the breadth of issues it simultaneously examines, it was decided to limit the scope of this research to four case studies and their cross-case comparison.

To find the most appropriate cases of ICMs to be studied, the research started from an initial pool of companies from which the cases could be chosen. The most widely accepted publicly available list of international construction majors is published annually by the *Engineering News Record* (ENR). The ENR, publishes annually two lists: i) the top 225 global contractors and ii) the top 225 international contractors. Both

³ Choosing specific data collection methods specifies what constitutes ‘data’ for the purpose of this research. This is what gives the research its qualitative nature and distinguishes it from the Grounded Theory methodology (Glazer and Strauss, 1967; Glazer, 1978; 1998) where the dictum ‘all is data’ holds.

⁴ See Appendix 5.1.

provide information on turnover and market share with respect to the regions and markets that companies are active in⁵.

The initial criteria set to formulate the boundaries of the sample group, stipulated that the ICMs studied must:

- Have been in the list of ‘ENR’s 225 Top International or Top Global Contractors’ for the last five years in a row;
- Follow a strategy of related diversification within the construction industry⁶;
- Be internationalized in at least two geographical regions of the world;
- Have - at the time that this research began - a turnover in excess of \$1 billion.

Being included in ENR’s lists for five years in a row would suggest an ICM has a long-standing position in its markets and would therefore ensure the ICMs chosen were companies with a history that would have allowed strategy execution routines to have developed. The criterion of following a strategy of related diversification was considered important, as core competence development involves inter-BU coordination and therefore the study of companies that have adopted specific configurations to coordinate related BUs is relevant here. The criterion of ‘operating in at least two geographic regions of the world’ was included, as it was desirable to identify and study core competence development routines transcending national boundaries. This selection criterion was intended to exclude ICMs that would not have had to capture and disseminate ‘market-specific’ knowledge obtained through experiential learning during internationalization (Johanson and Vahlne, 1977; 2003). Finally, the threshold of \$1 billion turnover was applied to select companies of a scale where economies (or diseconomies) of scope arise and provide the opportunity for inter-BU coordination issues to be examined.

The advantage of studying ICMs from different national origins are that common findings can be generalised and differences point to features that are context specific. The initial sample pool was rather heterogeneous, achieving the highest degree of potential generalization. It was practically too large and was reduced, yet within the range advised by Eisenhardt (1989). The next step was therefore to start approaching companies from the initial list and determining, which would be willing to participate in the research.

⁵ Though the accuracy of ENR’s data is disputed by some, the lists are widely considered as providing adequate information on the companies’ scale of operation, activities and overall standing in the market.

⁶ Viz. Chapter 2, Section 2.4

Approaching the companies started by trying to find influential individuals from the 'pre-qualified' ICMs. Letters of introduction were initially sent to such individuals from three ICMs in January 2006⁷. One ICM wished to further engage with the research project and a series of interviews were set-up to take place in the following months. A paper presented at the ASCE *Leadership in Construction and Engineering* conference (Zoiopoulos et al., 2006) drew the attention of a research group based at Stanford University, the Colaboratory for Research on Global Project (CRGP), which agreed to set-up interviews with US-based ICMs. After a five to six month period of planning and preparation, a series of interviews with senior executives were scheduled with three ICMs, to take place at their US headquarters. The interviews took place between mid-October and late November 2007. As those events unfolded, a Middle Eastern ICM and an ICM of Cypriot-Greek origin exhibited the interest to be included in the research. By March 2008, a series of interviews was scheduled with the latter, which took place over the summer that year⁸.

Completing the interviews with the Cypriot-Greek ICM, data had been gathered on three ICMs from the US and two from Europe, a total of five. It was determined during the later stage of data analysis that the data collected for one of the five ICMs where not sufficient for it to be included in the study⁹. It was therefore decided to proceed with the analysis of the remaining four. The total number of ICMs satisfied the number of case studies sufficient for exploratory research (Eisenhardt, 1989; 2000) and provided a relatively diverse yet internally comparable sample. Figure 5.1 depicts the timeline of the case-study work¹⁰. Table 5.1 provides a brief description of each ICM studied and the 'pseudonym' used for the purpose of this research, as confidentiality

⁷ See Appendix 5.2.

⁸ The interviews were conducted at the offices of the companies studied. Unavoidably, time was spent with employees of the companies outside the interview sessions. This may create the impression that the research has elements of participant observation and perhaps ethnography. This, however, is not the case. The interaction between the researcher and the interviewees was limited to the time spent during the actual interviews. The existence of 'ethnographic' elements may be stronger than the participant observation ones - through in reality negligible - as the time spent with the interviewees was strictly used to discuss pre-defined themes, which were by and large repeated across interviews.

⁹ Though not included, the work undertaken for this fifth ICM served as a 'shadow' case, which helped the researcher developing his understanding. First, it provided useful insights which helped clarify the conceptual boundaries of this research within the mind of the researcher. Second, it helped the researcher refine his research skills - particularly related to data collection through interviews. Finally, it assisted in shaping the boundaries of what constitutes a case-study for the purpose of this research, making the remaining case studies a 'sample' which was more uniform and internally comparable.

¹⁰ This timeline also demonstrates a clear distinction between the qualitative research strategy adopted in this research and that of Grounded Theory. In Grounded Theory (Glazer and Strauss, 1967; Corbin and Strauss, 1990), data collection and analysis are interrelated processes and analysis begins as soon as the first bit of data is collected. In this research, the majority - if not all - of the data was collected prior to beginning the systematic analysis.

Figure 5.1: Case-Study Work Timeline

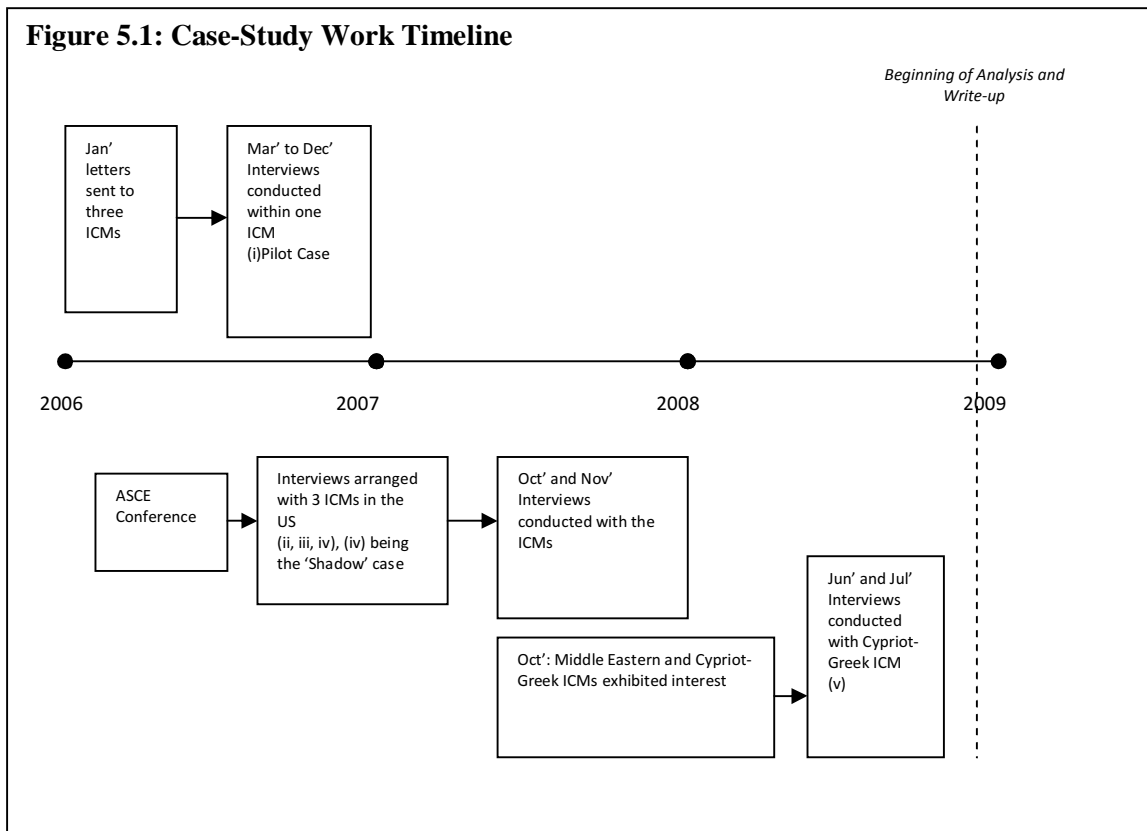


Table 5.1: Description of ICMs

Aegean Group	Albion plc	Pacifico Corporation	Cyclone Corporation
A leading international building, civil and electro-mechanical construction services group, also active in property and infrastructure development, with an annual turnover in excess of \$1 billion, operating in 11 countries straddling South Eastern Europe, North and East Africa and the Middle East and employing directly around 5000 people.	An internationally diversified construction services and investment business with a turnover close to £10bn, valued at £1.7bn and operating in the United Kingdom, Continental Europe, the United States, South America, North Africa, Middle East and Asia/Pacific regions, employing around 50,000 people.	The corporation provides engineering, construction, systems and resource integration, project/program management, and environmental services to a wide range of global customers. It is a multinational company with 2,500 clients and 8,000 projects worldwide, a turnover close to \$3 billion, operating in 50 US states and 80 foreign countries, with more than 11,500 employees.	The corporation provides engineering, construction procurement and/or project/program management services, has an annual turnover in excess of \$13billion, operates out of 25 offices in as many countries and employs directly approximately 25,000 people.

agreements were signed with all ICM as a pre-requisite for their participation in the study¹¹.

5.6 Data Collection: The Desk Study

The historical context of ICMs assists in understanding their present configurations (Miles and Huberman, 1994; May, 2003). Therefore, desk studies of the ICMs were conducted to map their 'evolutionary profiles' focusing on a ten-year period prior to the beginning of this research. Ten years represent a time-period slightly greater than a full economic cycle of 7 years (Gruneberg and Ive, 2000). Therefore, they constitute a time-frame within which a successful - in terms of survival - company can be observed for 'transformation' purposes. In addition, the time-frame is not too long for the researcher to run the risk of considering data that are irrelevant to the organization's present state, and not too short so that path dependency issues can be identified and how the organization came to be to its present state can be adequately understood. The intention, was for the evolutionary profiles to provide the following information:

- How the 'structural' characteristics of each ICM and the 'roles' it had adopted in the production of the built environment had evolved during the last eight to ten years;
- A reflection on each ICM's current practices;
- A time-ordered overview of each ICM's strategic intents, the strategic architecture to achieve those, as well as insights on how it stretched and leveraged its resources;
- An indication of the core competencies the ICMs had developed and the dynamic capabilities they deployed to continuously transform them.

To be able to construct such evolutionary profiles, publicly available data were gathered for each ICM for a ten-year period prior to the interview date, such as: i) company archival records, ii) published documents (annual reports, investors' reports) and iii) other documents published in the press. In publicly listed companies annual reports were available on the web. For private companies the focus shifted on gathering

¹¹ In retrospect - and linking back to Section 5.5 - it should be recognized that the sampling logic adopted and the ICMs ultimately chosen, stemmed also from reasons of practicality.

documents publicly available in the press, from which an image of their evolutionary profile could be built.

Finally, the evolutionary profiling was intended to provide vital background information that could be used to transform generic theory-based constructs into topics for discussion in company-specific interviews.

5.7 Data Collection: The Interviews

There is a wide range of question-types that can be asked to interviewees. May (2003) distinguishes between three generic types of interviews: i) structured, ii) semi-structured and iii) unstructured/focused interviews. The structured interview method permits greater ‘comparability’ between responses relying upon a uniform structure, and might be appropriate when the primary objective is to identify similarities and differences across various contexts (May, 2003; Miles and Huberman, 1994). However, such interviews might not be the most appropriate for an exploratory case-study research intending to identify underlying and unobservable structures and mechanisms. Unstructured interviews on the other hand are said to have the ability to challenge the preconceptions of the researcher, as well as enable the interviewee to answer questions within their own frame of reference, by allowing the person being interviewed to talk freely about the topic. Unstructured interviews, however, are not appropriate to exploit the ‘analytic’ benefits of the theoretical concepts developed for the purpose of this research.

It was decided that the most appropriate interview type was that of ‘semi-structured’ interviews. In semi-structured interviews, questions are normally specified, but the interviewer is freer to probe beyond the answers in a manner that would appear prejudicial to the aims of some standardization and comparability. The ability of the interviewer to seek both clarification and elaboration on the answers given enables a dialogue with the interviewee and allows people to answer more on their own terms than the standardized interview permits - providing still a greater depth and richness for comparability over that of the focused interview (Rubin and Rubin, 1995; May, 2003). In addition, the data gathered would not only embrace subjectivity of perceptions of inside experts, but also be tested against internal consistency and against the mapping of external data sources gathered through the evolutionary profiling of the desk study.

With this research's primary question and the theory reviewed and developed in Chapters 1-4 as a starting point, a list of subject areas and questions to be discussed with interviewees was formed¹². The intention was to keep the list:

- Broad and generic enough to be transferable across construction markets;
- Broad and generic enough to be relevant across different organizations;
- Specific enough to be compatible with the nature of construction work.

The interviews were conducted with senior executives of the companies studied. The fact that the interviewees were people in key executive positions of their organization was suitable, because it provided insights on practices transcending organizational units. Table 5.2 shows the number of interviewees per case, their initials and their hierarchical position (excluding Bechtel, the ICM that did not become part of this research). 48 interviews were conducted (9 with Aegean, 8 with Albion, 11 with Pacifico, 12 with Cyclone and 8 with senior executives of Bechtel).

Initially, the purpose was for one interview to focus on identifying the general 'functioning' and 'structural' characteristics of the ICM studied, as well as the 'horizontal organization' set-up to coordinate and integrate their distinct, yet related, BUs. Then, five more interviews were to be conducted, each focusing on each one of the five generic, corporate-level activities respectively. In each of these interviews, interviewees were asked to describe:

- The organization-specific routines through which the generic activities are implemented within the ICM s/he was employed;
- The general 'structural' and 'functioning' characteristics of the ICM and how they influenced the implementation of the activity;
- The 'horizontal organization' set-up in the ICM and how this influenced the implementation of the activity;

Due to scheduling constraints of the interviewees, interviews of the first case were completed before any other case studies were initiated (viz. Figure 5.1). Unintentionally, 'Albion plc' acted as a 'pilot' study for the following ones and enabled the refinement of the data collection method, as is typical for exploratory research (Eisenhardt, 1989; Yin, 2003)¹³.

¹² See. Appendix 5.1.

¹³ See Appendix 5.4.

Table 5.2: ICMs, Interviewees and their Position¹⁴	
ICM	Interviewee Initials and Position
Aegean	<p>NG: Regional Vice President of the Board of Directors and member of regional executive management team KK: Regional Chief Executive Officer GG: Regional Procurement Director KH: Managing Director of Real Estate and Development BU BH: Managing Director of PPP/PFI Concessions BU GS: Regional Director of 'Pursuing and Securing Projects' Function IK: Regional Director of Human Resources NS: Director of Regional Construction Division (Building)</p> <p style="text-align: right;">Total: 8 Interviews</p>
Albion	<p>JK: Corporate Director of Succession Planning DV: Corporate Director of Strategic Planning and Development IN: Corporate Director of Risk and Opportunity Management AS: Director of Internal Audit PS: Corporate Director of Knowledge Management PP: Commercial BU Director AMcN: BU Managing Director (Civil Engineering Construction) JF: BU Managing Director (Infrastructure Services) TS: Director of Corporate Communications</p> <p style="text-align: right;">Total: 9 Interviews</p>
Pacifico	<p>TW: SVP, GBU Business Development Director MH: SVP, GBU Operations Director MZ: SVP, GBU Finance Director DR: VP, GBU Human Resources Director GB: GBU Procurement Director MN: Manager, Project Controls BS: SVP, Division Director ER: SVP, International Division Director TP: VP and GBU Engineering Director JS: VP, GBU Director Construction MT: Manager, International Construction Manager TL: Division Director</p> <p style="text-align: right;">Total: 12 Interviews</p>
Cyclone	<p>PF: BU Managing Director RA: SVP, Construction and Procurement Director LJ: VP, Strategy and Sourcing Management JMcK: VP, Construction and Procurement JMcQ: VP, Technology Strategies and Knowledge Management LB: VP, Corporate Accounts PM: Project Execution Services WH: Senior Director, Operations and Maintenance DS: Corporate Engineering Manager CS: SVP, Upstream Operations, Energy and Chemicals KS: SVP, Government Services PF: SVP, Managing Director, Infrastructure</p> <p style="text-align: right;">Total: 12 Interviews</p>

The interviews lasted on average around one hour and were recorded so that they could be later transcribed. The senior executives interviewed were selected on the basis of their knowledge regarding the topic each interview addressed. For example, when the issue of 'people development' was addressed, a senior Human Resources director was interviewed. The fact that the interviewees were managers of the ICMs

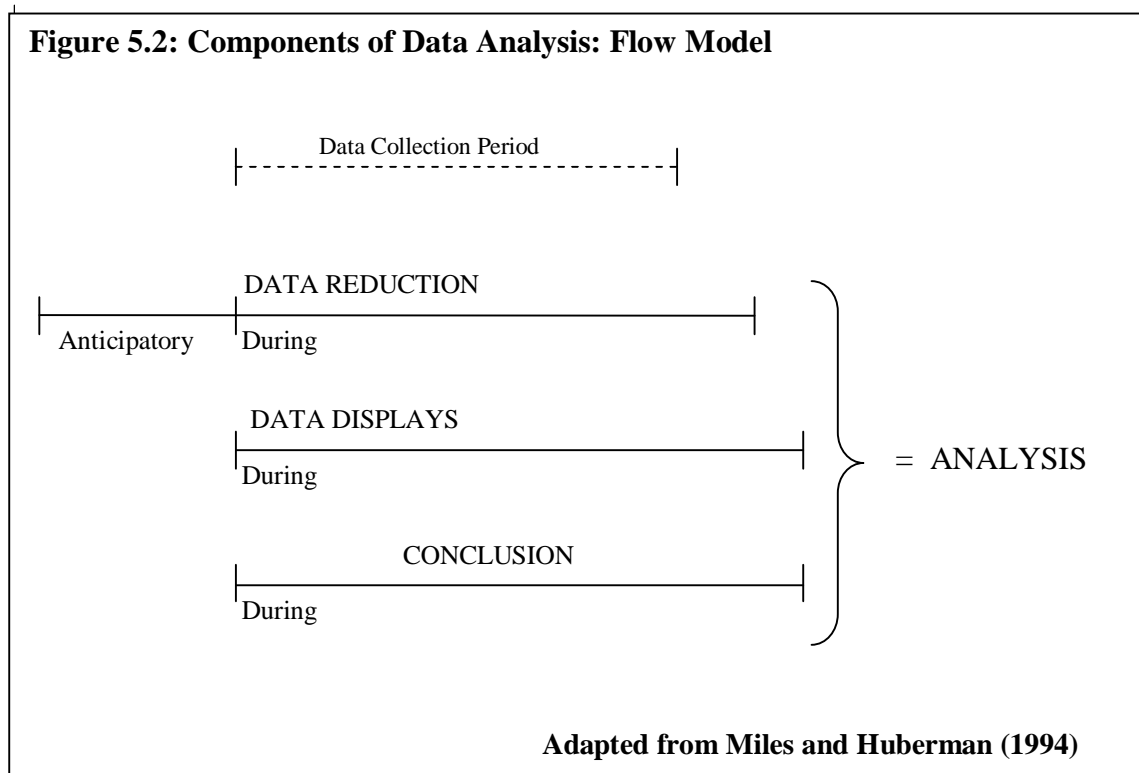
¹⁴ The following abbreviations apply: Business Unit (BU), Senior Vice President (SVP), Global Business Unit (GBU), Vice President (VP)

studied raises the issue of ‘managerial bias’ regarding their responses. This issue was partly overcome by the nature of the interviews and the type of questions asked, as interviewees were not asked to give their personal subjective opinions on their company and its performance, but were asked to describe specific processes and mechanisms of their organization¹⁵.

5.8 Data Analysis

Mills and Huberman (1994) defined qualitative research analysis as consisting of three concurrent flows of activity (Figure 5.2):

- Data reduction;
- Data display;
- Conclusion drawing/verification.



In their view, conclusions are also verified as the analysis proceeds, since qualitative data analysis is a continuous interwoven process.

Data reduction - or data condensation (Tesch, 1990) - refers to the process of selecting, focusing, simplifying, abstracting and transforming the data in written-up

¹⁵ Such a process-oriented approach has been argued by some as being appropriate when examining competence-related issues (Tampoe, 1998; Markides et al., 1994; McGrath et al., 1995).

field notes or transcriptions. Data reduction occurs continuously throughout the whole lifecycle of qualitative research as part of the analysis. The decisions regarding which data chunks to code and which to pull out, which patterns better summarize a number of chunks, which evolving story to tell, are all analytic choices.

Miles and Huberman (1994) argue that valid analysis requires, and is driven by, displays that are focused enough to permit viewing of a full data set in the same location and are arranged systematically to answer the research question. They distinguish between two major families of display formats: matrices and networks, stressing the choice of format must be driven by the research questions.

As extended text is weak and usually cumbersome to display (Miles and Huberman, 1994), in this research, extended texts from documents, interviews and field notes had to be coded, extracted, condensed and summarized. For each case study conducted, the analysis was separated to that of the ‘desk study’ and that of the ‘semi-structured interviews’.

5.8.1 Analysis of Desk Study Data

To analyze the documents collected for the purpose of the desk-study evolutionary profiling, an analytical framework was required that could categorize parts of extended texts into clusters that would reflect ‘structural’, ‘functioning’ and ‘core competence development’ characteristics of the ICMs studied. King’s model (1988) (Figure 5.3) provided the foundation for the development of such a framework. To create a framework more compatible with core competence theory, King’s (1988) model had to be adapted to satisfy the needs of the core competence-based context. Consequently, its strategic elements were re-arranged and grouped under categories that correspond to the sequential stages of core competence development strategy execution (viz. Chapter 1, Figure 1.2). The new framework helped highlight the high-level transformation ICMs underwent. Subsequently, annual reports and other publicly available documents were sorted annually, read, and relevant passages were highlighted, summarized and coded under the categories shown on Figure 5.4¹⁶: ‘strategic intent’ (including missions, objectives and goals), ‘strategic architecture’ (including strategies, structural and functioning characteristics) and ‘stretch and leverage’ (including programs, resource allocation mechanisms and initiatives). From this, the co-evolution

¹⁶ As an example, the ‘Desk Study’ analytical framework for Albion plc is shown on Appendix 5.5.

Figure 5.3: King’s Strategic Elements of Choice



Source: King (1988)

Figure 5.4: Desk Study Framework

Strategic Intent	Strategic Architecture	Stretch & Leverage
<ul style="list-style-type: none"> ▪ Mission ▪ Objectives ▪ Goals 	<ul style="list-style-type: none"> ▪ Strategies ▪ Configuration (Structural Elements) 	<ul style="list-style-type: none"> ▪ Programs ▪ Resource Allocation Mechanisms ▪ Initiatives

Source: Zoiopoulos et al., (2008b)

of ‘core competence development’ with organization-specific ‘structural’ and ‘functioning’ transformations could be observed.

Using the analyzed data, an ‘evolutionary profile’ of each ICM studied was constructed, demonstrating the co-evolution of strategic elements of choice for the 10-year period. The evolutionary profiles constructed following the analysis are displayed in the individual Case Studies (as Figures 6.1, 7.1, 8.1 and 9.1, in Chapters 6, 7, 8 and 9 respectively) and are accompanied by an explanatory text.

5.8.2 Single Case Analysis of Interview Data

Identifying potential causal relationships between the combination of organizational configurations ICMs adopt and the effectiveness with which they develop their core competencies is at the centre of this study. One way of doing this would have been to group interviewee responses per core competence development activity (viz. Chapter 4) and then identify how many responses a) cite or imply (in verifiable ways from other parties or data sources) a causal relationship, b) do not support a causal relationship, or c) cannot be considered valid because they are biased or unsubstantiated. However, in the critical realism approach, answers to the questions cannot be given on the basis of subjectivity or opinion of interviewees alone. Substantiation through several data points plus conceptual alignment is needed in order to identify causality that identifies the underlying mechanisms (although these may be intangible and even abstract at times in the sense that the evidence supports their presence yet actors may not be concretely aware of some processes).

In conducting this research, the notion developed by Nelson and Winter (1982) that the behaviour of organizations can be explained by the routines they deploy was adopted. In that sense, understanding the firm entails identifying its routines, how they interrelate and how they change. The activity-based¹⁷ nature of the firm allows another analogy to be drawn between corporate-level activities involved in the execution of a core competence development strategy and the value-adding activities of the *value chain* (Porter, 1985). Whereas the ‘value chain’ concept examines interrelationships between primary and secondary company activities that add value to the product/service a company provides, the analysis in this research intends first to identify and explain the organization-specific routines related to each generic, corporate-level activity for each ICM studied, and second, examine interrelationships between ICM-specific activities, with respect to the organizational routines they share (viz. Chapter 4, Section 4.4, Figure 4.5).

Undertaking the interview data analysis, the interview voice files were transcribed and uploaded to the N*6 software. Although the initial intention was to rely exclusively on the use of N*6 as a data management tool, it should be stressed that, at times, it was found to be cumbersome and inconvenient. On many occasions, this researcher found it faster, easier and more workable, to analyze semi-structured interview texts using self-made thematic tables in Microsoft Word files. The research

¹⁷ Viz. Chapter 1, Section 1.4 for clarification.

questions and the theoretical concepts and constructs they include, provided the initial basis for the ‘coding’ process through which semi-structured interview data was ‘clustered’. The extended texts of the transcribed semi-structured interviews were reviewed and passages (their size ranging from one sentence to three to four paragraphs) were coded and clustered, per ICM, under the following categories, which represent the theoretical concepts most pertinent to the research questions:

- Structure , coordination mechanisms, key organizational part, type of market-focus strategy, role in the production of the built environment;
- Exhibiting strategic intent and crafting strategic architecture;
- Regulating strategic architecture implementation;
- Stretching and leveraging resources and core competencies (further broken down to:
 - Individual level core competence (ILCC) leverage (knowledge transfer, employee mobilization).
 - Process replication.
 - Organizational-level competence integration;
- Developing managerial and organizational leadership capacity;
- Improving business practices.

For the purpose of identifying and analyzing underlying mechanisms in the tradition of critical realism, the clustered ‘coded’ interview data was carefully reviewed to identify within each ICM the organization-specific routines through which each core competence development activity was conducted. The routines identified were broken down to: i) the people and/or organizational bodies involved in their implementation and the role each played, ii) the processes through which the implementation was conducted and coordinated, and iii) the organizational structure that facilitated the people and processes through which the activities were conducted. The organization (and its environment) was the context¹⁸. These findings were then used to describe in the individual case studies how each ICM conducted each activity within its own organizational setting¹⁹.

¹⁸ As an example, the identification of the roles of individuals/organizational bodies, processes and structures involved in the implementation of a specific routine, is demonstrated for the case of one ICM in Appendix 5.6.

¹⁹ A note on how interviews are referenced on the case studies: multiple interviewee descriptions were used to describe routines linked with core competence development activities. On other occasions, vignettes were used to illustrate a point. In both occasion, the text was referenced to the interviewee(s) it originated from. The referencing system is simple. Assuming the first interview would have been

Throughout the analysis process ‘memoing’ was used, a technique common both in Grounded Theory (Glaser and Strauss, 1967) as well as qualitative research (Miles and Huberman, 1994). Through memoing, insights were recorded, which were then consulted during write-up to help substantiate this research’s core argument.

The routines and the individuals/organizational bodies involved in their implementation were tabulated in the case studies, and accompanied by an explanatory text in the sections where the activities were described. Following this, a table was created (per ICM) from which the routines ‘shared’ between activities could be identified²⁰.

It should be noted - in favour of the validity and applicability of the theoretical constructs/concepts developed in the theoretical chapters of this thesis, that the emergent findings from the analysis fell within the boundaries of pre-defined themes.

5.8.3 Cross-Case Analysis

The purpose of the cross-case comparison was to contrast and compare the findings of the individual case studies, in order to make generalizations that could contribute to our knowledge. This was the research’s most strongly ‘theory-building’ part. According to the principle of analytic generalization, if two or more cases are shown to support the same findings and/or theory, replication may be claimed. This ‘replication’ logic is the same that underlies the use of experiments and allows scientists to cumulate knowledge across experiments (Eisenhardt, 1989; Yin, 2003). At the cross-case comparison: i) similarities and differences across cases regarding the organizational routines through which the generic, corporate-level activities were implemented and ii) similarities and differences with respect to the interrelationships between the activities were identified. The findings from the cross-case comparison essentially provided the explanatory foundation to this research’s question. On occasions, conclusions for the cross-case studies were supported by vignettes, which were drawn directly from the extended texts of the transcribed semi-structured interviews.

conducted with ‘Ioannis Zoiopoulos’, then next to the vignette or condensed text, the initials of his first and last name would appear, preceded by the abbreviation for ‘interview 1’ (i.e. **I1:IZ**).

²⁰ i.e. Tables 6.7, 7.7, 8.7 and 9.7 in Chapters 6, 7, 8 and 9 respectively.

5.9 Concluding Remarks

The research methodology developed for the purpose of this research adopted the epistemological tradition of critical realism, a case study strategy and used predominantly qualitative data collection and analysis methods. The research design focused on four case studies and their cross-case comparison. Because the qualitative data secured from interviews was evaluated and interpreted in the light of other material available in the public domain published by the companies, the trade and academic press, it was expected that this form of cross-checking and evaluation - a quasi-form of 'triangulation' (Krieger, 1979), would enhance the quality and validity of the findings.

In summary, this research is of an explanatory, exploratory and theory-building nature. The research design and its implementation reflect this. It is exploratory, because it aspires to draw empirically-based conclusions on core competence theory areas that still remain unexplored (viz. Chapter 1, Section 1.5). The choice of a critical realist epistemology and a qualitative research strategy based on documentary and interview data are both aligned with this objective. It is explanatory, in the sense that the case studies constructed following analysis of the data, wish to describe how the theoretical models developed in earlier parts of the thesis (viz. Chapters 1, 2 and 3) are applied to and interrelate with organization-specific contexts. Its theory-building nature is manifested in the cross-case comparison. There, a second level of analysis (meta-analysis) based on the individual - explanatory - case-studies, allows generalizations and suggestions to be made within the boundaries of this research's domain of interest (viz. Chapter 1, Sections 1.5 to 1.7).

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Chapter 6: The Aegean Group

6.1 Early History

Aegean was founded in Cyprus in 1940. It quickly grew to become active in the Middle East and North Africa, working for oil companies and other industrial corporations from 1963 onwards. During the 1960s, Aegean successfully completed a number of civil and building contracts of various sizes and types in oil terminals, refineries and various industrial sites. During the 1970s, the company grew substantially in the Middle East and North Africa and in 1979, it entered the Greek market.

In the 1980s, the successful completion of a number of mechanical and electrical contracts established Aegean as a contractor of choice for many major oil companies. The group continued to grow in the Middle East and North Africa, where it had already diversified to a number of construction markets such as airports, transportation and infrastructure. During the 1990s, the group retained its market share and competitive position in the Middle East and North Africa, but shifted its growth efforts towards the Balkans and Eastern Europe, using Greece as a springboard for this expansion.

At the time when this research begun, Aegean was a leading international building, civil and electro-mechanical construction services group, also active in property and infrastructure development. The Group had an annual turnover in excess of 1\$ billion, operated in 11 countries straddling South Eastern Europe, North and East Africa and the Middle East, employing directly around 5000 people.

6.2 Recent Evolutionary Path and Aegean's Present State

Recent developments regarding how Aegean's 'role' in the production of the built environment and 'structural' characteristics of its configuration have evolved in relation to notable strategic intents its leadership has set, strategic architectures it has pursued and investments it has made, are displayed on Figure 6.1¹.

¹ Interrelationships are demonstrated with the use of 'line-arrows' (notice that the thread always starts from a strategic intent that the group has set), to explain how new conditions emerge from previous decisions and actions.

Figure 6.1: Recent Evolutionary Path of the Aegean Group

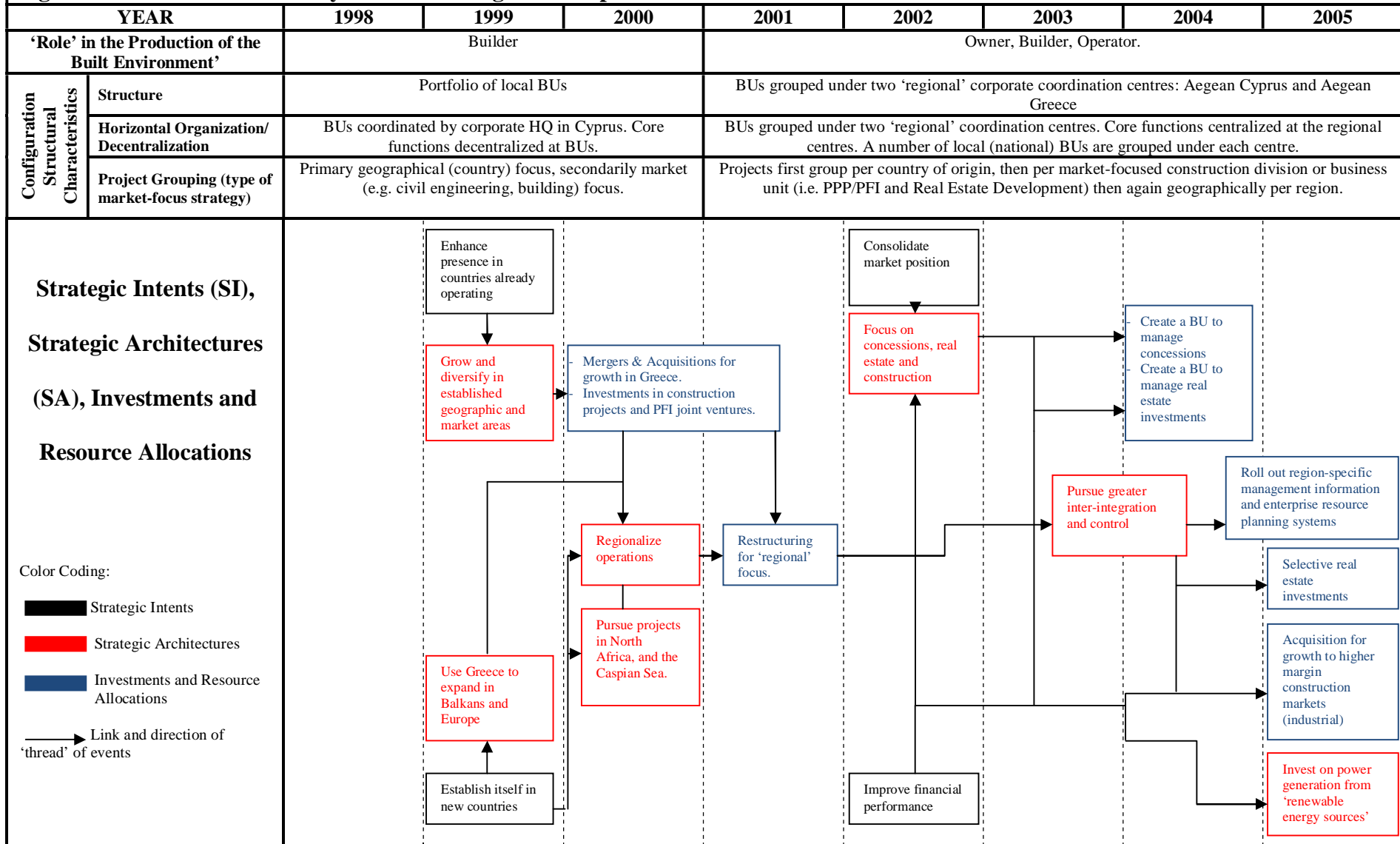


Figure 6.1 tells us that towards the end of the 1990's, Aegean exhibited two strategic intents: i) to enhance its presence in the countries it already operated in² and ii) to establish itself in new countries and markets. The strategy pursued was growth through related diversification and internationalization. At that moment in time, Greece offered opportunities for growth both within it as well as opportunities for internationalization towards the Balkans and Eastern Europe, mainly because of the prominent position that Greek private investors, companies and institutions had attained in the region.

To build on existing strengths, investments were made for acquisitions of leading Greek contractors. In June 1999, the group became a strategic shareholder of a leading Greek construction company listed in the Athens Stock Exchange. The new organizational entity further acquired a number of companies in 2000, gaining access to public works of all budget ranges in Greece, as well as the emerging Greek PPP/PFI market. Through this, the group began to develop capabilities related to the 'structuring, pursuing, securing and management of concession contracts'. Subsequently, investments were made through the Greek entity to set-up offices in Romania and Poland.

During 1999 and 2000, Aegean restructured in two 'regional', autonomously operating corporate centres (Aegean-Cyprus and Aegean-Greece) through which projects in the regions under their responsibility would be coordinated. The restructuring was a response to the specific ownership structure of Aegean-Greece³ and the belief that the two regional entities would be more successful pursuing the group's objectives relatively independently. Subsequently, the leadership of Aegean Cyprus decided that additional growth could be achieved by using its already well-established operations in the Middle East and North Africa to grow organically and increase market share in those regions, as well as to penetrate the local markets around the Caspian Sea. Thus, projects were pursued along the lines of that strategy.

Having invested considerably in growth through a combination of acquisitions and internal development, especially through Aegean-Greece, the group's leadership shifted their intentions in 2002 from 'growth' to 'consolidation'. The strategy was to focus on high-margin opportunities in construction, concessions and real estate. In the case of concessions, the purpose was to take advantage of the dual benefits from the

² By the end of the 1990s, the group had established a strong presence in Cyprus, the Middle East and North Africa.

³ The Aegean Group owned 48% of the shares, four Greek shareholders (who were also executive directors of Aegean-Greece) owned 25% and the rest 27% was publicly traded.

returns on equity invested and the construction work generated for Aegean-Greece. This strategy led to investments for the development of two BUs to manage concessions and real estate developments in Aegean-Greece (an autonomous division to manage real estate investments in Aegean-Cyprus had already been set-up from the 1970s).

In 2004, it was decided to 'regionally' roll-out enterprise resource planning (ERP) and management information (MI) systems. This was followed by a decision from both regions to implement stricter selection criteria for real estate investments, acquire companies that would enable them to grow in higher-margin construction markets (e.g. industrial) and broaden their 'spectrum' of investments by entering the market of power generation from renewable energy sources.

Aegean's evolutionary path can be summarized as follows. The group originated from a construction services background, from which it developed throughout the last 60-70 years into a leading international building, infrastructure, industrial and M&E construction services company, with an annual turnover in excess of \$1 billion and operating in 11 different countries. In addition to its role as a constructor, the group has been involved in property development - from Cyprus - since the 1970s, a role which it replicated by creating a property development business unit in the Greek-based entity in which it invested. During the 1990s, regulatory changes in Greek government procurement methods, enabled the group to adopt the role of infrastructure developer through the acquisition of Greek contractors who were licensed to bid for such contracts within their home country. From its initial involvement in concessions, the group slowly expanded its portfolio while simultaneously developing a capability as a toll operator and facilities manager⁴.

Along those lines, Aegean's evolutionary profiling allows three major observations to be made. First, that the unique ownership structure of Aegean-Greece and its strategic importance to the Group's growth as a whole, led to an organizational restructuring around two regional coordination centres, each one pursuing its objectives independently. Second, that Aegean pursued a strategy of related diversification (Rumelt, 1974) by acquiring and developing resources that were both supplementary and complementary (Wernerfelt, 1984) to the ones it already possessed. Third, that the adoption of a new role in the production of the built environment (that of developer/owner) through entry and growth in the construction-related markets of 'concessions' and 'real estate development', created the necessity to establish

⁴ Since the introduction of the PFI/PPP procurement route in Greece, the group has managed - in collaboration with Greece's two other largest construction groups - to oligopolize the country's infrastructure and buildings concessions markets.

autonomous BUs - within Aegean-Greece - whose purpose was to specialize on that role.

In light of Aegean's evolutionary path, it could be argued that the Group has developed core competencies related to:

- Pursuing, estimating, securing and delivering building, infrastructure and industrial construction contracts (both within Aegean-Greece and Aegean Cyprus);
- Identifying and developing real estate development opportunities (both within Aegean-Greece and Aegean-Cyprus);
- Structuring, securing and managing infrastructure and buildings concessions (only within Aegean Greece).

Furthermore, Aegean's evolutionary profiling reveals that it pursued its strategies through two main routes: i) acquisition of companies to increase market share in markets for which it already possessed the core competencies to compete in (e.g. the case of the acquisition of the Greek contractor in 2000) and ii) the organic development and ultimate 'divisionalization' of activities related to new markets (e.g. the market for PPP/PFI contracts). This indicates that Aegean's 'dynamic capabilities' (Teece et al., 1997) are based on being able to:

- Acquire and successfully integrate companies;
- Organically build core competencies to be competitive in markets it has no prior experience.

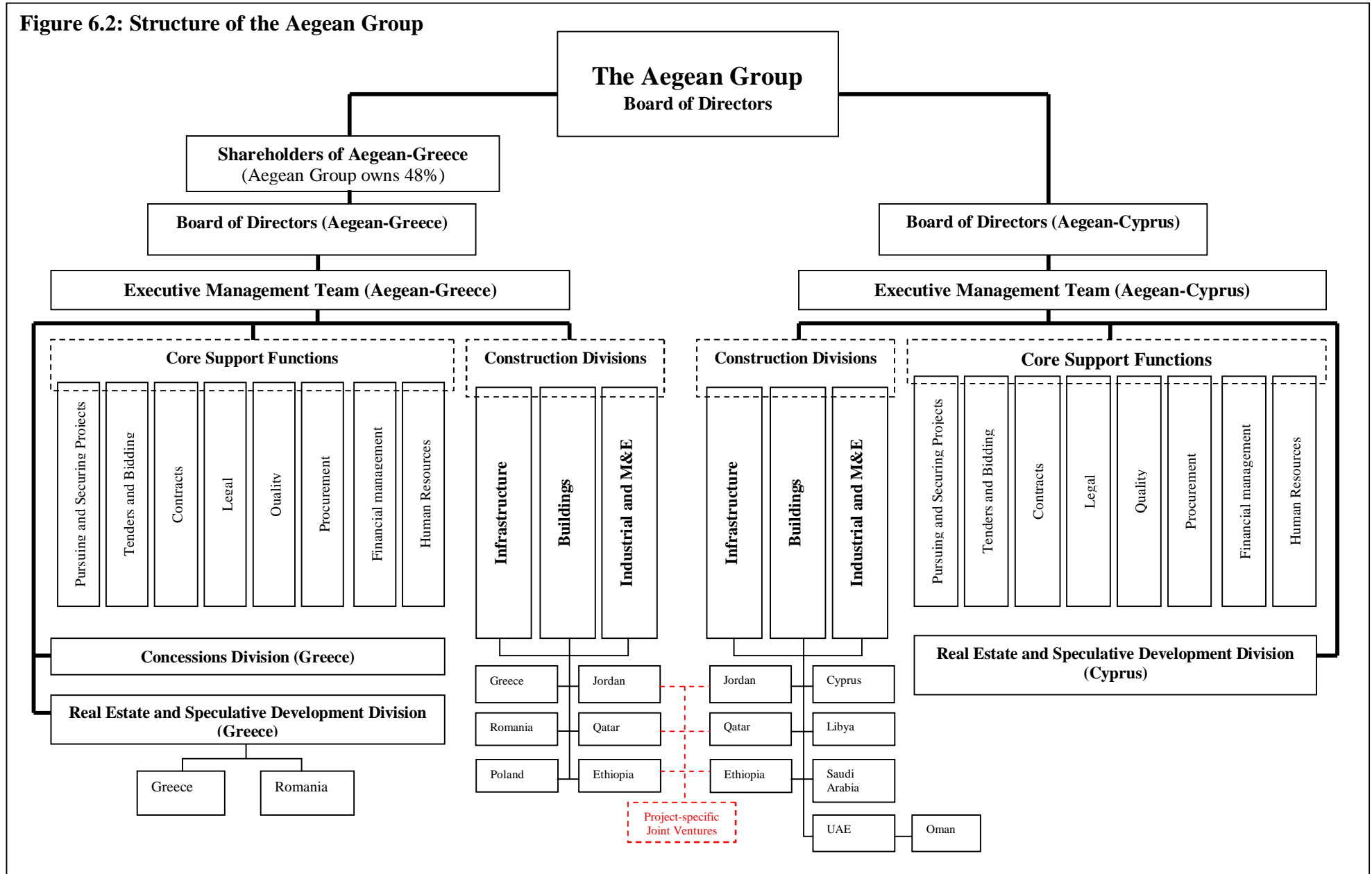
Other core competencies and dynamic capabilities may also exist.

6.2.1 Structural, Functioning and Agency Characteristics

Figure 6.2⁵ shows Aegean being organized in two regional centres, Aegean-Greece and Aegean-Cyprus. Both regional centres have grouped construction projects under three market-focused construction divisions ('Buildings', 'Infrastructure and Industrial' and 'M&E'). Depending on location, projects are undertaken by the local subsidiaries that each regional centre oversees. In some countries (Jordan, Qatar,

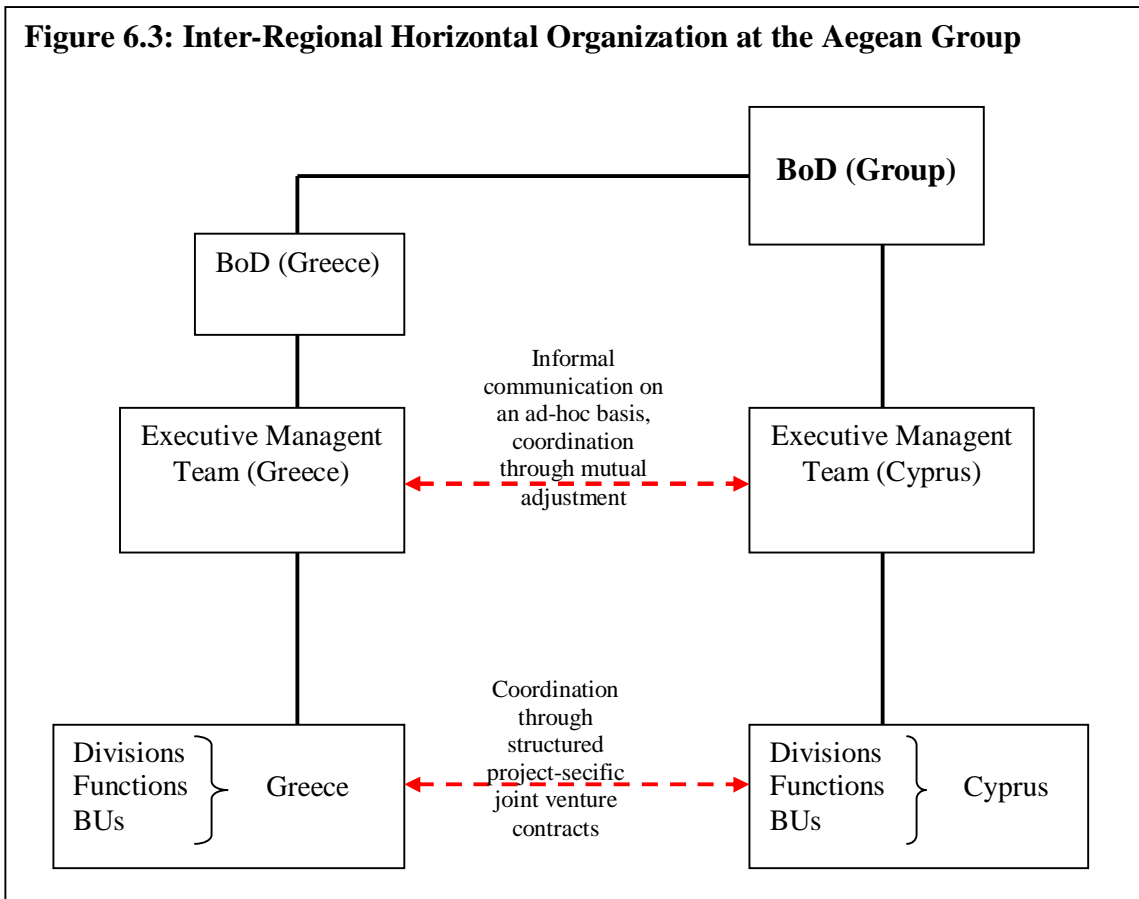
⁵ The figure presented here is an adaptation of an organizational chart that the researcher received from one of the interviewees. The adaptation was considered necessary as the original chart contained information that could reveal the identity of the ICM, which would go against the confidentiality agreement that the researcher had to sign as a prerequisite for the ICMs' participation in this research.

Figure 6.2: Structure of the Aegean Group



Ethiopia) construction divisions of the two regions form cross-regional joint ventures (JVs) to undertake projects. In the case of the local subsidiaries of Aegean-Cyprus, each has a unique ‘ownership structure’ in order to abide with company laws of the country it operates in and to accommodate the Group’s local partners. Both regions have a BU focused in ‘real estate and development’. In the case of Aegean-Greece this BU has internationalized to Romania. In addition, Aegean-Greece has set-up a BU to pursue, secure and manage concession contracts. All divisions, functions and BUs are lead by a ‘director’. Regionally, they are coordinated by an ‘executive management team’ led by a regional CEO, who reports to a regional board of directors (BoD) (**I1:KK, I2:NG, I5:GG, I7:IK**).

Aegean exhibits characteristics of a diversified organization operating through two regional divisions, broken down in turn to market-based units. It is also a bureaucratic organization, where some work processes (particularly ‘materials purchasing’ and ‘financial management’) are standardized, albeit regionally. Due to its regional focus, no ‘tangible interrelationships’ (Porter, 1985) exist across regions. Processes are shared and know-how is being transferred only on an ad-hoc basis, during inter-regional joint ventures (Figure 6.3).



Effectively, each region is a semi-autonomous ‘diversified’ organization pursuing ‘standardization of outputs’ of its units. As an executive characteristically stated:

‘What we all know is that we have to deliver against objectives when the time comes to report our results, or when the CEO will come asking.’(I4:KH)

The Group’s highest governing body is the Board of Directors (BoD). Aegean’s BoD is responsible for appointing the BoD of Aegean-Cyprus, who in turn appoints the regional executive management team. Due to its unique ownership structure, Aegean-Greece is governed by a separate BoD, on which Aegean-Cyprus exerts however considerable formal and informal influence. The BoD of Aegean-Greece is responsible for appointing in turn its own executive management team. Both regional executive management teams constitute of the directors of regional core functions, construction divisions and autonomous BUs. Each regional executive management team elects annually its CEO who has ultimate responsibility for the region’s performance. Effectively, the regional CEOs and their executive management teams are responsible for coordinating the various construction divisions, functions and BUs of their region. The members of each executive management team coordinate with each other through mutual adjustment, and communication across regions - at the same hierarchical level - is based on informal processes, occurring on an ad-hoc basis. The structural, functioning and agency characteristics of Aegean are summarized on Table 6.1.

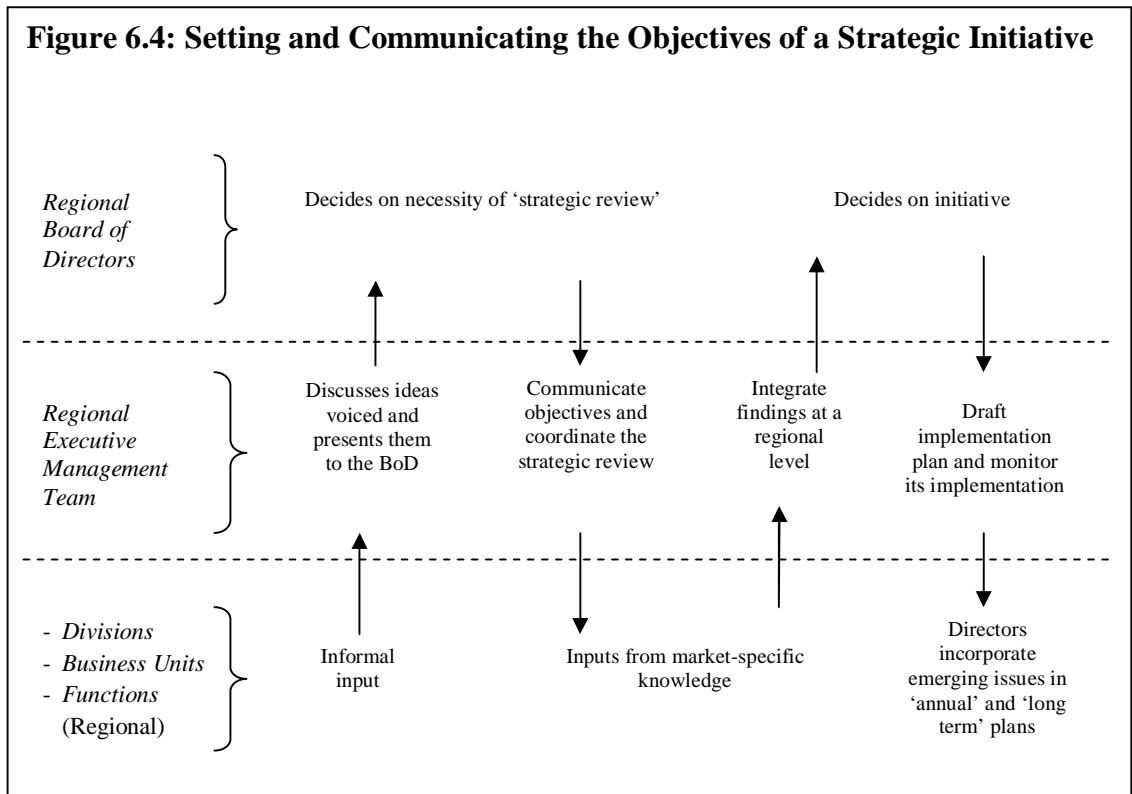
Having presented Aegean’s background and its current structure, functioning and agency characteristics, the purpose of the next section is to describe how they relate to the organizational routines through which it implements each of the corporate-level core competence development activities, proposed in Chapter 4 as effectively controlling core competence development.

6.3 Core Competence Development Activities

This section is divided into five sub-sections. Its purpose is twofold. First, to present and describe the company-specific ‘organizational routines’ through which Aegean develops its core competencies. Second, to identify and describe the role of organizational agents (individuals/groups) most integral to the implementation of the routines identified. Findings related to each activity will be presented and the

Table 6.1: Aegean’s Configuration Characteristics

Structural Characteristics	Market-Focused Strategy (project-grouping)	<ul style="list-style-type: none"> • Grouped in the country of project location. • Then <i>market</i>-focused, under construction (Infrastructure, Building, Industrial and M&E), real estate/speculative development and PPP/PFI divisions. • Then again <i>geographically-focused</i>, as projects are then monitored first on a <i>national</i> and then on a <i>regional</i> basis.
	Horizontal Organization/ Degree of Decentralization	<ul style="list-style-type: none"> • Regions operate independently • Each region’s executive management team: <ul style="list-style-type: none"> - Coordinates and resolves conflicts that may arise between construction divisions; - Coordinates construction divisions with PPP/PFI and real estate divisions; - Oversees project-specific joint ventures between construction divisions of the two regional principal subsidiaries. • Regionally, the following activities are centralized: <ul style="list-style-type: none"> - Accounting; - Procurement (materials); - Equipment and fleet management; - Human resources (firing/hiring, payroll, professional development and training, managerial services, coordinating transfer of individuals across divisions). - Decisions to pursue construction projects/investments.
Functioning Characteristics	Coordination Mechanisms	<ul style="list-style-type: none"> • Mutual adjustment at ‘horizontal levels’. • Direct supervision of strategic apex and middle management to units. • Standardization of outputs for function, divisions and business units. • Regional standardization of processes regarding financial management and materials purchasing.
Agency Characteristics	Key-People/ Organizational Parts	<ul style="list-style-type: none"> • The strategic-apex (CEO and executive management team) of each region. • Regional financial management functions. • Regional procurement function. • Regional ‘pursuing and securing projects’ functions.



implications of their implementation with respect to the Group's configuration will be briefly discussed in turn.

6.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture

Three organizational routines have been identified through which Aegean 'exhibits strategic intent (SI) and crafts strategic architecture (SA)'. The first is that of 'setting and communicating the objectives of a strategic initiative' (Figure 6.4). Although strategic initiatives are not routinely undertaken, the process of deciding 'whether or not', 'how' and 'towards what end' an initiative will be undertaken is in itself a standardized process. First, a strategic review of the Group (or one of its units) has to take place after an executive voices a concern about an issue related to competitiveness. Concerns voiced are first discussed at the level of the regional 'executive management team' and then it is the responsibility of the regional CEO to present and discuss them with the regional BoD - which will decide on the necessity for a strategic review. Review findings are integrated by the executive management team (with inputs from functions, divisions and BUs) and presented by the CEO to the BoD, who ultimately decide whether the strategic initiative is necessary. If it is, the regional CEOs and executive management teams are responsible to draft an implementation plan, which, once approved by the BoD, can be communicated downwards to functions,

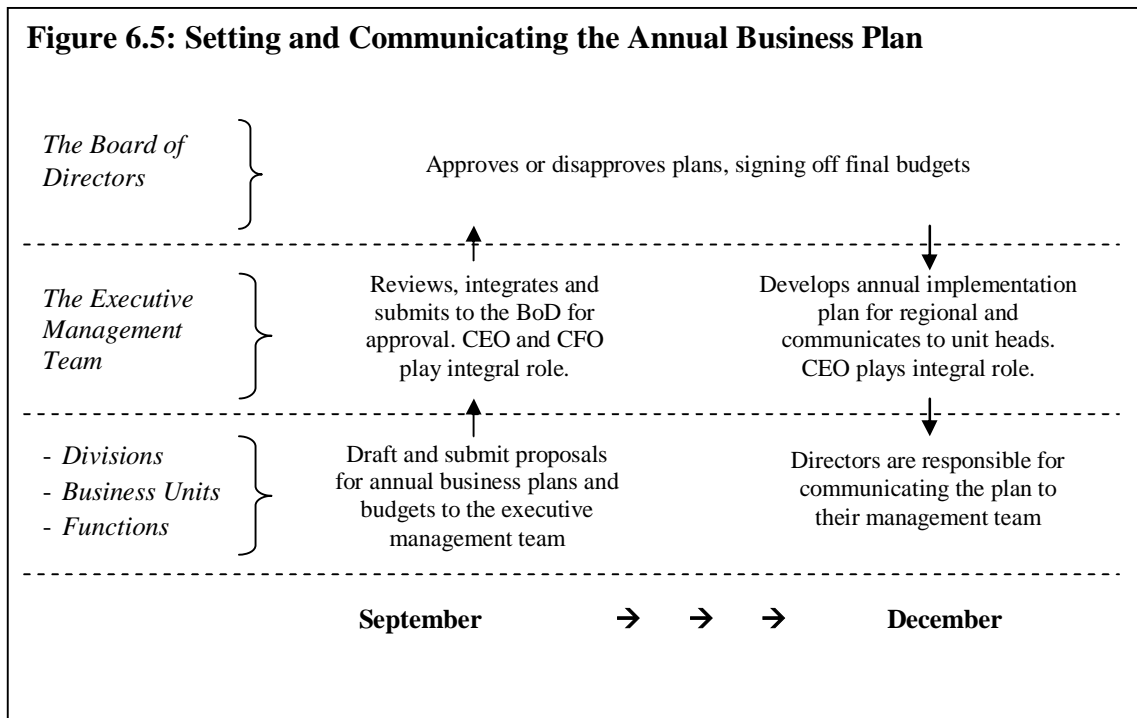
divisions and BUs that will have to incorporate any emerging issues to the implementation of ongoing business plans (**I1:KK, I2:NG**).

An example of such an initiative was the regional rolling-out of enterprise resource planning (ERP) and management information systems (MIS). Having established clearer lines of responsibility and authority, the regional restructuring of Aegean completed in 2001 brought forward the opportunity for greater control over regional construction divisions and other BUs. Some executives identified a cost-saving opportunity in centralizing certain functions that could be shared, potentially even across regions. Others, observing the Group's rapid growth - especially in the Greek market - felt that immediate action should be taken to expand its 'administrative boundaries' (Penrose, 1959; 1995). Those factors led to executives from both Aegean-Greece and Aegean-Cyprus proposing to their executive management teams in 2003 that ERP and MIS should be rolled-out and implemented in a group-wide manner. When the BoD of Aegean-Greece and that of the Aegean-Group considered the proposal, it was decided that the systems would be implemented, albeit by each region independently. By mid-2004, the executive management teams of Aegean-Greece and Aegean-Cyprus were charged with setting-up a plan of how the systems would be incorporated⁶.

The second routine is that of 'setting and communicating the annual business plan' (Figure 6.5). The process starts in October of each year at the divisions, functions and BUs, whose directors are responsible for drafting their unit's budget for the next year and for developing an 'annual business plan' proposal. Subsequently, each region's executive management team (under the coordination of the region's CEO and chief financial officer (CFO)) integrate annual budgets and business plans to a 'regional proposal' and submit this to their BoD for consideration. The two boards independently review them and decide. The decisions taken are then hierarchically communicated downwards through to the regional executive management teams who develop 'action plans' and set specific targets for their region's individual units. The directors of those units are then responsible to communicate those plans and targets to their own employees (**I1:NG, I3:BH**).

The third organizational routine is that of 'setting and communicating a long-term strategic plan' (three to five years). This routine is also implemented annually, simultaneously to 'setting and communicating the annual business plan'. Divisions,

⁶ This is an example where Aegean's existing configuration imposes a BU-mindset (Pralhad and Hamel, 1990; Hamel and Prahalad, 1994) on the group, by decentralizing operations and setting a 'silo' between the two regional centers.



functions and BUs first put together ideas drawing from their market-specific knowledge. Those are collected and integrated, at a regional level, by each executive management team. The CEOs submit and discuss them with their BoD for approval of any recommendations made. Once decisions have been made, a three to five year strategic plan is drafted by each region’s executive management team and its goals and objectives are communicated down through the hierarchy, so that each division, function and BU can incorporate them into their annual business plans.

The routines for ‘exhibiting SI and crafting SA’ and the people/organizational bodies involved in their implementation are shown on Table 6.2. Considering the roles of the individuals/groups involved, it can be understood that although it is the responsibility of the divisional, functional and BU directors to timely develop annual and long term business plans and the responsibility of their BoD to approve these, it is the executive management team of each region - led by the annually elected regional CEO - that integrates them, presents them to the regional BoD and then plans and executes them. This elevates the regional strategic apex and upper middle management as the key organizational part in exhibiting SI and crafting SA. This indicates that management and leadership will have developed a clear ‘comprehension’ regarding long and short term objectives and the strategies to achieve them, a prerequisite, in theory (McGrath et al., 1995), of organizational competence.

Considering the routines identified, it can be observed that, regionally, they provide a foundation for regulating longer term (strategic initiatives, long-term business

Table 6.2: Exhibiting SI and Crafting Strategic SA - Aegean	
Organizational Routines	People/ Organizational Bodies Involved
<i>Setting and Communicating the Annual Business Plan</i>	Aegean Group BoD Aegean-Greece BoD (Formal an informal influence by Aegean-Group's BoD) CEO of Aegean Greece Executive Management Team of Aegean- Greece CEO of Aegean-Cyprus Executive Management Team of Aegean-Cyprus Functional, Divisional and BU directors of Aegean-Greece Functional, Divisional and BU directors of Aegean-Cyprus
<i>Setting and Communicating Long-Term Strategic Plans (3-5 years)</i>	Aegean Group BoD Aegean-Greece BoD (Formal an informal influence by Aegean-Group's BoD) CEO of Aegean Greece Executive Management Team of Aegean- Greece CEO of Aegean-Cyprus Executive Management Team of Aegean-Cyprus Functional, Divisional and BU directors of Aegean-Greece Functional, Divisional and BU directors of Aegean-Cyprus
<i>Setting and Communicating the Objectives of Strategic Initiatives</i>	Aegean Group BoD Aegean-Greece BoD (Formal an informal influence by Aegean-Group's BoD) CEO of Aegean Greece Executive Management Team of Aegean- Greece CEO of Aegean-Cyprus Executive Management Team of Aegean-Cyprus Functional, Divisional and BU directors of Aegean-Greece Functional, Divisional and BU directors of Aegean-Cyprus

plan) and shorter-term (annual business plan) strategies, permitting strategies to be changed when necessary (Mintzberg, 1978 and in construction: Chinowsky and Meredith, 2000; Langford and Male, 2001). It could be argued however, that Aegean's regional divisionalization and the fact that SI is exhibited and SA crafted by the two regions independently, impose - by default - a BU-mindset (Prahalad and Hamel, 1990) to the Group, confining resources within regions and not allowing Aegean to set the stage for actualizing the latent economic benefits of related diversification (Nayyar, 1992).

6.3.2 Regulating Strategic Architecture Implementation

Two main organizational routines with respect to this activity have been identified within Aegean: i) reporting and ii) the project selection process.

Reporting, both within Aegean-Greece and Aegean-Cyprus starts at the project-level. Project reports are created on a weekly basis and the process is driven by each

region's financial management function, which collects information through the regional enterprise resource planning (ERP) system. Weekly, project reports are created and delivered to construction division, BU and functional directors. These weekly reports are aggregated monthly at a divisional and regional level. Monthly and quarterly meetings take place between the CEO, CFO, divisional, functional and BU directors of each region independently to address emerging issues. In the basic responsibilities of every director is the collaboration with the financial management function to continuously monitor compliance with the region's financial targets, regulating diversions from plans and proposing remedial action. Division managers are also responsible for the timely informing of functions of the resources required by them to execute projects. However, it is with the 'executive management team' that the ultimate responsibility to monitor and regulate the implementation of annual and strategic plans lies. Regionally, the CEO and CFO inform the BoD, who in turn informs shareholders.

With respect to the 'project selection process', the following has been identified. Projects are pursued regionally. Once a project is publicised, the responsibility to pursue it will be undertaken by the regional 'construction division' director whose area it falls under, or, who has the most expertise related to it. Initially, it is the division managers' responsibility to discuss the project with the regional executive management team, who, depending on project value may have to obtain approval by the regional BoD. In collaboration with the regional 'pursuing and securing projects' function, the construction division's 'estimating department' determines whether the project falls within the group's targets. If it does, the project is pursued (**I1:KK, I2:NG**). Subsequently, the construction division will appoint a bid director who will collaborate with divisional 'estimators' and the regional 'pursuing and securing projects' function, until the bid is submitted⁷ (**I4:KH, I6:GS**).

The organizational routines, people and organizational bodies involved in 'regulating strategic architecture implementation' are summarized on Table 6.3. Three groups of people emerge as the regulators of strategic architecture implementation: i) private shareholders, ii) the boards of directors of Aegean-Greece and Aegean-Cyprus and iii) the regional executive management teams.

⁷ Although the estimating department of each division prepares the bids, there is sometimes collaboration with the regional procurement function prior to bid submission. Consequently, if and when the project is won, there is already a 'cost structure', with information on the suppliers and the quotes they gave. This cost structure becomes the basis for project control and the monitoring of financial costs during project execution.

Table 6.3: Regulating SA Implementation - Aegean	
Organizational Routines	People/Organizational Bodies Involved
<p><i>Reporting</i></p> <p>a) Weekly project execution reporting - Performance monitored against bidding targets and estimating cost - Cost monitored through ERP framework</p> <p>b) Monthly reviews c) Quarterly Reviews d) Annual Business Plan</p>	<p>Project controller Project director Financial management function Divisional, functional and business unit directors CEO and executive management team BoD</p>
<p><i>Project Selection Criteria</i></p> <ul style="list-style-type: none"> -Bidding decentralized at the division level. -Pursuing and Securing Projects function supports division. -Procurement supports at establishing project costs at the bidding stage. -Construction person leads the bid preparation. 	<p>Construction division director Estimating department of division BU directors (in the case of property development BU of concessions BU) Pursuing and securing projects function CEO and executive management team BoD</p>

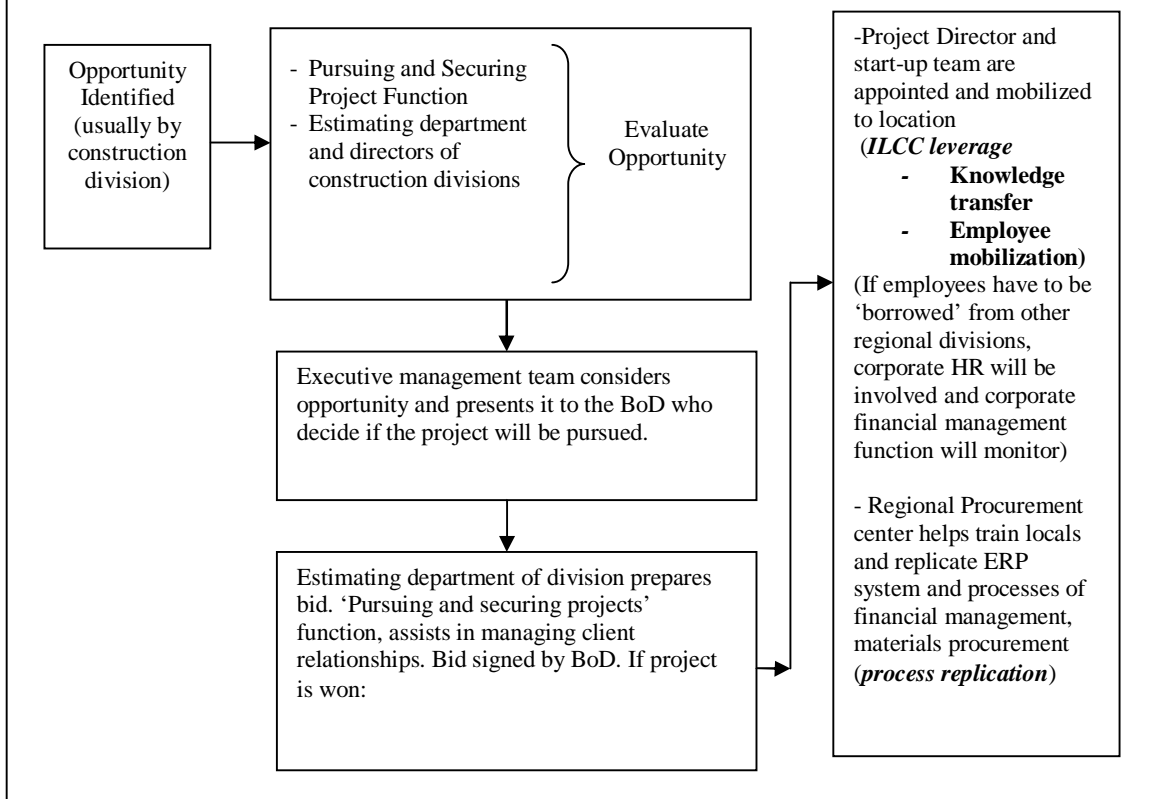
As identified in this case study, an organizational environment of ‘vertical decentralization’ (Mintzberg, 1979; 1989) of responsibility for strategy execution within regions exists at Aegean, with executive decision-making authority held by the ‘executive management team’ and BoD of each region independently. This section highlights the importance of ‘monthly’ and ‘quarterly’ meetings/reviews between regional leadership and the process of project selection, in allowing Aegean’s regions to ‘reflexively’ (Giddens’ 1984) monitor and regulate strategies if external or internal circumstances necessitate it (Langford and Male, 2001).

6.3.3 Stretching and Leveraging Resources and Core Competencies

At Aegean, three occasions have been identified where stretch and leverage of resources and core competencies occurs, one ‘intra-regionally’ and one ‘inter-regionally’.

The first intra-regional occasion is when one regional construction division undertakes a construction project in a location/country it has not operated before (Figure 6.6). In this occasion, the core competence leveraged is that of pursuing, estimating, securing and delivering construction contracts, through the intra-regional stretch of both ‘human’ and ‘organizational’ capital resources (Barney, 1991) and their integration on a project-basis. At initial project stages, human resources from the ‘pursuing and securing projects’ function are stretched to leverage ‘relational’ and ‘entrepreneurial’ core

Figure 6.6: Stretch and Leverage at Construction Projects in Novel Locations¹



competencies (Lampel, 2001) in order to secure projects. These are complemented by ‘estimating’ and ‘technical’ core competencies (Lampel, 2001), embodied in individuals from the regional construction divisions.

Assuming such a project is won (following the ‘project-selection’ process described in Section 6.3.2), a project director supported by a project start-up team will be mobilized to the project’s location⁸. If the construction division does not have the resources to staff the project internally, it will first try to obtain resources from another construction division of the region it belongs to. In such a case, the human resources (HR) teams of the construction divisions in collaboration with the regional HR function and the regional internal audit team (part of the financial management function that monitors divisions as profit and loss centres and therefore has to monitor changes in payroll) will be involved (**I7:IK**).

The project director’s primary responsibilities are to hire (if necessary) local employees and to ‘replicate’ the regionally standardized processes of i) financial management (cost control and project reporting) and ii) materials procurement, by

⁸ Whether the project director will be appointed and mobilized ‘pre’ or ‘post’ contract award, varies from project to project.

applying the regional ERP framework. The regional procurement function has developed a methodology to support the replication of procurement processes by project teams. The practice is to install a 'local' procurement centre, directly supervised by the centralized regional office in terms of the people appointed, processes followed and budgeting limits of the purchases that it can approve (**I5:GG**). The project start-up team members and the newly hired local procurement staff are trained by central procurement on how the ERP framework works. As a follow-up, random controls through visits on-site occur, to ensure processes are being followed (**I5:GG**).

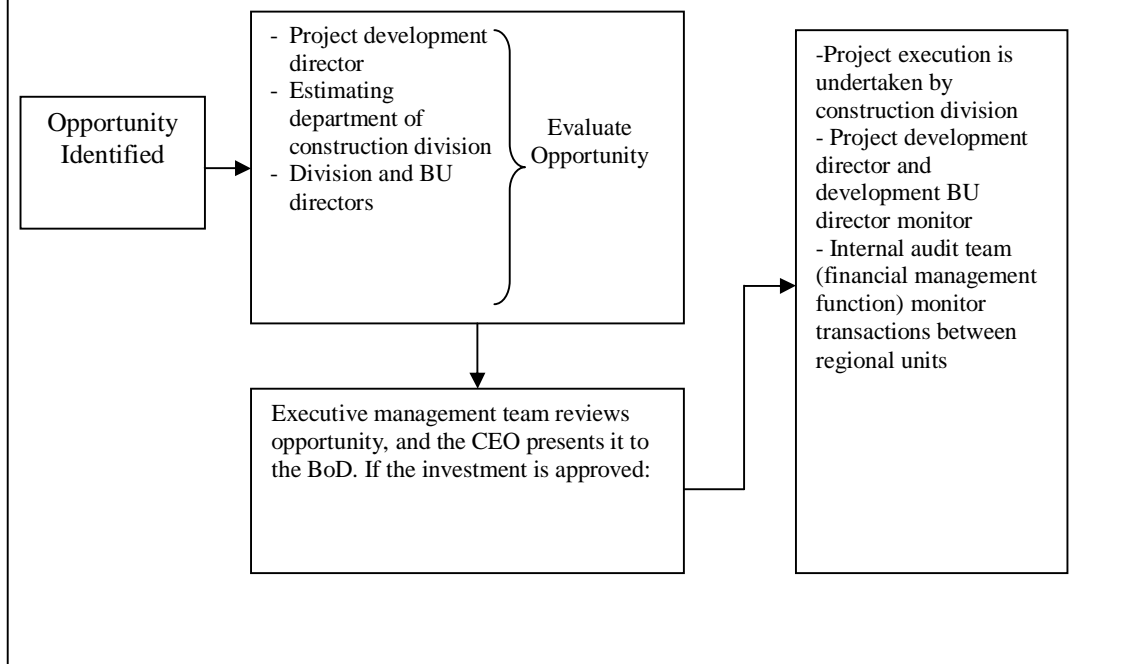
It becomes evident that, critical to deploying regionally the core competence of delivering construction contracts are the standardized processes of 'project controls', replicated across projects through the support of the regionally centralized procurement centre, through standardization of processes, skills⁹ and outputs as coordination mechanisms. Within that context, replication of effective routines (Nelson and Winter, 1982) social practices across different localities (Giddens, 1984) enables resources and core competencies to be stretched and leveraged effectively.

The second occasion of intra-regional stretch and leverage occurs during project-specific collaborations between a 'real estate and development' BU and a construction division (Figure 6.7), in order to identify and develop real estate opportunities. To illustrate this case with an example, assume the real estate and development BU of Aegean-Greece wishes to invest in a commercial building in Romania. Once the investment opportunity has been identified - usually by a 'development manager' of the BU - the BU director liaises with the director of the 'building' construction division, who provides the expertise of its estimating department for a cost estimate of the project to be developed. After an understanding of the investment's commercial issues has been achieved, the business opportunity is presented to the regional executive management team who also reviews it. The CEO subsequently presents it to the regional BoD for approval.

Once the BoD approves the investment, the development BU and construction division directors are responsible to develop an 'action plan' for its implementation. Before design of the building is outsourced to a design company, a project-specific contract is signed between the real estate development BU and the construction division, allocating responsibilities between the two parties. The enforcement of the contract and all subsequent transactions between the two units of Aegean-Greece are

⁹ Training, is also used as a mechanism to stretch Aegean's project-control resources.

Figure 6.7: Intra-Regional Stretch and Leverage – Real Estate and Development and Construction



monitored by the regional internal audit team. A ‘development manager’ from the development BU will monitor project execution as an ‘internal’ client representative¹⁰.

In the example described, the ‘real estate and development’ BU brings to the table the competence of identifying investment opportunities and the regional building-construction division brings to the table the ‘estimating’ and construction-related ‘technical’ core competencies¹¹, in order to successfully develop the project. The two units integrate and coordinate their efforts to leverage Aegean-Greece’s ‘identifying and developing real estate opportunities’ and ‘construction-related’ core competencies (viz. Section 6.2.1). The ‘coordination’ and ‘integration’ mechanisms between the two units are not standardized. As the managing director of Aegean-Greece’s ‘real estate and development BU’ indicatively stated:

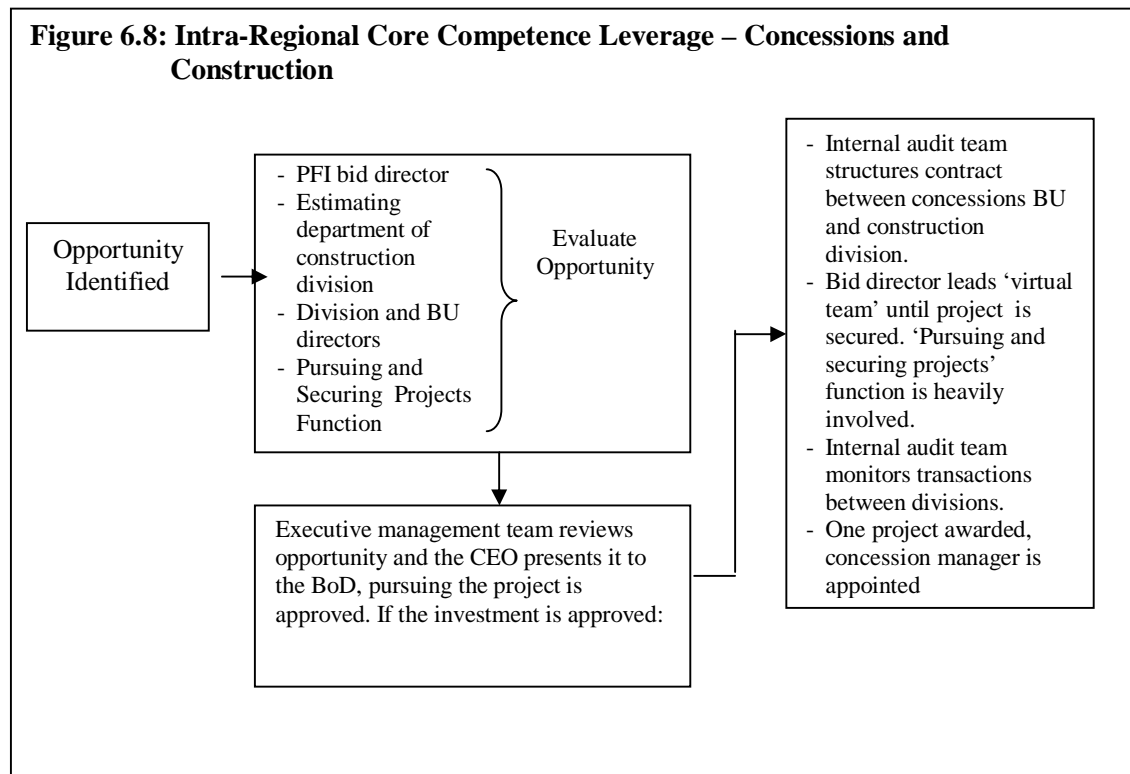
‘At the senior level, communications and decision making between the real estate and development business unit and the rest of the group is very informal and disorganized. It depends on individuals taking initiatives and does not happen through institutionalized processes.’ (I4:KH)

¹⁰ Understandably, if the project’s location is one where the group has no presence, core competence leverage as shown in Figure 6.5 will also take place.

¹¹ As these have been defined from Lampel (2001), viz. Chapter 3, Section 3.2.6.

The third case of intra-regional stretch and leverage is that occurring during project-specific contractual agreements between Aegean-Greece’s concessions BU and one of the region’s construction divisions (Figure 6.8)¹². In this case the core competence deployed is that of ‘structuring, securing and managing infrastructure and building concessions’ (viz. Section 6.2.1).

In this case, once a project opportunity has been identified, a bid-director is appointed, usually from the concession’s BU. The bid director is the person responsible for bringing together the ‘pursuing and securing projects’ function and the estimating department of the relevant construction division to evaluate the opportunity. The efforts of the participants at this stage are jointly overseen by the concessions BU and construction division directors. Once the opportunity is evaluated, the ‘executive management team’ reviews it and subsequently, the CEO presents it to the BoD for approval. If the BoD approves the necessary investment, then the internal audit team gets involved to structure a project-specific contract between the region’s market-based units.



Throughout this process, the bid director leads the efforts of the project team, staffed from the regional units involved and coordinates their efforts until after bid submission, when the project is secured. The ‘pursuing and securing projects’ function is heavily involved in that process (I2:NG, I3:BH).

¹² This is a case that occurs specifically in Aegean-Greece and not the group as a whole.

Once a project is awarded, a concessions manager is appointed, most probably from the concessions BU. The concession manager will be responsible to oversee the successful completion of the project, liaising with BU and division directors to ensure their effective coordination. During project implementation, the region's financial management will constantly monitor and record transactions between group units.

Each organizational unit brings a different competence to the table and these are integrated on a project-specific basis through stretching and leveraging of the 'specialized knowledge of individuals'. The concessions BU in collaboration with the financial management function that of 'structuring, pursuing and securing concession contracts'. The pursuing and securing projects function, that of 'building relationships with the client and managing the project stakeholders'. The construction division, that of estimating the project cost (at the estimating stage) and managing the design and construction of the built asset. Collectively, they deploy to the project the core competence of 'structuring, securing and managing the concession'. One feature of this case is that there is no employee mobilization between the organizational units involved. The project team is effectively a 'virtual team' led by a bid-director during the pre-award stage and the concession manager after the contract has been won, who are responsible for bringing together the individuals possessing the expertise needed, but who may be directly employed by different divisions (**I3:BH**).

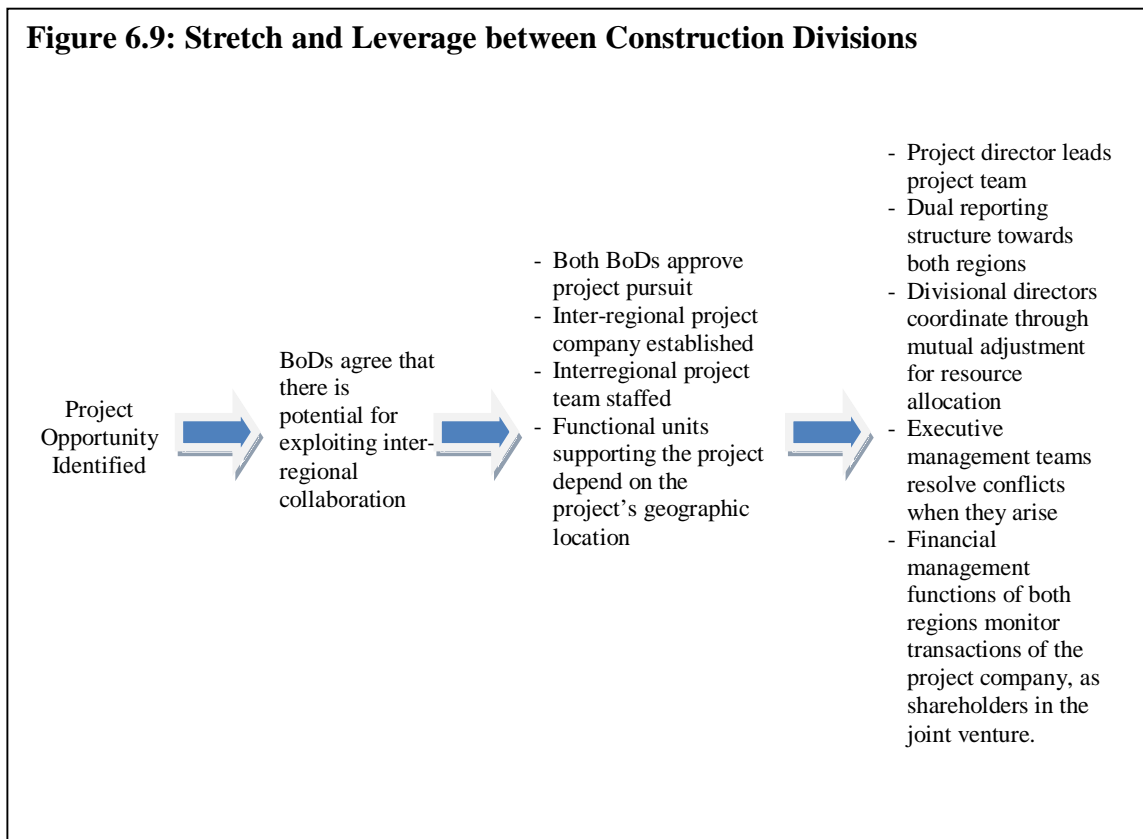
Regarding inter-regional core competence leverage, this occurs when two (or more) regional construction divisions form a project-specific contractual agreement for an international construction project (Figure 6.9)¹³. The core competence leveraged at this instance is that of 'pursuing, estimating, securing and delivering construction contracts'. The way that collaboration between the two regions would be initiated is usually after the director of a regional construction division would realize that he needs a resource/competence that his division does not possess. In such a case, the director would have to communicate with other regional division directors, or through his regional executive management team to the other region¹⁴. The fact that no direct communication exists between BU-directors of different regions, indicates that, as a group, Aegean has not managed to 'economize' on the communications required for the knowledge of its individual members to be more accessible (Grant, 1996b).

Discussions on how to structure an 'inter-regional project-specific contractual agreement' would then begin. In such cases, there is direct communication between the

¹³ As in the cases of projects undertaken in Jordan, Ethiopia and the UAE (Figure 6.2).

¹⁴ Viz. Figure 6.5.

Figure 6.9: Stretch and Leverage between Construction Divisions



CEOs and executive management teams of Aegean-Greece and Aegean-Cyprus to determine how a which region will provide ‘functional’ support. Communication across regional boards and executive management teams is informal. In the case of such projects, individuals have to be mobilized and functional processes have to be replicated in a remote geographical context. A cross-regional project team is created in order to undertake the task.

In addition to the coordination issues between the two regional units, the implementation of the project itself and the ‘stretch’ and ‘leverage’ mechanisms involved in its execution once the project team has been staffed and the region that will provide functional support has been chosen, are identical to the process described with respect to a ‘project undertaken in a novel location’ (viz. Figure 6.3). As with intra-regional coordination, communication is informal at the strategic apex level. In one interviewee’s own words:

‘When a joint venture has to be formed, communication starts at the very senior level and is very informal...but nevertheless effective. Together we decide how the project will be staffed and which region will provide functional support.’ (I1:KK)

The findings regarding stretching and leveraging resources and core competencies at Aegean are summarized on Table 6.4. What can be immediately observed is that in three out of four occasions where competencies are leveraged across Aegean, a project-specific contractual agreement has to be set-up by different parties, a testament to the group's divisionalization and transaction costs involved in intra-organizational collaboration. This, points to higher overheads of the group as a whole, potentially reducing its cost competitiveness.

A review of the people/organizational bodies in the different occasions stretching and leveraging occurs, provides useful insights as to the 'integration' and 'coordination' mechanisms through which core competencies are deployed within Aegean. In all four occasions identified, certain organizational bodies are constantly present. First and foremost, there is the regionally centralized procurement function, which is responsible for enforcing in regionally dispersed projects the 'replication' of project control processes. Second, there are the project directors and their support teams who embody the core competencies of their region and who actually replicate processes across project contracts. Third, there are the executive management teams and the CEO of each region, who coordinate the various divisions, functions and BUs, while providing direction by specifying their expected outputs. The strategic apex of each region is essentially the 'integrator' of different organizational units. Fourth, there is the HR function involved as the 'mediator' between divisions. Finally, it has been identified that all transactions between divisions (e.g. a project-specific collaboration between the concessions BU and one of the construction divisions, or, the renting of equipment from one of the construction divisions) whether those may be inter-regional or intra-regional, happen through 'contractual agreements' and are monitored by the region's internal audit function.

As expected from the description of Aegean's configuration (viz. Section 6.2.1), resource 'stretch' and core competence leverage is confined within regions, except in the case of inter-regional project-specific collaborations. Aegean's regional mind-set inhibits leveraging its core competencies group-wide, which suggests that its ability to access, harness, transfer and integrate the knowledge held by its individual members (Grant, 1996b) has not yet reached its full potential. In addition, the opportunity and lateral linkages do not exist for the establishment of active cross-regional social networks between peers, which would allow value to be extracted from the 'relatedness' and 'interrelationships' between the activities that the two regions undertake (Porter, 1985; Tsai, 2000).

Table 6.4: Stretching and Leveraging Resources and Core Competencies - Aegean

Generic, Theory-based Activity	Occasion	People/Organizational Bodies Involved	Type of Core Competence Leverage	Core Competencies Leveraged
<i>Stretching and Leveraging Resources and Core Competencies</i>	Construction projects in Novel Locations	<ul style="list-style-type: none"> - Construction division estimating department - Project director - Start-up team 	ILCC Leverage (employee mobilization)	<ul style="list-style-type: none"> - Pursuing, estimating, securing and delivering projects at novel locations
		<ul style="list-style-type: none"> - Regional 'pursuing and securing projects function' - Regional procurement 	Process replication	
	Intra-Regional Contractual Agreement Between a Real Estate and Development BU and a Construction Division	<ul style="list-style-type: none"> - Project manager/construction - CEO, executive management team - Internal audit team (financial management function) 	OLC Integration and Leverage	<ul style="list-style-type: none"> - Pursuing, estimating, securing and delivering projects at novel locations - Identifying and developing real estate opportunities
		<ul style="list-style-type: none"> - Director of construction business-unit - Construction division estimating department 	ILCC leverage (knowledge transfer – Virtual Team)	
		<ul style="list-style-type: none"> - Project development manager and director of development 	ILCC leverage (Virtual Team)	
	Intra-Regional Contractual Agreement Between the PPP/PFI BU and a Construction Division	<ul style="list-style-type: none"> - CEO and executive management team 	OLC Integration and Leverage	<ul style="list-style-type: none"> - Pursuing, estimating, securing and delivering projects at novel locations - 'Structuring, securing and managing infrastructure and building concessions'
		<ul style="list-style-type: none"> - Bid director (concessions BU) - Director of concessions BU - Director of construction division - Construction division estimating department 	ILCC Leverage	
		<ul style="list-style-type: none"> - Pursuing and securing projects function - Internal audit team (financial management function) 	Process Replication	
	Inter-Regional Project-Specific Contractual Agreement between Construction Divisions	<ul style="list-style-type: none"> - Board of Directors - CEO and executive management team 	OLC Integration and leverage	<ul style="list-style-type: none"> - Pursuing, estimating, securing and delivering projects at novel locations
		<ul style="list-style-type: none"> - Director of construction division - Project director and start-up team 	ILCC Leverage	
		<ul style="list-style-type: none"> - Pursuing and securing projects function - Internal audit team (financial management function) 	Process replication	

6.3.4 Improving Business Practices

At Aegean, ‘improving business practices’ occurs either through strategic initiatives or ‘experiential learning’ at projects. In the first case, the implementation of such initiatives does not transcend regional centres and happens in a process similar to ‘setting and communicating a strategic initiative’ (viz. Section 6.3.1, Figure 6.5). One example (viz. Section 6.3.1) was that related to the rolling out of ‘enterprise resource planning’ (ERP) and ‘managing information’ (MI) systems in order to regionally standardize practices in i) materials purchasing, ii) financial management and iii) project controls¹⁵. These three activities are the only ones standardized at a regional level.

Capturing knowledge and innovations created at projects does not occur routinely. Any areas of improvement in the processes related to ERP are identified by the procurement and financial management functions during operations. The ‘routinization’ of any improvements is proposed to the BoD (who control finances) and if approved, they become part of the standardized operating procedures of the ERP framework (**I1:KK, I2:NG, I5:GG**). Most frequent is the case when a project manager might wish to improve existing processes in a specific project context (**I3:BH**). As the director of one of the construction divisions of Aegean put it:

‘The ERP only serves the finance people. So, what they monitor is the project’s implementation in terms of money spent only, not physical asset constructed. What we need is some framework to monitor work against what we are supposed to be building. So, I asked a project manager to improve the monitoring process, by monitoring the physical construction on top of the financials. Did we use it again? No. Could we have used it? Perhaps.’ (**I8:NS**)

Findings regarding ‘improving business practices’ are summarized on Table 6.5. The case study identifies the absence of systematic processes through which project-led learning (Brady and Davies, 2004; Davies and Hobday, 2005) can occur, indicating that knowledge and experience gained can be lost when projects end and their teams are dismantled. In addition, the absence of learning mechanisms (Prencipe and Tel, 2000) and systems to collect, analyze, store, disseminate and use information (Popper and Lipschitz, 1995), indicate that Aegean does not have the capacity for ‘self-reflective’ (Giddens, 1984) organizational learning (Argyris and Schön, 1978) except learning that

¹⁵ Also viz. Section 6.3.2, where the issue of ‘process replication’ within the context of stretching and leveraging resources and core competencies was discussed.

Table 6.5: Improving business practices - Aegean	
Organizational Routines	People/Organizational Bodies Involved
<i>Strategic Initiative</i>	Board of Directors Executive management team CEO Divisional, functional and BU directors
<i>Project-Specific Improvements</i>	Project Manager

occurs as a result of ‘reflection’ during ‘regulating SA implementation’ routines. This observation is echoed in the words of one senior executive who stated:

‘The problem starts from the fact that, in our group, we have not spent the time and effort to record knowledge gained and to document it so that it can be transferable and applicable in different contexts. That’s why usually knowledge is lost. And this happens because if a change is made in a process probably no one outside the project will care once the project is over.’ **(I3:BH)**

6.3.5 Developing Managerial and Organizational Leadership Capacity

Findings regarding this activity are summarized on Table 6.6. Aegean has not yet developed a formalized succession planning and leadership development framework. Within both regions, each divisional, functional and BU director is responsible to develop and assess, ‘on the job’, his/her employees. It is an informal process based on a common understanding that exists, that superiors are responsible for recognizing managers with potential and helping them develop further. Along these lines, the development of management and organizational leadership capacity happens through functional and divisional directors informally monitoring individuals who show potential and giving them roles of increased responsibility as they may appear. The absence of structured programs to develop managers and leadership, means that individuals who may hold different positions of responsibility at the group are not being evaluated against a set of ‘objective’ and ‘explicitly’ stated individual-level skills or profession-specific individual level core competencies, but rather on how they measure up to their superiors’ expectations. Consequently, it could be argued that the organizational leadership developed will be a perpetuation of the existing leadership’s personalities and traits (Rothwell, 2006), irrespective of whether these are the most appropriate or not.

Table 6.6: Developing Managerial and Organizational Leadership Capacity – Aegean	
Organizational Routines	People/ Organizational Bodies Involved
<ul style="list-style-type: none"> - Promotion is based ‘on the job’ performance and assessment. - Divisional, function and BU directors are responsible for developing their own employees, assisted by regional HR organizing professional development seminars on an ad-hoc basis. - Senior managers of divisions, functions and business units need to be approved by executive management teams. - Directors of functions, divisions and business units are appointed by the BoD but need to be approved by the executive management team. - The executive management team elects annually the CEO. 	<ul style="list-style-type: none"> BU directors Division directors Functional directors Executive management teams Boards of directors Regional corporate HR function

The role of regional executive management teams is to decide on the competence of their divisional, functional and BU directors. Executives do this through informal discussions with their personal networks and the other directors. At this hierarchical level, performance assessment implicitly includes an evaluation of their motivation and their continuous involvement in the achievement of organizational objectives (**I2:NG, I1:KK**). Ultimately, the BoD appoints the executive management team and the directors. However, the latter have to be approved by the former.

The fact that Aegean does not have a structured system to monitor and guide competent managers intra-regionally - let alone inter-regionally - indicates that the Group carries the risk of competent managers being trapped within the divisions they belong in the first place. This, re-enforces the existence of a BU-mindset (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994) already identified as inherent in Aegean’s configuration. In addition, the absence of a ‘horizontal organization’ mechanisms to rotate managers across regions, in combination with the absence of a ‘horizontal organization’ that can facilitate, maintain and develop social networks across regions at the operating core and middle management levels, carries the risk of developing organizational leadership with reduced social capital and a willingness to trust and learn from their colleagues (Penrose, 1959; 1995; Javidan, 1998; Drath, 2000).

The case study so far has described the ‘structural’ and ‘functioning’ characteristics of the Aegean Group, as well as the ‘routines’ and ‘agents’ involved in the implementation of the five core competence development activities. The purpose of

the next section is to discuss how Aegean's configuration influences the interrelationships between the five, generic, core competence development activities.

6.4 Interrelationships between Activities

This section integrates findings from sections 6.3.1 to 6.3.5 to identify the interrelationships between core competence development activities, as well as how these are influenced by Cyclone's configuration (viz. Chapter 4, Section 4.4). Summarized findings from Tables 6.1 to 6.6 are displayed on Table 6.7.

At Aegean, 'exhibiting strategic intent (SI) and crafting strategic architecture (SA)' occurs independently in the two regions the group is organized in. Consequently, one can talk about two simultaneous, largely independent, corporate strategies. Within each region, 'exhibiting SI and crafting SA' is integrated with routines for 'regulating SA implementation' through the development of an annual business plan. This allows management to regulate strategy execution in line with regional objectives, mainly through 'reporting' and 'project selection' routines. It does not however assist in the management of each region developing adequate 'comprehension' as to the objectives of the other region and consequently, of the Group as a whole. At the same time, Aegean's configuration lacks:

- Organizational learning mechanisms that can put experiential knowledge in future use by capturing and disseminating it corporate-wide;
- Systematic processes to track, monitor and train competent employees.

As a result, routines related to 'improving business practices' and the 'development of managerial and organizational leadership capacity' are not a part of regional, nor group strategies. The consequences for Aegean are that it may find it harder to maintain the human capital that spearheads its growth efforts as current leadership retires or moves on. In addition, it could face obstacles when developing existing routines or selecting new successful routines as a function of experiential learning. Consequently, the effectiveness with which it will develop its core competencies could suffer.

Table 6.7: Activities, their Routines and Interrelationships - Aegean			
Generic, Theory-Based Activities	Organizational Routines	Key-People/ Organizational Bodies	
Exhibiting SI and Crafting SA	<ul style="list-style-type: none"> • Setting and Communicating the Annual Budget and Business Plan • Setting and Communicating Long-Term Strategic Plans (3-5 years) • Setting and Communicating Strategic Initiatives 	Board of Directors/Shareholders Executive Management Team Divisional, Functional and BU Directors	
Stretching and Leveraging Resources and Core Competencies	<ul style="list-style-type: none"> • Construction Projects in Novel Locations • Intra-Regional Contractual Agreements between a Property Development BU and a Construction Division • Intra-Regional Project-Specific Contractual Agreements between the Concessions Division and a Construction Division • Inter-Regional Project-Specific Contractual Agreement between Two Construction Divisions 	Executive Management Team Divisional, Functional and BU Directors Internal Audit Team (Financial Management Function) Pursuing and Securing Contracts Function	<i>Organizational Level Competence Integration and Leverage</i>
		Project Director and Support Team Regionally Centralized Procurement Team Regionally Centralized Human Resources Functions	<i>Individual Level Core Competence Leverage</i>
		Regionally Centralized Procurement Team Regionally Centralized Financial Management Function	<i>Process Replication</i>
Developing Managerial and Organizational Leadership Capacity	<ul style="list-style-type: none"> • ‘On the Job’ Performance 	Divisional, Functional and BU Directors Executive Management Team Board of Directors/Shareholders	
Improving Business Practices	<ul style="list-style-type: none"> • Strategic Initiatives • Project-Specific Operational Improvements 	Board of Directors/Shareholders Executive Management Team (especially CEO) Divisional, Functional and BU Directors Project Directors	
Regulating SA Implementation	<ul style="list-style-type: none"> • Reporting • Project Selection Criteria 	Board of Directors/Shareholders Executive Management Team (especially CEO and CFO) Divisional, Functional and BU Directors Financial Management Function (including Internal Audit Team)Project Directors	

6.5 Summarizing and Concluding Section

The findings of this case study regarding the issues this research addresses are summarized on Table 6.8. When considering the influence of Aegean's configuration on the effectiveness with which it can develop its core competencies, the following can be concluded:

- Aegean's regionalization could lead to ineffective use of resources from duplication of efforts across regions;
- Intra-regionally, there are additional processes on top of 'financial management' and 'materials-purchasing' that could be codified, standardized and replicated across projects, to save project managers the time of having to discover solutions that may have been already discovered in previous projects. This point is echoed in concerns voiced by executives, particularly regarding activities related to project execution. Indicatively, a senior executive stated:

'What would really help in the first stages of a project, would be to have a booklet, with method statements about activities that need to be undertaken. This would save lot of project managers a lot of time, as they would be able to plan and execute their work quicker.' (I8:NS)

The lack of method statements makes core competence leverage much more dependent on the tacit knowledge of project managers. This, combined with the absence of a 'horizontal organization' to the specialized knowledge of individual organizational members across organizational units, could reduce Aegean's ability to replicate effective routines and therefore leverage its core competencies;

- The fact that 'improving business practices' is not integrated with the strategy process, combined with non-existence of organizational learning mechanisms, indicates that Aegean may not be able to improve existing routines or develop new ones as a function of experiential learning, and therefore runs the risk of repeating mistakes;
- No mechanisms exist to promote the creation of social capital between the managers and leadership of the two regions. This, combined with the absence of institutionalized programmes for succession planning and leadership development, suggests that Aegean may not be able to sustain and develop its managerial and organizational leadership capacity in line with its corporate objectives.

Table 6.8: The Aegean Group: Summarizing	
Issues	Findings
Configuration	Two autonomously operating regions, each diversified and internationalized in different construction markets (building, civil engineering, industrial), a real estate development BU (both Aegean Greece and Aegean-Cyprus), and PPP/PFI BU (only in Aegean Greece). Functions centralized at a regional level and facilitate some degree of process standardization in activities such as procurement and financial management, but only intra-regionally. Business units have performance responsibility but human resources are owned by regions and are coordinated regionally.
Core Competencies	<ul style="list-style-type: none"> • Pursuing, estimating, securing and delivering building, infrastructure and industrial construction contracts; • Identifying and developing real estate development opportunities; • Structuring, securing and managing infrastructure and buildings concessions (only within Aegean Greece).
Dynamic Capabilities	<ul style="list-style-type: none"> • Acquiring and integrating companies • Organically building core competencies in related markets with no prior experience.
<i>On the relationship between Aegean's configuration and its ability to develop a corporate strategy, with optimal potential for implementation</i>	Aegean is regionally divisionalized. This creates a 'regional'-mindset and does not allow setting the stage for strategy execution to take place in an environment of organization-wide collaboration. It also inhibits 'provisions' that could be made, regarding corporate-wide trading, training and rotating of competent employees.
<i>On the relationship between Aegean's configuration and the effectiveness with which it regulates its strategies</i>	Feedback mechanisms exist to allow strategies to be regulated, albeit regionally
<i>On the relationship between Aegean's configuration and the effectiveness with which it stretches its resources and core competencies</i>	Employees are not mobilized across regions. This reduces Aegean's ability to stretch its human resources corporate-wide, and may reduce its ability to leverage across regions the human-dependent, intangible element of core competencies, embedded in the tacit knowledge of individual employees. The absence of knowledge management systems may have similar implications.
<i>On the relationship between Aegean's configuration and the effectiveness with which it can reconfigure its processes, structures and norms, as a result of organizational learning</i>	The absence of organizational learning mechanisms suggests that Aegean may not be able to capture knowledge created and effectively deploy it to other projects, nor utilize it to undergo necessary organizational transformations.
<i>On the relationship between Aegean's configuration and the effectiveness with which it develops managerial and organizational leadership capacity</i>	The absence of succession planning and leadership development programs, suggests that Aegean may not be able to intentionally exploit informal networks and intra-organizational relationships between employees and develop the 'social capital' of its management and leadership.

Reviewing the findings one cannot be certain whether Aegean will successfully align its organizational resources with the requirements of its industry environment in the long term. However, even in the case that it does, this would likely constitute a passive reaction to external forces, which, sooner rather than later, are bound to find the group vulnerable to external threats beyond its control. What the findings allow one to suggest is that, with its current configuration, Aegean may not be able - in the long run - to effectively pursue strategies for the development of its core competencies.

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Chapter 7: Albion Plc

7.1 Albion's Early History

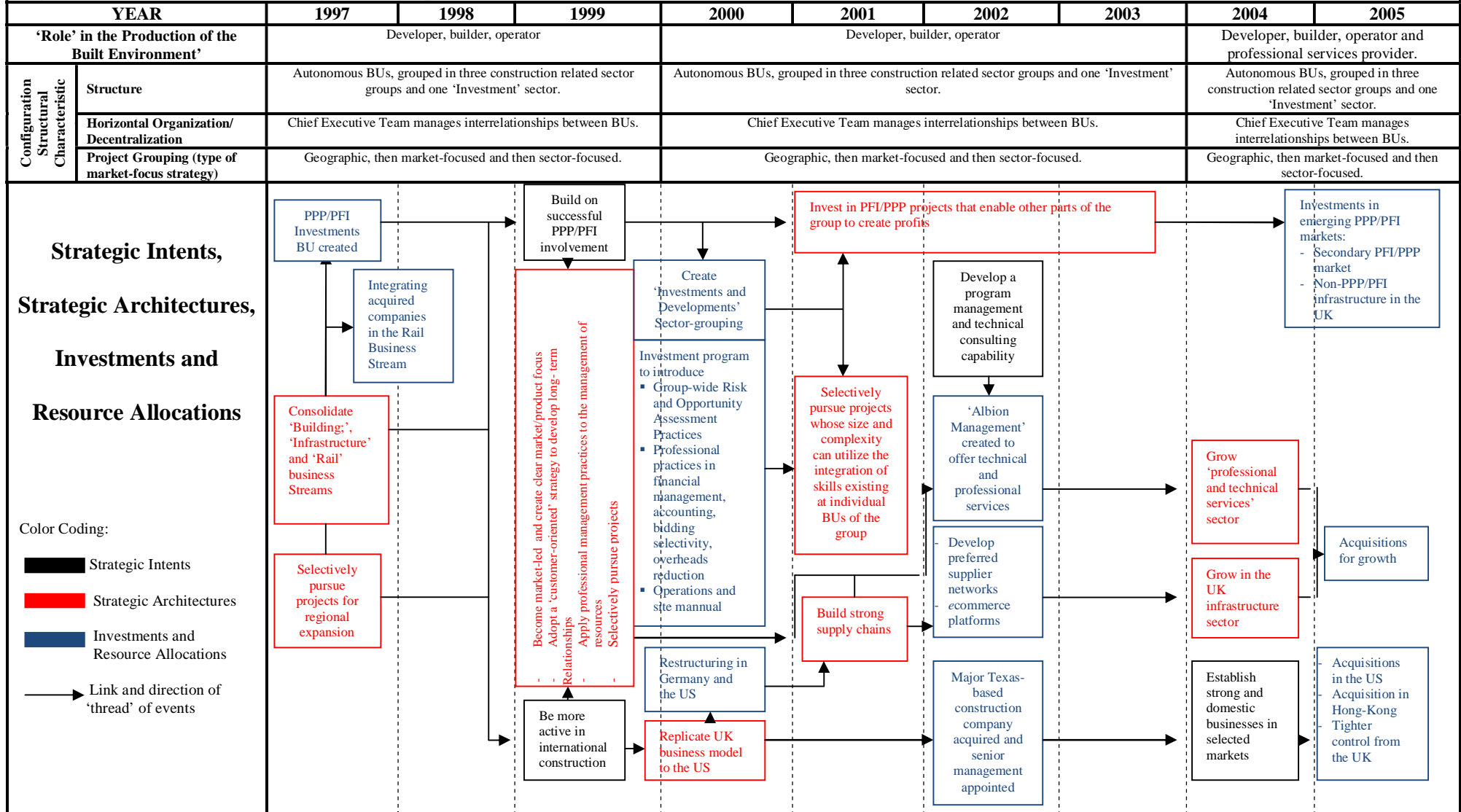
Albion was founded in 1909 in the United Kingdom (UK). Its first contract involved laying new track and installing additional generating plant at a power house. By the 1920s, Albion had diversified into power and energy. In 1922, its founders established a company called 'Power Investments' to develop and fund hydroelectric projects. Overseas work was massively curtailed during the 2nd World War, but that changed during the 1950s. The 1950s also saw 'Power Investments' acquiring Albion. During the 1960s, the company constructed a major portion of a network of overhead power lines in the UK, a number of power projects in Malaysia, Kenya, and Tanganyika, as well as water systems in the Jordan Valley. In 1969, 'Power Investments', which still owned Albion, was taken over by a cable manufacturer. The principle benefit for the cable manufacturer was that installation work secured by Albion provided some volume for cables sales, capturing market share. During the 1970s, the company took advantage of the booming railway electrification market. The 1980s saw further diversification with commercial building as a major activity. A strategic acquisition substantially enhanced the group's mechanical and electrical capability and wider activity coverage. In the 1990s, rail privatization and the - then - newly introduced PPP/PFI procurement route provided opportunities for growth, which Albion decided to exploit by entering those markets. In 1997, the decision was taken to dispose of all cables businesses by 1999. It was at that point that the corporate entity began trading publicly under the name of 'Albion plc'.

At the time of writing, Albion was an internationally diversified construction services and investment business. It had a turnover close to £10bn, was valued at £1.7bn and operated in the United Kingdom, Continental Europe, the United States, South America, North Africa, Middle East and Asia/Pacific regions, employing around 50,000 people.

7.2 Recent Evolutionary Path and Albion's Present State

Figure 7.1 displays how Albion's 'role' in the production of the built environment and 'structural characteristics' of its configuration have evolved in relation to notable strategic intents its leadership has exhibited, strategic architectures

Figure 7.1: Evolutionary Profiling of Albion plc



it has crafted and investments it has made¹.

During the sale of the cable manufacturing business (1996-1999) Albion grouped autonomous market-focused business units (BUs) under three sector-focused groups: 'rail', 'civil engineering' and 'building'. Through these, Albion played in each sector the role of construction services provider. This organizational restructuring was accompanied by the appointment of a managing director (MD) for each BU and a sector managing director (SMD) for each grouping, with clear lines of authority, responsibility and accountability.

Initially, when the focus was clearly on securing more stable and secure earnings, the plc's overall objectives were to:

- Create stable workload for the group's BUs;
- Improve returns on capital investments;
- Improve operational efficiencies in key business processes.

Albion's expansion plan was founded on acquiring businesses that would complement or supplement its existing competencies in specific market areas it was already active in. Such a strategy necessitated continuous integration of BUs, something pursued through on-going 'organizational restructuring programs' (1997-1998, 2000 and 2004).

In addition to consolidating and growing in the three construction sectors it was already active in, Albion took advantage of the PPP/PFI procurement route introduced by the UK government in the early 1990s and decided to enter and pursue growth in that market. It did so by building on its existing strengths of 'design and build' and experience from 'early contractor involvement' contracts. As involvement with PFI/PPP projects grew (1998-1999), a fourth sector-grouping was created to coordinate market-focused portfolios of PFI/PPP projects. Its creation reflected the increasing importance of PFI/PPP contracts for Albion, as well as the intent to better manage their interrelationships with the rest of the plc's BUs. The aptly named 'Investments' sector unit, undertook 'life-cycle management of concession contracts, procuring construction and operations services from Albion's other autonomous BUs. In that capacity, 'Investments' acted as a quasi-client creating workload for the group's other units, in parallel with generating income from equity investments in concessions.

¹ The display is in the form of an 'event-flow network'. Interrelationships are demonstrated with the use of 'line-arrows' (notice that the thread always starts from a strategic intent the group has set) in order to explain how the new conditions emerge from previous decisions and actions.

1999 saw Albion strengthening its focus towards improving key business processes². Efforts were made for ‘risk management’ practices to be embedded in BU-specific operating systems and in 2000 an effort was made to roll-out a corporate-wide ‘risk and opportunity management framework’ covering commercial, safety, environmental and reputational risks. In 2001, an attempt was made to apply this framework’s principles to the processes through which Albion’s BUs selected projects and investment opportunities.

In addition, Albion’s leadership decided in 2000 to pursue a greater degree of internationalization. The intent was set to replicate the successful UK business model in the US, followed by the acquisition of a major US building contractor in 2002. International expansion was also pursued towards Asia/Pacific, with the acquisition of a 50% stake in a leading construction company in Hong-Kong³. In 2004, Albion exhibited the intent of developing a ‘professional’ services business that, coupled with a customer-focused strategy and early involvement in the project process, would provide clients with a single point of contact with the plc’s BUs. The objective was to provide clients with a professional-oriented service regarding activities at the front end of the project’s life-cycle (e.g. master planning, design management, procurement methods) while exploiting the interrelationships existing between the plc’s four industry-focused sector-units of BUs. For that reason, a BU called ‘Albion Management’ was created.

A review of Albion’s recent evolutionary profiling allows the following observations. First, the group has pursued a strategy of growth by related diversification in the construction industry. Second, it has organically grown in the PPP/PFI sector, leading to the creation and growth of a sector-focused organizational unit. Third, the group has moved from having adopted the roles of ‘developer’, ‘constructor’ and ‘operator’ of built assets, to adopting the role of ‘professional service’ provider, which it intends to use in order to ‘integrate’ the different ‘role-skills’ it possesses and develop into a life-cycle service provider. To develop the capabilities required on that role, an autonomous BU was originally set-up and charged with the task.

Albion originated from a construction services and investments background and, following a period of ownership by a cables manufacturer, re-emerged to develop into a leading diversified international construction services provider. Early involvement with

² This does not imply that systems to perform these processes did not exist, but that their application was specifically reinforced, sometimes with the start-up and implementation or corporate wide programs (e.g. risk management).

³ Pursuit of growth in the PPP/PFI markets, internationalization and an effort to improve and standardize key business processes was being simultaneously pursued up to the time when this research began.

PPP/PFI projects has allowed the company to solidify its position as a leading concessions manager in the UK and abroad. What its brief historical review and evolutionary profiling suggest, is that Albion has developed the following core competencies:

- Pursuing, securing and executing ‘building’, ‘civil engineering’ and ‘rail engineering’ construction projects;
- Structuring, securing, delivering and managing PPP/PFI concessions.

In addition, the recent evolutionary profiling provides some useful insights regarding the ‘dynamic capabilities’ (Teece et al., 1997) of Albion and the strategies and tactics through which it pursues the development of its core competencies. Thus, Albion:

- Acquires - and may integrate - companies in order to expand its geographical scope of operations and complement core competencies it already possesses;
- Develops organically (e.g. Albion Investments, Albion Professional Services) the capabilities and core competencies that may be market-related but revolve around a different ‘role’ involved in the production of the built environment;
- Improves business practices from the centre and tries to disseminate best practice to the BUs through BU-specific liaisons.

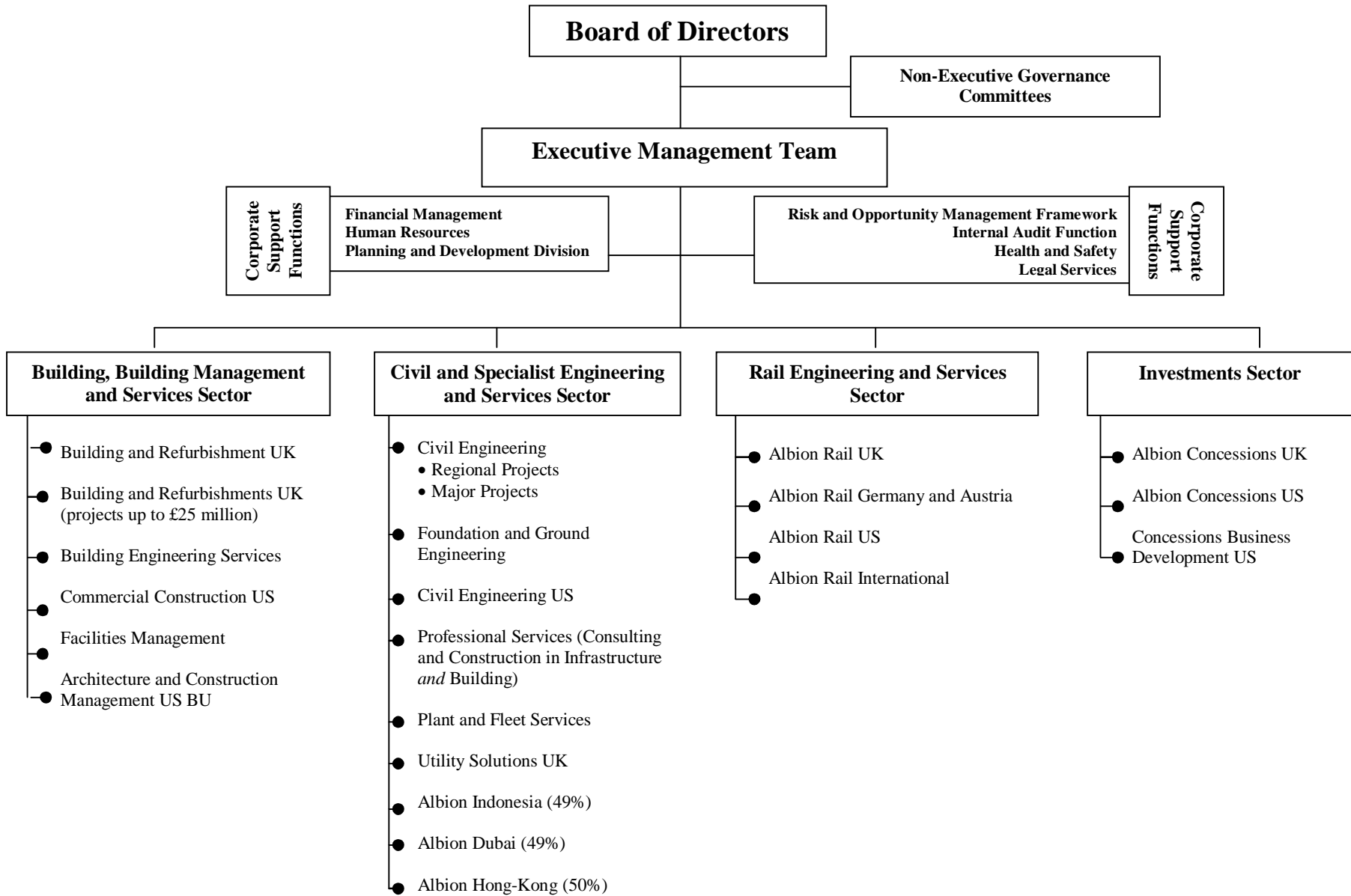
Other core competencies and dynamic capabilities may also be present.

7.2.1 Structural, Functioning and Agency Characteristics

As Figure 2.4⁴ shows, Albion groups projects in autonomous, market-focused BUs, which also reflect their ‘national’ operating context (e.g. Commercial Construction *US*, Utility Solutions *UK*, Albion Rail *US*, Albion Concessions *US*). BUs are positioned under three construction-related sector groupings (‘civil engineering’, ‘building’ and ‘rail’) and one related to PPP/PFI investments. Human resources are owned by BUs, which have autonomy over their allocation. Each BU represents an organizational level capability (potentially competence) in a specific market rather than an orientation towards a ‘client type’ (**I2:DV**).

⁴ The figure presented here is an adaptation of an organizational chart that the researcher received from one of the interviewees, in order to conceal the identity of the ICM.

Figure 7.2: Structure of Albion plc



Within the construction-related sector-groupings, the services BUs offer reflect the extent of Albion's 'horizontal integration' (e.g. Building and Refurbishment UK vs. Commercial Construction US) and 'vertical integration' (e.g. Architecture and Construction Management US, Commercial Construction US). Albion 'Investments' has a unique structure. Each PFI project is a company on its own, but there are permanent relationships between projects. There is a project-grouping called 'Roads', focusing on road projects; 'Health', with different partners, focusing on hospital projects and 'Education', pursuing schools projects. The reasons behind PPP/PFI project-grouping are the market-specific similarities in bidding processes between projects (**I3:DV**).

Regarding construction-related BUs, 'market' and 'sector' focus is strengthened by decentralization of authority and performance responsibility to BU managing directors (MDs) (**I1:JK; I2:DV; I9:AMcN**). Each BU managing director (MD) reports upwards to a sector managing director (SMD), who is responsible for the performance of a 'sector-grouping' of BUs (e.g. civil engineering). SMDs are responsible for managing interrelationships between the BUs of their sector, as well as coordinating their sector's BUs with the rest of the group (**I1:JK; I2:DV**).

Albion's four sector-groupings are coordinated by Albion's 'chief executive's team', which consists of the chief executive officer (CEO), the chief financial officer (CFO), the director of a small, corporate, 'planning and development' division and the four SMDs. The 'chief executive's team' reports to the board of directors (BoD) of which the CEO is the only executive member⁵ (**I1:JK, I2:DV; I6:IN; I9:AMcN**).

Albion has chosen to play a number of roles in the production of the built environment. Through its grouping of BUs around construction industry sectors, it is involved as a constructor of built assets in markets within each of those sectors. Through 'Albion Investments', Albion plays the roles of 'developer' and 'operator' of built assets. It is a diversified and divisionalized bureaucratic organization, with some features of a professional organization. In pursuit of a strategy towards related diversification, Albion has chosen 'market-focus' as a basis for project grouping in order to manage important 'workflow interdependencies' that allowed it to align its supply chain to benefit clients (and itself) from greater efficiencies (Mintzberg, 1979;

⁵ The BoD appoints the members of the chief executive's team. The CEO is proposed by the chief executive's team to the BoD for approval. Additionally, sector and BU managing directors are appointed by the BoD following their recommendation by the chief executive's team.

1989). This has created however ‘structural’ boundaries between BUs that have ended up operating as ‘silos’.

The primary coordination mechanism is standardization of outputs, which is how the group controls the autonomous market-focused BUs. There is limited vertical decentralization of authority, as BU MDs and their senior management teams are ultimately responsible for their BU’s performance, even though they are being directly monitored by the chief executive’s team and supported by corporate functions. These characteristics, elevate Albion’s chief executive’ team and BU MDs (and their management teams) as a key part of the organization, as it constitutes the people who actually manage interrelationships between autonomous BUs, while at the same time are responsible for setting and implementing strategies.

The corporate centre is very small since each BU operates autonomously and corporate functions are geared towards **(I1:JK, I2:DV, I5:AS, I6:IN)**:

- Human resource management: in terms of remuneration of senior executives and succession planning;
- Financial management;
- Providing ‘Quality Assurance’⁶ regarding the business processes the plc’s BUs follow, through the centrally coordinated:
 - Internal audit function⁷;
 - Risk and opportunity management framework⁸;
- Due diligence on acquisitions and advice on post-acquisition integration, through the centrally-based ‘planning and development division’;
- Setting minimum standards regarding ‘business practices’.

Corporate functions are responsible for maintaining the ‘social networks’ through which individuals from different BUs are brought together and exchange

⁶ ‘Quality Assurance’ was a corporate wide program launched in 2002 after a strategic review initiated by the CEO at the time, to ensure the quality and standards of operations throughout the group, regarding strategic business processes such as ‘bidding’, ‘financial management’ and ‘health and safety’.

⁷ The internal audit function ensures financial management practices comply with Financial Services Authority (FSA) and Securities and Exchange Commission (SEC) regulations. It does so by identifying potential risk areas in projects and then establishing a project-specific schedule whereby someone from the function will monitor proper implementation of corporate-wide processes, in terms of financial management and reporting.

⁸ The most operationally involved function from the assurance framework is that of ‘risk and opportunity management’, an integral part of processes such as tendering reviews and reporting. The function is centrally coordinated and has two main purposes:

- Assessing and communicating risks up the hierarchy for their management to be appropriately allocated;
- Identifying risks and opportunities when a new ‘project’ is considered.

knowledge through ‘socialization’. The ‘risk and opportunity management framework’, the HR function and the ‘planning and development’ division, organize fora twice a year for their members to socialize (**I6:IN**)⁹. These fora help in establishing and maintaining relationships between individuals across BUs (Tsai, 2000; Markides, 2002). It should be noted though that the US and UK BUs are much more strongly represented in these fora than other BUs. Though these fora are an important means for maintaining inter-BU employee relations and transferring knowledge through ‘socialization’, reliance upon socialization renders the functional-related competencies fragile as the fora operate relatively autonomously from the processes operating within the fora.

In addition, within individual BUs, ‘special interest groups’ (SIGs) tend to spring-up almost in an unstructured way (**I1:JK**). Those tend to be mostly in ‘support-type’ functional areas, where there is a functional director at the BU senior management with overall responsibility for them. They do not transcend BU boundaries however, apart from the case where a sector managing director (MD) agrees to sponsor them (**I4:PS, I7:JF**).

At Albion, the only processes that are actually standardized corporate-wide are those related to financial management and reporting. In addition, there is some degree of standardization of work processes, especially related to the ‘risk and opportunity management framework’ and the ‘internal audit function’. Although consistency in operational business processes exists between BUs in the US and the UK, there is less consistency when considering BUs in countries such as Dubai or Hong Kong that do not have the same management systems as the rest of the group (**I1:JK; I2:DV; I5:AS; I6:IN**). The reason for this is that Albion Dubai and Albion Hong Kong both have a unique ownership structure and culture that is strongly influenced by the local context in which they operate¹⁰.

Regarding the extent of ‘skills standardization’, the following has been observed. Each BU has its own ‘competency profiles’ for individual employees and attempts to standardize function-specific skills. At a plc level however, skills standardization is pursued only for those individuals who have been chosen by corporate succession planning as potential future leadership (**I7:JK**).

⁹ Other corporate functions do not.

¹⁰ In the case of Albion Dubai, the BU operates in the United Arab Emirates (UAE) where partnership with a local sponsor is compulsory by law. In the case of Albion Hong Kong, the ownership stake of Albion plc on the local company is 50%. In addition, that shareholding has been only recently acquired, which means that not enough time has passed for the possibilities of harmonizing business practices with the rest of Albion plc to be exploited.

Table 7.1 summarizes this case study's findings with respect to the 'structural', 'functioning' and 'agency' characteristics of Albion's configuration.

7.3 Core Competence Development Activities

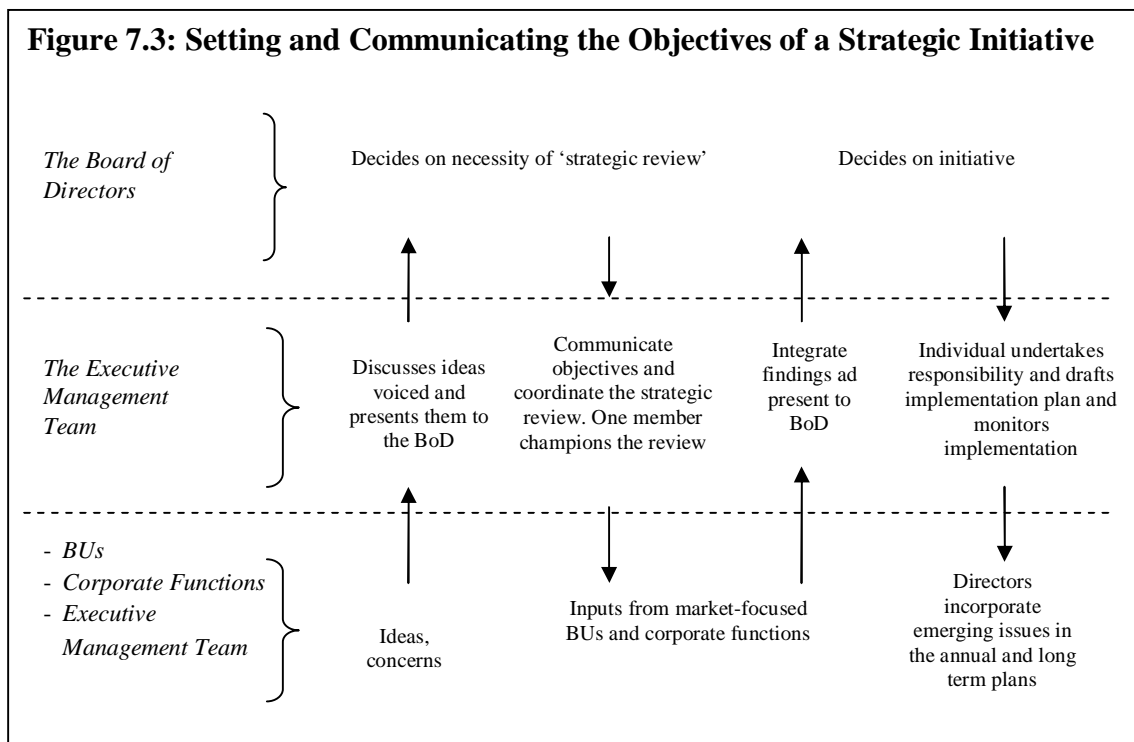
This section presents and describes the company-specific routines through which Albion conducts each generic, corporate-level activity that has been proposed (viz. Chapter 4) as being influential to core competence development strategy execution. As a result, it identifies and describes the role of the individuals/organizational bodies most integral to the implementation of the routines identified.

7.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture

In Albion, this activity is conducted through the following three organizational routines. First, is the routine related to 'setting and communicating the objectives of a strategic initiative' (Figure 7.3). This is usually the result of ideas or concerns that have been voiced from BU senior management, or any member of the chief executive's team. They are undertaken following a strategic review of the group's operations by the plc's leadership. Strategic reviews do not happen at regular intervals, but rather when unique external or internal circumstances necessitate it. Following a strategic review, which is coordinated by the chief executive's team, the BoD might decide on setting a new strategic direction for Albion (as in the decision to enter a new market, such as PFI) or approve the implementation of an internal program for change (as in the creation of the 'Assurance' framework). Following such a decision, the chief executive's team will communicate down the hierarchy to the BU MDs the direction the plc intends to follow and will ask their contribution as to what they think about the strategies with which it can be achieved. Corporate functions will also be asked for similar contributions. The implementation of any strategic initiatives in the form of projects/programs for change that might arise from this process always become a direct responsibility of one member of the chief executive's team - perhaps even the CEO himself depending on the strategic importance of the initiative (**I6:AS, I5:PP**). This individual is responsible for drafting and executing an implementation plan, and coordinate with BU MDs who will have to incorporate any emerging issues in their BU's annual and long-term plans.

Table 7.1: Albion’s Configuration Characteristics

Structural Characteristics	Market-Focused Strategy (project-grouping)	<ul style="list-style-type: none"> • Grouped on ‘location’ under market-focused BUs, which are in-turn grouped under industry-focused sectors.
	Horizontal Organization/ Degree of Decentralization	<ul style="list-style-type: none"> • Small corporate centre – functions have a ‘supporting’ and ‘consulting’ role; • BUs operate autonomously; • Each BU MD responsible for his/her BU; • Sector MDs coordinate BUs and resolve conflicts that may arise between them; • Chief executive’s management team coordinates BUs and sectors; • Relationships between BUs are governed by project-specific contractual joint-venture agreements.
Procedural Characteristics	Coordination Mechanisms	<ul style="list-style-type: none"> • ‘Performance’ control regarding BUs - standardization of outputs; • ‘Action planning’ regarding managerial and organizational leadership development; • Limited standardization of processes (in cases such as: Risk and Opportunity Framework, Internal Audit Function, Financial Management) corporate-wide, except in the case of Albion Dubai and Albion Hong-Kong.
Agency Characteristics	Key-People/ Organizational Parts	<ul style="list-style-type: none"> • Strategic Apex (chief executive’s team and BU MDs); • Financial management; • ‘Assurance’ activities (Risk and Opportunity Framework).



An example would be the strategic initiative towards ‘professionalization’ of services, which led to the creation of ‘Albion Management’ as an autonomous BU in 2004 (viz. Section 7.2). In that occasion, the group’s leadership decided there was a market for offering professional services to its clients that were relevant to the front-end of the project (feasibility, design management, project management). In addition, it was believed that entering that market would create a point of entry for other BUs of Albion. ‘Albion Management’ was created to develop that capability, drawing from the group’s existing resources. From the inception of the plan, the CEO personally oversaw and championed the initiative. Even after its creation, the MD of Albion Management continued to report directly to the CEO (instead of a sector MD), a testament to the initiative’s strategic importance.

Second, is the routine for ‘setting and communicating the annual budget and business plan’ (Figure 7.4). This takes place annually, between September and December. Each September, each BU proposes an annual budget and operating plan for the following year. Those are then aggregated at a sector level, and then at a plc level. The corporate director of the ‘risk and opportunity framework’ assists sector managing directors (SMDs) and the chief executive’s team with the integration of BU-specific and sector-specific plans respectively, to ensure clear comprehension of the risks to be managed and their allocation to appropriate risk owners.

Once the plc's annual plan is ready, it is submitted to the BoD for approval. The annual business plan of each BU contains a 'risk and opportunity' assessment¹¹, which sets the stage for the financial management-related risks that will be reviewed throughout the following year by the plc's internal audit function. Though integrated and approved at a plc level, the implementation of BU-specific plans is entirely a BU responsibility. As one senior corporate director noted:

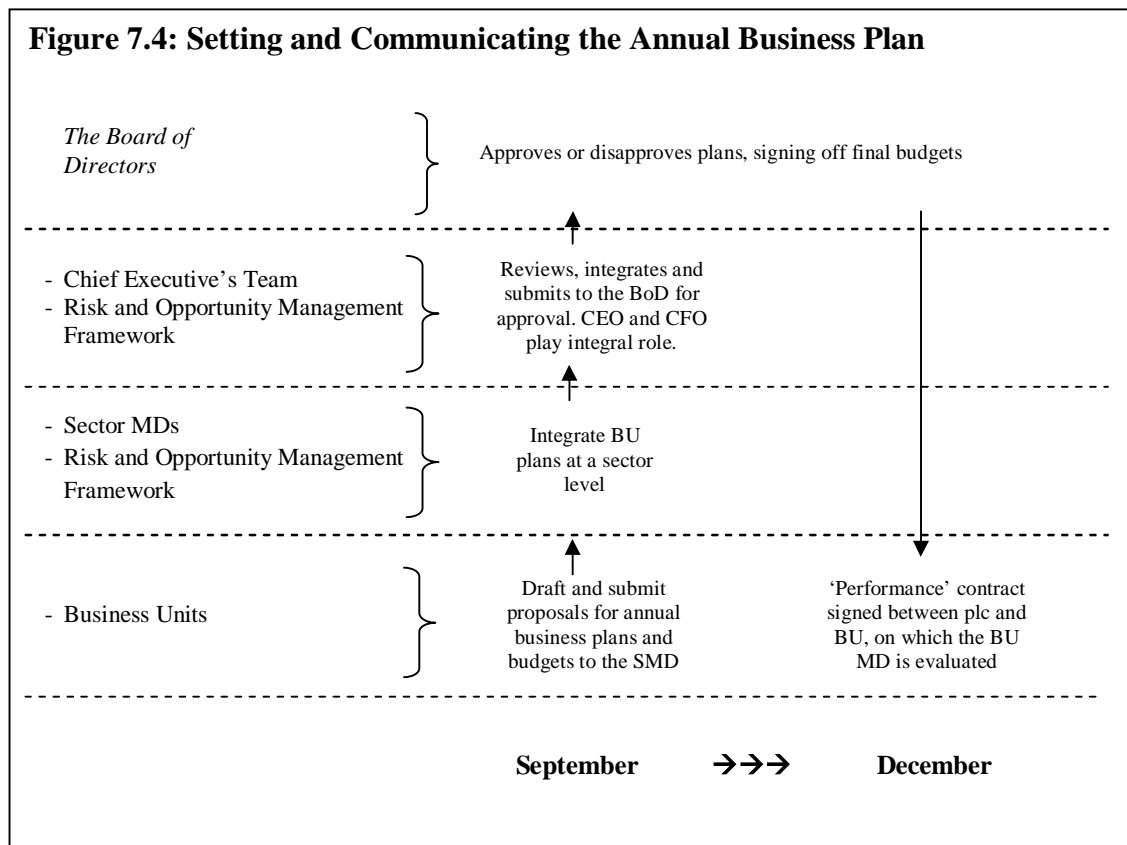
'We give our operating companies a great degree of autonomy and they will get their medium term and long term strategies reviewed and agreed, but then, how they will actually go to deliver them is their own responsibility.' (I4:PS).

BU annual business plans are essentially a contract between the corporate centre and each BU, against which BU MDs have to deliver. Incentive schemes revolve around performance with respect to annual budgets.

In addition, the annual business plan contains targets regarding the personal development of individuals who have been identified as potential leadership of the group. These targets are set during the 'annual peoples review', which is centrally monitored and coordinated by the corporate human resources (HR) function, with the contribution of BU-specific HR teams, and coincides annually with setting and communicating the annual business plan (I1:JK, I4:PS). This also sets the tone for BUs to monitor the development of their managers, regarding: i) the type of projects they work for and the scope of the work they do, ii) the clients they work for and iii) their key contacts (I4:PS).

In parallel to reviewing the annual budget and proposing the annual business plan, each BU's MD and their senior management team are responsible to develop a medium-term, three-year plan for their unit, the third routine through which SI is exhibited and SA crafted. Medium-term plans are aggregated at a 'sector' and 'plc' level in a similar manner to the annual plans (see Figure 7.4). They include financial projections and are reviewed annually at all BU, 'sector' and 'plc' levels. In the case that a new strategic direction is chosen, it is the responsibility of the chief executive's team to communicate this to the BU MDs and the latter's responsibility to implement them. The responsibility of the chief executive's team then becomes to monitor the performance of each BU against targets and manage interrelationships (and potentially conflicts) that may exist between them.

¹¹ This is developed by BU risk management champions, is signed off by BU managing directors, and then forwarded sector managing director.



The routines described in this section and the people/organizational bodies involved in their implementation are summarized on Table 7.2. What can be identified is that, simultaneously to being a routine for exhibiting SI and crafting SA, ‘setting and communicating the annual budget and business plan’ is also a routine through which the implementation of the plc’s medium term, three-year plan is ‘regulated’ by the chief executive’s team and BU managing directors. Along these lines, the role of the chief executive team and BU managing directors can be understood as both ‘designing’ and ‘regulating’ the context of other routines related to setting and executing strategy.

However, no provisions for rewarding BU directors for ‘cross-BU’ thinking are made, highlighting the BU-mindset¹² inherent in Albion’s configuration. Consequently, although implementation of routines related to exhibiting SI and crafting SA are a corporate-wide responsibility, the primary coordination mechanism (standardization of BU outputs) in place, does not set the stage for SA to be implemented by a cohort of BU managers working horizontally across the organization (Hamel and Prahalad, 1994). Despite this BU-mindset however, the incorporation of ‘people-development’ objectives in the annual business plan of each BU indicates that the plc recognizes the importance of managing corporate-wide the human resources which embody its core competencies.

¹² Viz. Chapter 3, Section 3.2.6.

Table 7.2: Exhibiting SI and Crafting SA - Albion	
Organizational Routines	People/ Organizational Bodies Involved
<i>Setting and Communicating the Annual Business Plan</i>	The Chief Executive's Team The Director of the Planning and Development Division The Managing Directors of BUs (and their senior management teams) The director of 'Risks and Opportunities Management Framework'
<i>Setting and Communicating Long-Term Strategic Plans (3-5 years)</i>	The Chief Executive's Office The Director of the Planning and Development Division The Managing Directors of BUs (and their senior management teams) The Director of 'Risks and Opportunities Management Framework'
<i>Setting and Communicating the Objectives of a Strategic Initiative</i>	Managing Directors of BUs and their senior management teams Business Stream directors and their supporting financial controllers) Albion's Corporate Commercial Director Planning and Development Division

7.3.2 Regulating Strategic Architecture Implementation

This activity is conducted through two major organizational routines: i) 'reporting' and ii) 'project' and 'investment' selection. Regarding reporting, 'project reporting' will be discussed first. The projects' 'cost structure' and 'risks register'¹³ are prepared from the bidding stage. This creates a framework for what will be reviewed throughout the project's life-cycle, as well as what the review criteria will be. Upon project award, a file containing all pre-award information is handed over by the estimating/bidding team to the project execution team, who then works to expand it. Project reporting occurs weekly within each BU, with project reports integrated all the way up to the BU-level, both in terms of financials and risks mitigated.

Monthly, project reports are integrated as part of the 'monthly operating reviews'. These reviews occur between sector managing directors (SMDs) and each of

¹³ The purpose of 'risk and opportunity' management is to drive an action plan to mitigate risks and then monitor delivery.

the MDs of the BUs under their responsibility. The participants from the BUs' senior management teams vary, but the MD, finance director (FD) and commercial directors are always present. Communications between the chief executive's team and BU management takes place to review the progress of strategy implementation and deal with any emerging issues if necessary. Monthly operating reviews look at performance against budget, focusing on i) profit, ii) cash flow, iii) forward workflow that has been secured and how this is changing, and iv) monitoring against projections.

Every three months, BUs go through a 'quarterly review', with the same participants as the monthly review. At the end of the quarterly review meetings, the corporate head of the risk and opportunity management framework assists the BU MDs and SMDs to draft a report on i) the identification of new risks, ii) the treatment proposed for their mitigation (pending approval) and iii) any other issues that may have arisen. These are then disseminated to and communicated back down the hierarchy to close the communication cycle. Based on the results of the quarterly reviews, the plc's annual budget is re-forecast.

Moreover, all BUs go through an 'all-day review' every four months¹⁴. The participants of these reviews are the BU MDs, their SMD, the CEO, the chief financial officer (CFO) and occasionally the BU finance directors (FD). During those meetings, the CEO will discuss with each BU MD:

- The issues facing their business;
- The impact on their medium term plan;
- The impact on their forecast;
- The risk and assurance issues involved.

On top of that, discussions are held regarding i) what the business is doing, ii) where it is going, and iii) what needs to be changed to meet the budget.

The 'reviews' described so far, are routines through which strategy execution is evaluated and are hence 'nodal' to integrating emerging strategies with intended ones. In cybernetic and management control theory (Beer, 1959; 1969; Berry et al., 1995), these routines constitute 'feedback' mechanisms through which Albion's controllers regulate the behaviour of the plc, depending on the external and internal influences that act upon them. The difference between the 'quarterly' and the 'monthly' reviews is that

¹⁴ Albion Management undergoes an additional six-month review by the CEO, because of its strategic importance to the group's intent to professionalize and adopt a greater service management orientation towards key clients.

the results of the former are documented and disseminated at a group level, whereas those of the latter are not.

The second routine for regulating strategic architecture implementation is that of ‘project’ and ‘investment’ selection. The routines in place for project selection regarding a) PFI/PPP and b) construction-service projects are of particular interest here, as it is these projects that Albion routinely undertakes. In Albion plc, those routines follow principles set out in:

- The ‘risk and opportunity management framework’;
- The ‘project tender review’.

Both have to comply with each BU’s ‘operating systems manual’.

The ‘project tender review’ in all BUs is a key routine for managing risks. Depending on i) project size and ii) risks identified, the threshold level of the project might require approval from the relevant sector managing director (SMD), the chief executive’s team, or even the board of directors¹⁵. In the UK and the US, corporate ‘risk and opportunity assessment’ leads the effort in standardizing the processes followed by BUs across the plc, regarding the project selection process.

Regarding the selection criteria for PPP/PFI projects, whether interest in bidding will be exhibited is based on a judgment related to the probability of securing it and that is determined following a consideration of the ensuing factors:

- Whether it sits within the group’s skills sets;
- The project’s scale;
- What the workload is with further PFI. Does Albion and its BUs have the capacity to bid for a specific project at that specific time;
- Whether the client is one that Albion finds reliable and easy to work with.

‘Project selection’ routines of Albion Management often transcend autonomous BUs and in the case of PFI/PPP projects, input during the bidding process may include external partners.

¹⁵ Those threshold levels of decision making authority are specified in what is internally known to Albion as the ‘Document of Decision-Making Authority’, which applies corporate-wide. Key project-selection criteria are:

- The level of return the project will make on the investment of resources;
- The project’s risk profile;
- The contract’s operating costs;
- Resource constraints.

In the case when a ‘strategic investment’ needs to be made, such as an acquisition, the process varies. The need to acquire a company may be voiced from a senior BU level and/or the chief executive’s team level. The corporate ‘planning and development’ function plays a consulting role on the ‘fit’ between the company targeted for acquisition and the rest of the group. In addition, it undertakes the responsibility to organize and coordinate all due-diligence activities prior to the decision to go through with the acquisition. Depending on the level of expenditure, approval for the investment may have to be obtained from the BoD¹⁶ (I2:DV).

The organizational routines and the individuals/organizational bodies involved in regulating strategic architecture implementation are summarized on Table 7.3.

Table 7.3: Regulating SA Implementation - Albion	
Organizational Routines	People/ Organizational Bodies Involved
<p><i>Reporting Reviews</i></p> <ul style="list-style-type: none"> • <i>All day review (4 months)</i> • <i>Quarterly reviews</i> • <i>Monthly reviews</i> • <i>Annual Business Review</i> 	<p>For (1) and (2): the ‘chief executive’s team’ as well as BU MD and BU finance director (FD). The CEO meets directly with each BU MD.</p> <p>For (3): sector-MDs and their BU MDs, BU FDs and Commercial Directors.</p> <p>For (4):BU MDs, sector-MDs, chief executive’s management team, CFO, Corporate ‘Risk and Opportunity’ Framework.</p>
<p><i>Project Selection</i></p>	<p>For PFI/PPP Projects: PFI/PPP bid directors, Albion Capital Projects MD, ‘Investments’ sector-MD (from chief executive’s office).</p> <p>For Albion Management: Albion Management MD, other BU MDs, the sector-MD or sector-MDs (from the Chief Executive’s Office)</p> <p>For all other BUs: BU MDs, sector-MDs (from Chief Executive’s Office)</p>
<p><i>Evaluating Acquisitions</i></p>	<p>Chief Executive’s management team, sector-MDs, BU MDs, Corporate ‘Planning and Development’, Corporate and BU Finance divisions, Acquisition ‘due diligence’ team.</p>

The routines described in this section constitute ‘feedback’ (Beer, 1959; Berry et al., 1995) mechanisms through which the plans decided upon during ‘exhibiting strategic intent and crafting strategic architecture implementation’ are regulated. The

¹⁶ A more detailed description of the pre- and post-acquisition stages will be provided in the following section of this case study, as it overlaps with organizational routines Albion has in place regarding core competence leverage.

findings of this section confirm the indications made in the previous one, regarding the role of the plc's chief executive's team and BU senior management as 'controllers' of strategy execution.

7.3.3 Stretching and Leveraging Resources and Core Competencies

In section 7.2.1 it was proposed that Albion's core competencies are:

- Pursuing, securing and executing 'building', 'civil engineering' and 'rail engineering' construction projects;
- Structuring, securing and managing PPP/PFI concession contracts.

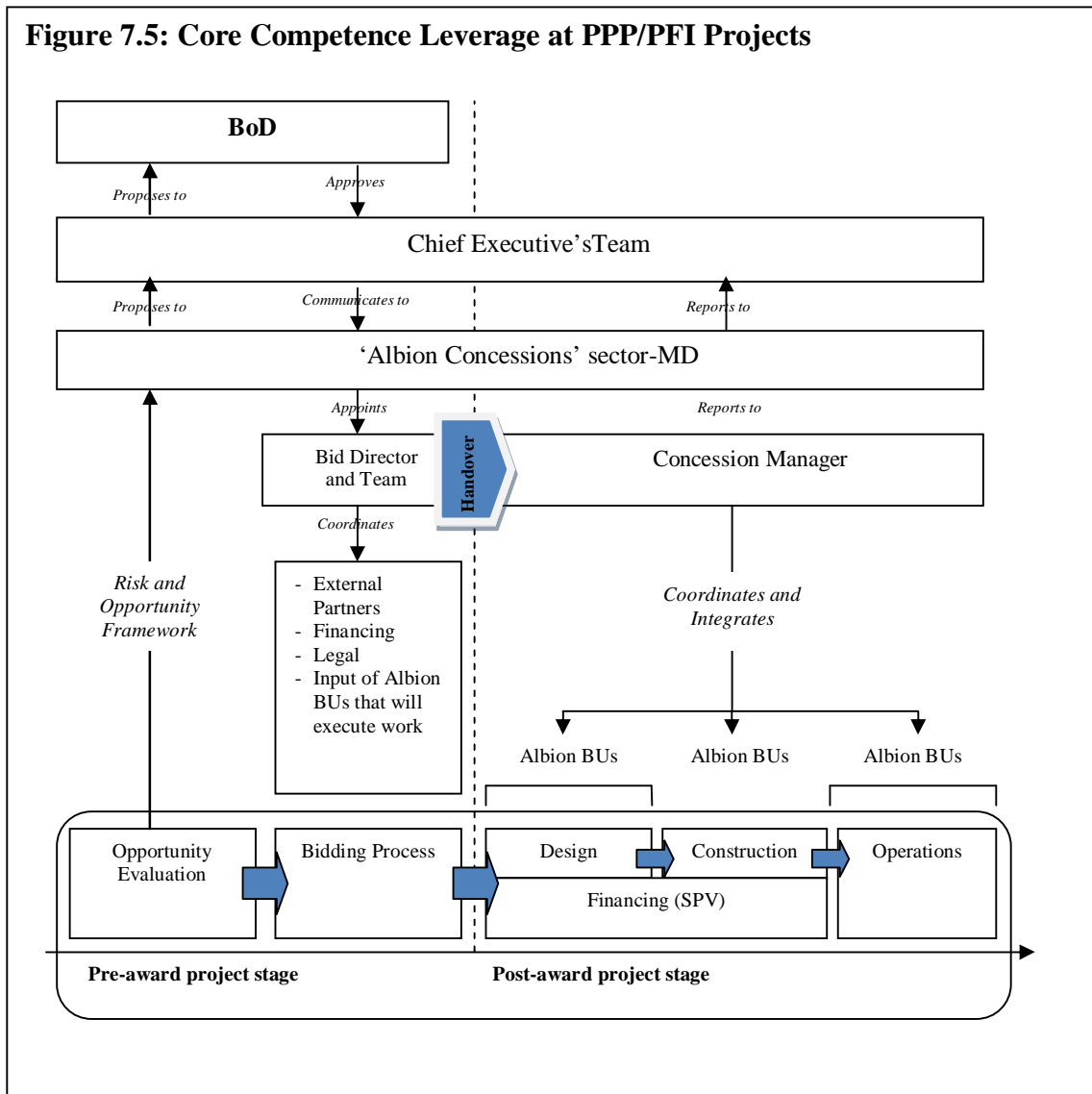
At a plc level, stretching and leveraging resources and core competencies happens in the following circumstances. First, in the case of PPP/PFI projects (Figure 7.5), with respect to:

- Structuring and securing concession contracts in a way that also secures work for Albion's construction BUs;
- Managing the concession throughout its life-cycle, by coordinating Albion's BUs involved.

PPP/PFI projects are a responsibility of 'Albion Concessions', which falls under the 'Investments' sector of the plc (viz. Figure 7.2). To better comprehend how core competence leverage occurs in this case, a description of the process through which Albion pursues PPP/PFI project opportunities as they appear on the horizon is necessary. Once a project opportunity appears, PPP/PFI bid directors communicate internally with Albion's BUs and externally with partners to structure the concession contracts during the pre-award (bidding) stage. As pursuing the project will involve considerable capital expenditure, the project's viability has to be evaluated by 'Albion Concessions' first and then presented to the BoD by the CEO for approval.

As, essentially the bid is a project, bid directors are usually chosen on the basis of their project management skills/strengths. The bid director is the focal point of communication between project participants during the bidding stage, although intra-organizational communication takes place at various levels depending on the issues that need to be addressed. This indicates that, for the case of PPP/PFI, lateral linkages that cut across autonomous BUs are in place.

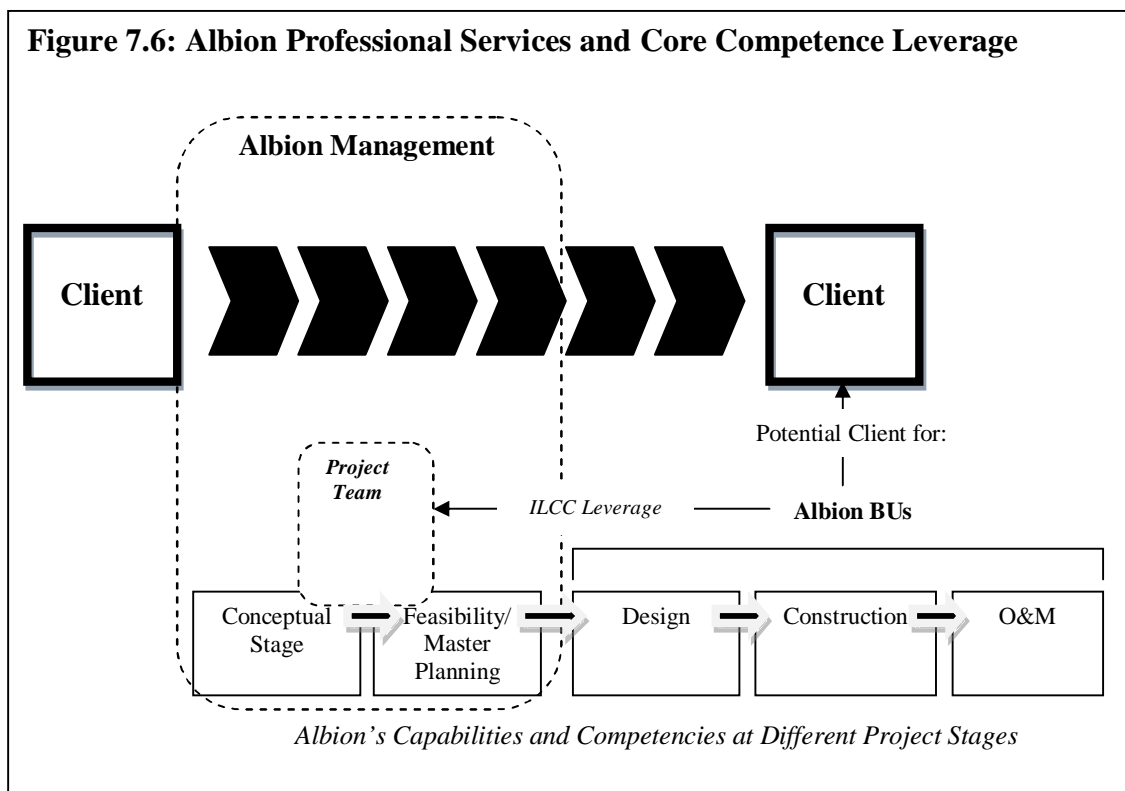
Figure 7.5: Core Competence Leverage at PPP/PFI Projects



Following project award, the concession managers (who may or may not be the bid directors who managed the bidding stage) manage the transition between ‘construction’ and ‘maintenance’ as those have been defined while structuring and securing the concession contract. Throughout the project’s life-cycle, the efforts of the bid director and the concession manager are being overseen by the sector managing director (SMD) of Albion Investments, who coordinates with other SMDs responsible for BUs that will be involved in the same project when necessary (**I2:DV, I7:JF, I8:PP, I9:AMcN**).

In light of what has been described in this section so far, it can be understood that the core competence of structuring, securing and managing PPP/PFI contracts is embodied in bid directors and concession managers of Albion’s ‘Investments’ sector-grouping and the chief executive team members who supervise and coordinate their efforts.

The second case of ‘stretching and leveraging resources and core competencies’ is related to the services offered by Albion Management in collaboration with other BUs of the plc (Figure 7.6). Following a client’s need for front-end project activities (feasibility, design management, potentially project management), Albion management would try to set-up a team of experts drawing individuals from BUs when necessary, to offer this client a more ‘holistic’ and ‘professional-oriented’ service. This is a case where a project-specific team is formed to serve the needs of a specific-client. Essentially, human resources are stretched across BUs and integrated by Albion Management, to leverage’ - on a project-basis - the knowledge of individual employees (I8: PP, I9:AMcN). The ability of Albion Management to integrate on a project-basis the diverse skills that exist elsewhere in the group, not only adds value to clients by helping them to manage better the front end of their projects, but can also potentially provide access to new clients and new markets to BUs of the group whose services are more relevant to later stages of the project’s life-cycle.



The third case of stretching and leveraging resources and core competencies occurs during joint ventures (JVs) between BUs belonging to either the same or different sector groupings of Albion. These joint ventures originate when a BU has identified a project opportunity that requires the competencies of another BU (I1:JK, I7:JF, I8:PP, I9:AMcN). Usually, the need for an inter-BU JV is first voiced during the ‘monthly operating reviews’ between BU and SMDs. Then, the SMDs are

responsible for coordinating MDs of different BUs. Thus, the ILCCs core competencies required to integrate BU organizational level competencies at Albion are embodied in sector and BU MDs. The purpose of inter-BU JVs is to set-up project-specific teams to ‘stretch’ and ‘leverage’ through the mobilization of individuals, Albion’s BU-specific competencies or Albion’s core competencies related to construction projects’ pursuit and execution. Due to the fact that sector-focused BUs are grouped under a sector managing director (SMD) responsible for managing their interrelationships, means that managerial action is potentially present to manage relationships between BUs.

What is also worth mentioning is that in all projects undertaken by Albion’s BUs - with the exception of the Albion Dubai and Albion Hong Kong - ‘project-specific intranets’ are being set-up to facilitate direct communication between project participants, in an attempt to create a project environment that maximizes efficiency of knowledge transfer and integration (Grant, 1996b). Project intranets are set-up and maintained by each BU’s knowledge management champions. The support of the corporate knowledge management function is provided when necessary (**I4:KS**). These project-intranets link to the intranet of each BU participating. BU intranets are not, however, linked with each other and remain, up to this day, BU-specific.

The fourth case concerns stretching resources to create leverage. Leverage can be applied to generate or develop core competencies which in turn are stretched. This occurs at Albion during ‘acquiring’ of companies. Stretch is more evident during the pre-acquisition stage, because of the mobilization of individuals whose specialized knowledge is necessary. Once an acquisition opportunity has been identified, Albion uses its own employees to conduct due diligence of the company to be acquired. Pre-acquisition efforts are coordinated by the ‘planning and development’ division. The initial objective is to find people from within the plc who possess knowledge related to the business of the acquired company. If the business to be acquired is too far away from Albion’s spectrum of activities, external assistance is hired¹⁷. Due diligence teams are formed on an ad-hoc basis, albeit through a standardized process. As the assistant director of the planning and development division stated:

‘Albion does not want to subcontract the due diligence business judgment to people it does not know, but people it can relate to and understand. The company considers the capability of managing that process core in managing the pre-acquisition risks.’ (**I2: DV**)

¹⁷ If the transaction involves the acquisition of another plc, an investment bank has to be involved, by law, to conduct due diligence on behalf of stakeholders and to oversee the transaction.

Observations regarding core competence leverage at Albion are summarized on Table 7.4. What the observations highlight is that in all four occasions of stretch and leverage identified, an organizational unit is responsible for maintaining 'lateral linkages' across BUs and integrate their efforts. This points to the existence of systematic processes to manage relationships between BUs (Markides, 2002) in order to access and harness the specialized knowledge of individual organizational members (Grant, 1996b), actualizing thus the latent economic potential of related diversification (Nayyar, 1992; Tsai, 2000).

However, the plc's decentralized structure creates an organizational context where, in the absence of 'integrating' and 'coordinating' units and institutionalized inter-BU links, the ability of Albion's autonomous construction-BUs to leverage the plc's core competencies at the projects they undertake suffers. The reasons for this are numerous. First, the absence of a corporate-wide IT network that would allow employees to directly contact their peers in other BUs (**I4:PS, I6:IN**). Second, the fact that the social networks of individuals existing between BUs - largely maintained by the annual forums organized by corporate functions, in which participation by all BUs is not mandatory - do not create an environment where employees from different BUs are willing to learn from one another (**I1:JK, I2:DV, I4:PS, I7:JF**). This condition is very accurately captured in the statement of one interviewee:

'Just because something happened somewhere with a consequence, one might not go blindly doing and repeating the same, because he might not trust what they tell him. That's the problem with many of those situations. If a project manager in a BU has documented that he solved a problem with a specific way, it does not mean that the person who reads it will believe what he reads. He will probably want to meet the guy in person and decide whether the same approach will be appropriate for him.' (**I4: PS**)

Some interviewees have gone as far as to state outright that in the absence of inter-BU networks on which 'trusting' relationships between individuals can be built, the potential of corporate-wide IT networks could not be actualized even if these ended up being set up (**I1:JK, I6:IN, I7:JF**). Indicatively, one employee stated:

'There is no point to have the tools and tell people to use them unless they know something about the person on the other end. Even if you have the option to get in touch with someone, it does not work that well, that's the

Table 7.4: Stretching and Leveraging Resources and Core Competencies - Albion

Generic, Activity	Occasion	People/Organizational Bodies Involved	Type of Core Competence Leverage	Core Competencies Leveraged
<i>Stretching and Leveraging</i>	PPP/PFI Projects	Chief executive's management team (potentially BoD) SMD of 'Investments' sector MDs of BUs Planning and Development Corporate Function	OLC Integration and Leverage ILCC Leverage (knowledge transfer through informal communication, employee mobilization and process replication with respect to project selection criteria)	Structuring, securing and managing PPP/PFI concession contracts.
<i>Resources and</i>	Albion management (Professional service Contracts)	CEO MD of Albion Management Ltd SMDs and other MDs of BUs that possess desired skills Project manager	OLC Integration and Leverage ILCC Leverage (employee mobilization at project teams for execution, knowledge transfer at project's pre-award stage)	Pursuing, securing and executing building, civil engineering and rail engineering projects.
<i>Core</i>	Intra-sector BU Joint Ventures	Sector MDs BU MDs	OLC Integration and Leverage ILCC leverage (employee mobilization at project execution team)	Pursuing, securing and executing building, civil engineering and rail engineering projects.
<i>Competencies</i>	Acquisitions (Due Diligence and Integration)	Sector MD of the sector group where the company will be positioned	OLC Leverage (acquiring and integrating)	'entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
		Individuals from across the group with knowledge of the market of the company acquired	ILCC Leverage (employee mobilization for due diligence)	
		Planning and Development Division	Process Replication (financial management and reporting)	
	Socializing Forums	Corporate function directors BU Functional Directors SMDs and BU MDs (depending on 'scope' of special interest groups (SIGs))	Knowledge transfer through 'socialization'.	'technical' core competencies (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
	Employee Rotation	Human Resources (corporate and BU) BU MDs and SMDs (if employee mobilized shows 'leadership potential')	ILCC Leverage (employee mobilization)	'entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
	Business Process Harmonization	Corporate function 'directors'; BU functional directors	Process Replication	'technical' core competencies (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).

trouble. You need to know the people who are there to help and be able to relate to them.’ **(I7:JF)**.

Third, the fact that BUs develop, in time, specific cultures and moreover that, due to the corporate centre’s lack of authority over the practices they follow, some BUs (e.g. Albion Hong Kong and Albion Dubai) are resistant to adopt practices that other BUs may have found effective **(I1:JK, I2:DV, I6:IN)**.

All these characteristics of Albion’s ‘decentralized’ diversified configuration seem to diminish its ability to create an intra-organizational environment of joint thinking and where employees are willing to learn from one another (Javidan, 1998). Within that context, Albion’s construction BUs cannot effectively leverage the plc’s core competencies on occasions, to deploy them to projects they undertake. Consequently, in their quest to develop effective routines that support their competitiveness, they may have to duplicate efforts (Mintzberg 1979; 1989) undertaken by other BUs, which, for the plc as a whole, would translate to resource waste and increased costs.

7.3.4 Improving Business Practices

Due to Albion’s decentralized nature, the responsibility for capturing and disseminating knowledge ultimately falls to the executive management of each BU. In each BU, there are some ‘knowledge management champions’ who have this responsibility as *part* of their day-to-day job. These may be people working with a ‘business process improvement’ role, using knowledge management techniques in what they are doing. In their capacity, they may be recording good practices on projects and helping transfer them to other projects. However, there is no ‘overriding’ function for ‘knowledge management’ practices across the group **(I4:PS, I6:IN)**.

Innovations and knowledge created is communicated informally by the knowledge management champions to the BU managing directors (MDs) and it may be discussed with sector managing directors (SMDs) during the ‘monthly’ or the ‘quarterly’ reviews¹⁸. This may act as an opportunity for norms to be re-negotiated and practices and structures reconfigured.

At projects, knowledge may be captured on project-intranets (provided BU-knowledge management champions or someone else records it). Even though

¹⁸ Viz. section 7.3.1.

knowledge captured may be recorded, no ‘corporate-wide’ intranet, nor processes exist to make it available to other BUs of the group (**I4:PS**). Lacking structured processes to capture, store, analyze and disseminate information, Albion carries the risk of knowledge gained from ‘experiential learning’ to be lost once project teams are dismantled and their members move to the next project (Brady and Davies, 2004; Davies and Hobday, 2005).

Employees at a BU might identify and implement an improvement and communicate it to their counterparts in other BUs through ‘socialization’ during functionally-led inter-BU forums (viz. Section 7.2.1). This is a case where the loosely bound central functional communities of practice and the organically developed special interest groups can contribute to the reproduction of Albion’s business processes, through knowledge transferred through a process of ‘socialization’.

The ‘Internal Audit’ function - though not created with ‘improving business practices’ in mind - might lead to improvements of financial management practices. If, when auditing a project, the internal audit function identifies financial management practices that need to be improved, then, in collaboration with the BUs it will determine: i) who will undertake the responsibility to conduct those improvements and ii) a timeframe for their implementation. The monitoring of the implementation of those changes then occurs quarterly, to coincide with the internal meetings of Albion’s Audit Committee¹⁹.

Finally, business practice improvements can occur through ‘strategic initiatives’ that the group may undertake as a whole. Strategic initiatives are intended to establish the application of new processes or improve the ones in place. In Albion, two major initiatives that have occurred in the last ten years are the following:

- The rolling out of a corporate-wide enterprise resource planning (ERP) system (on-going);
- The creation, rolling-out and application of a corporate-wide framework to provide assurance with respect to ‘standards’ Albion’s business processes are applied.

Each of these initiatives is centrally coordinated by a team at Albion’s corporate-centre that was specifically assembled to oversee its successful implementation.

¹⁹ The ‘Auditing Committee’ is a non-executive board member committee monitors corporate governance of the plc.

Findings from this section regarding the organizational routines through which ‘improving business practices’ occurs and the individuals/organizational bodies involved in their implementation have been summarized on Table 7.5. The observations made in this section identify that at Albion, no institutionalized, structural and procedural arrangements exist to systematically collect, analyze, store and disseminate knowledge created at projects.

Table 7.5: Improving Business Practices - Albion	
<i>Organizational Routines</i>	<i>People/ Organizational Bodies Involved</i>
<i>Reporting</i> - <i>Operational management reviews</i> - <i>Management reviews</i>	BU ‘knowledge management champion’ BU MD Sector MD
<i>Knowledge management – in a restricted and partial sense for explicit knowledge</i>	Project-intranets BU intranets
<i>SIGs and discussion forums</i>	Functional/technical experts
<i>Strategic Initiatives</i>	Managing directors of BUs and their senior management teams Business stream directors and their supporting financial controllers) Albion’s Corporate Commercial Director Planning and Development Division

This, indicates that Albion’s potential to learn from projects is reduced, as knowledge created can be lost when project teams are dismantled and members move on. Consequently, theory (e.g. Cyert and March, 1965; 1992; Prencipe and Tell, 2001; Brady and Davies, 2004) would suggest that Albion’s BUs and the plc as a whole cannot effectively revise its operating procedures as a function of ‘experiential learning’, nor use lessons learned to engage in self-reflective organizational learning.

7.3.5 Developing Managerial and Organizational Leadership Capacity

With respect to developing managerial and organizational leadership capacity, the following have been identified. Albion plc has a structured ‘succession planning framework’ in place, concentrating on the individuals who have been identified as the

plc's future potential leadership (top 150-200 employees). The team responsible for 'succession planning' is part of the corporate human resource function. It coordinates the 'annual people's review' in collaboration with each BU's human resources (HR) function. The participants in the reviews are the corporate HR director, the head of the succession planning team, the BU managing directors (MDs) and relevant sector managing director (SMD). During these reviews, the top-team of each BU is looked at, both in terms of their 'performance' and 'potential'. Their individual performance is assessed and their importance to their managers and directors is reviewed.

During the annual 'people's review', each BU MD and the people belonging to their management team are asked to identify their successors in terms of who is ready to succeed them a) now, b) in 1-2 years and c) in 5 years. The meeting with each individual lasts between three to four hours. When all interviews are completed across all BUs, the corporate succession planning function produces a report on its findings. Subsequently, a meeting occurs between the succession planning team and the entire chief executive's team to discuss succession issues at a group level (**I1:JK**). The succession planning team then assists the HR functions of the individual BUs to develop individual professional development plans for each individual who has been identified as a potential 'successor'. Each BU is then responsible for the professional development of these individuals, but its efforts are monitored by the corporate succession planning team.

Experience is often provided by mobilizing employees across different BUs and sectors, exposing them to a variety of responsibilities and roles (**I1:JK, I6:IN; I9:AMcN**). At Albion, it is preferred to develop key people in high positions from within the business as much as possible (**I6:IN**). This managerial and leadership development practice links with 'regulating SA implementation'. SMDs monitor through the monthly reviews the need for mobilizing individuals across BUs belonging to their sector and facilitate communication between the interested BU MDs (**I1:JK, I2:DV, I6:IN, I5:AS**). When the occasion concerns an individual who has been identified by corporate succession planning as someone who belongs to the future leadership of Albion, then his/her mobilization across BUs is tracked by senior management and corporate succession planning, who want to have a clear picture of where within the group potential leaders are positioned (**I1:JK, I2:DV, I6:IN, I9:AMcN**). This constitutes a characteristic of an organization that has overcome the BU-mindset inherent in divisionalized, diversified configurations, by perceiving the

‘competencies’ of individuals as corporate-wide, rather than BU-specific property (Prahalad and Hamel, 1990).

In addition to succession planning at a corporate level, all UK and US BUs independently assess the development of managers with leadership potential through:

- ‘Assessment development centres’: 2-3 day events where managers with leadership potential undertake a series of exercises while being observed by a group of senior managers trained as observers, for the latter to get a good idea of i) the strengths the former have and ii) the skill areas which the former need to grow and get experience.
- A 360° feedback review where a promising employee’s boss and three colleagues complete questionnaires on their managerial competencies.

The ‘assessment development centres’ and the ‘360° feedback reviews’ are implemented by the business units, with the immediate support of its human resources (HR) function, but their implementation and results are also monitored by the corporate succession planning team and form part of the annual ‘peoples review’ (I1:JK).

Table 7.6: Developing Managerial and Organizational Leadership Capacity - Albion	
Organizational Routines	People/Organizational Bodies Involved
<i>Management Development Program</i>	Corporate HR receives proposals from BU HR and evaluates
<i>Personal Development Assessment/Leadership Development - Annual HR Review</i>	BU HR Corporate HR Succession Planning Team
<i>Succession Planning - People’s Review - Annual HR Review</i>	Corporate HR: Succession Planning Director SMD BU MD BU HR

The findings of this section are summarized on Table 7.6. They identify an organization that has made provisions to track, train and rotate competent employees across market-focused BUs, an indication that a BU-mindset (Prahalad and Hamel, 1994) regarding the ownership of resources is absent, a positive influence to the effective development of the ICM’s core competencies. In the absence of active social networks across BUs (viz. Section 7.3.3) it could be argued however that Albion still

has obstacles to overcome if it wishes to develop management and leadership with interpersonal competencies and ‘social capital’ built in social networks with a culture of trust, mutual respect and a willingness of members to learn from one another (Javidan, 1998; Drath, 2000; McCawley, 2000).

Having identified the ‘routines’ through which Albion plc implements each of the core competence development activities and the context in which they take place, the following section will discuss the interrelationships existing between these activities and how these are related to the configuration that Albion has developed.

7.4 Interrelationships between Activities

The purpose of this section is to integrate the findings from sections 7.3.1 to 7.3.5 and identify the interrelationships between core competence development activities, as well as how these are influenced by Cyclone’s configuration (viz. Chapter 4, Section 4.4). Findings from Tables 7.1 to 7.6 are displayed on Table 7.7.

When ‘exhibiting SI and crafting SA’, the routine of ‘setting and communicating the annual budget and business plan’ (viz. Section 7.3.1) essentially links long-term strategy with ‘regulating SA implementation’. Changes identified and integrated to intended strategies through ‘management reviews’ and ‘project selection’ criteria (viz. Section 7.3.2) feed into the following year’s annual budget and business plan, and may influence medium and long-term plans. Setting and communicating the annual business plan also makes provisions for tracking, training and rotating competent employees by containing the ‘annual people’s review’ (centrally coordinated by corporate succession planning), whose

Finally, the interrelationships existing between ‘stretching and leveraging resources and core competencies’ and ‘regulating strategic architecture - manifested especially in project-selection routines - implementation’ indicate that Albion’s configuration can facilitate decision-making and resource allocation in-line with SA set. The ‘monthly review’ emerges as an integral routine for regulating the group’s efforts towards meeting its targets, and offers the opportunity to Albion’s middle management and strategic apex to monitor strategy execution and merge emerging issues with intended ones when necessary (Mintzberg, 1979; 1989 and in construction: Langford and Male, 2001).

Table 7.7: Activities, their Routines and Interrelationships - Albion

Generic, Theory-Based Activities	Organizational Routines	Key-People/ Organizational Bodies	
Exhibiting SI and Crafting SA	<i>Setting and Communicating the Annual Business Plan</i>	The Chief Executive's Team The Director of the Planning and Development Division The Managing Directors of BUs (and their senior management teams) The director of 'Risks and Opportunities Management Framework'	
	<i>Setting and Communicating Long-Term Strategic Plans (3-5 years)</i>	The Chief Executive's Office The Director of the Planning and Development Division The Managing Directors of BUs (and their senior management teams) The director of 'Risks and Opportunities Management Framework'	
	<i>Setting and Communicating the Objectives of a Strategic Initiative</i>	Managing directors of BUs and their senior management teams Business Stream directors and their supporting financial controllers) Albion's Corporate Commercial Director Planning and Development Division	
Stretching and Leveraging Resources and Core Competencies	<i>PPP/PFI Projects</i>	Chief executive's team (potentially BoD) Sector MD of 'Investments' sector MDs of BUs Planning and Development Corporate Function	OLC Integration and Leverage ILCC Leverage (knowledge transfer through informal communication, employee mobilization and process replication with respect to project selection criteria)
	<i>Albion management (Professional Service Contracts)</i>	CEO MD of Albion Management Ltd Sector MDs and other MDs of BUs that possess desired skills Project manager	OLC Integration and Leverage ILCC Leverage (employee mobilization at project teams for execution, knowledge transfer at project's pre-award stage)
	<i>Intra-sector BU Joint Ventures</i>	Sector MDs BU MDs	OLC Integration and Leverage ILCC leverage (employee mobilization at project execution team)
	<i>Acquisitions (Due Diligence and Integration)</i>	Sector MD of the sector group where the company will be positioned	OLC Leverage (acquiring and integrating)
		Individuals from across the group with knowledge of the market of the company acquired	ILCC Leverage (employee mobilization for due diligence) Process Replication (financial management and reporting)
	<i>Socializing Forums</i>	Corporate function directors BU Functional Directors SMDs and BU MDs (depending on 'scope' of special interest groups (SIGs))	Knowledge transfer through 'socialization'.
	<i>Employee Rotation</i>	Human Resources (corporate and BU) BU MDs and Sector MDs (if employee mobilized shows 'leadership potential')	ILCC Leverage (employee mobilization)
<i>Business Process Harmonization</i>	Corporate function 'directors'; BU functional directors	Process Replication	
Developing Managerial and Organizational Leadership Capacity	<i>Management Development Program</i>	Corporate HR receives proposals from BU HR and evaluates	
	<i>Personal Development Assessment/Leadership Development</i> • Annual HR Review	BU HR Corporate HR Succession Planning	
	<i>Succession Planning</i> • People's Review • Annual HR Review	Corporate HR: Succession Planning Director Sector MD BU MD BU HR	
Improving Business Practices	<i>Reporting</i> • Operational management reviews • Management reviews	BU 'knowledge management champion' BU MD Sector MD	
	<i>Knowledge management – in a restricted and partial sense for explicit knowledge</i>	Project-intranets BU intranets	
	<i>Special Interest Groups (SIG)s and discussion forums</i>	Functional/technical experts	
	<i>Strategic Initiatives</i>	Managing directors of BUs and their senior management teams Business Stream directors and their supporting financial controllers) Albion's Corporate Commercial Director Planning and Development Division	
Regulating SA Implementation	<i>Reporting Reviews</i> • All day review (4 months) • Quarterly reviews • Monthly reviews • Annual Business Review	1) From CE Office, CEO, CFO, GMD as well as BU MD and BU FD. CEO meets directly with each BU MD. 2) SAME 3) Sector MDs and their BU MDs and BU FD and Commercial Director.	
	<i>Project Selectivity</i> • Project tender review	1) PFI/PPP bid directors, Albion Capital Projects, BU MD, I&D BS, GMD (from chief executive's office). 2) BBM MD, other BU MDs, the Sector MDs (from the Chief Executive's Office) 3) BU MDs, Sector MDs (from Chief Executive's Office)	
	<i>Assurance Framework</i> • Risk and opportunity framework (Assurance). • Project specific	Internal Audit Function, Risk Management.	

7.5 Summarizing and Concluding Section

The findings of this case study regarding the issues this research addresses are summarized on Table 7.8. At Albion, the effectiveness of ‘stretching and leveraging resources and core competencies’ may suffer in the absence of institutionalized, structured, inter-BU links, as it becomes hard to access, transfer and integrate the tacit knowledge of individual employees, who are spread-out throughout the plc. Regarding ‘improving business practices’, the absence of organizational learning mechanisms and a horizontal organization through which information on knowledge and experience gained can be captured, stored and disseminated on a corporate-wide basis may inhibit long-term competitiveness. Knowledge may end-up being lost following project completion and Albion’s BUs may not be able to develop new routines - or existing ones - as a function of ‘experiential learning’. Consequently, the plc’s effectiveness in developing its core competencies could suffer if those structural and functioning issues are not addressed.

Table 7.8: Albion plc: Summarizing	
Issues	Findings
Configuration	Diversified configuration with some elements of professionalization embodied in standardized processes that corporate support functions develop and assist autonomous BUs in implementing. Autonomous BUs, coordination through standardization of outputs and vertical decentralization of authority to their directors. The plc's strategic apex emerges as a key organizational part, which acts both as a designer and controller of the group's strategies.
Core Competencies	<ul style="list-style-type: none"> • Pursuing, securing and executing building, civil engineering and rail engineering projects; • Structuring, securing and managing PPP/PFI concession contracts.
Dynamic Capabilities	<ul style="list-style-type: none"> • Acquires companies in order to expand its geographical scope of operations and complement core competencies it already possesses; • Develops organically (e.g. Albion Investments, Albion Professional Services) the capabilities and core competencies that may be market-related but revolve around a different 'role' involved in the production of the built environment.
<i>On Albion's configuration and its ability to develop a corporate strategy, with optimal potential for implementation</i>	SI and SA set in a BU-mindset with provisions made however for tracking, training and rotating competent employees. BU autonomy could lead to objectives of individual employees being aligned with BU objectives, rather than corporate objectives
<i>On Albion's configuration and the effectiveness with which it regulates its strategies</i>	Feedback mechanisms (reporting and project selection) allow upper middle management to 'reflexively' strategy execution.
<i>On Albion's configuration and the effectiveness with which it stretches and leverages its resources and core competencies</i>	Stretching and leveraging resources and core competencies is effectively implemented when a centralized organizational body with authority to manage inter-BU links exists (e.g. Albion 'Investments' and Albion 'Management'). In the absence of this (such as in the case of construction-related BUs), lack of 'trust' and cultural differences across BUs, could inhibit the transfer of the specialized knowledge of individual employees, as well as the replication of effective routines and social practices.
<i>On Albion's configuration and the effectiveness with which it can reconfigure its processes, structures and norms, as a result of organizational learning</i>	Absence of organizational learning mechanisms as well as the structures and processes to store and diffuse knowledge and experience gained across organizational units.
<i>On Albion's configuration and the effectiveness with which it develops managerial and organizational leadership capacity</i>	Inter-BU social capital is developed mainly through loose corporate functional fora. Centrally coordinated succession planning framework, which monitors and regulated the development of managerial and organizational leadership capacity is corporate-wide, but focuses on a small number of employees.

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Chapter 8: The Pacifico Corporation

8.1 Pacifico's Early History

Pacifico was first established in 1916 as a refinery design company. In 1944, its founder incorporated in California the 'Pacifico Corporation' offering engineering, construction and technical services. During the 1950s, Pacifico diversified into the chemical and petroleum industries and oversaw the construction of a number of refineries for natural gas and petroleum in Turkey and several European nations. In 1958, the company began the first of many airport projects in the United States (US). Internationally that was followed by the design and development of an airport in Saudi Arabia, which signified the beginning of Pacifico's involvement in the design and construction management of airports worldwide. In 1961 a strategic acquisition brought significant involvement in mining and metallurgy. During 1965 and 1974, Pacifico transitioned from its entrepreneurial stage into a sophisticated organization with strategic, long-term financial and operational plans. In 1976, the joint venture company 'Saudi Arabian Pacifico Limited' was founded to administer and pursue project opportunities in the Middle East. In 1977, Pacifico acquired two established engineering firms based in Houston, in order to strengthen its engineering capability.

During 1978 and 1979 Pacifico divisionalized its structure, grouping projects under four market-based units: 'Pacifico Design and Construction', 'Pacifico Environmental and Transport Projects' (both in the US), 'Pacifico Constructors Inc.' (a subsidiary intended to provide construction capability) and 'Pacifico International Limited' (to undertake projects outside the US). In the same year, Pacifico transitioned to a 100% private ownership by its employees.

Between 1985 and 1995, Pacifico's leadership exhibited the intent for the corporation to become a 'total integrated services' provider. That intent was pursued through acquisitions of companies that complemented the corporation's existing capabilities. Within that decade of acquisitions and growth, the firm expanded into an international network of autonomously operating companies specializing in a broad spectrum of activities. In 1995 an organizational shift led to the consolidation of Pacifico's subsidiaries into global business units (GBUs), each focused on specific industry sectors.

8.2 Recent Evolutionary Path and Pacifico's Present State

Figure 8.1 displays how Pacifico's 'role' in the production of the built environment, as well as its 'structural' and 'functioning' characteristics, have evolved in relation to notable strategic intents its leadership has set, strategic architectures it has pursued and investments the corporation has made¹.

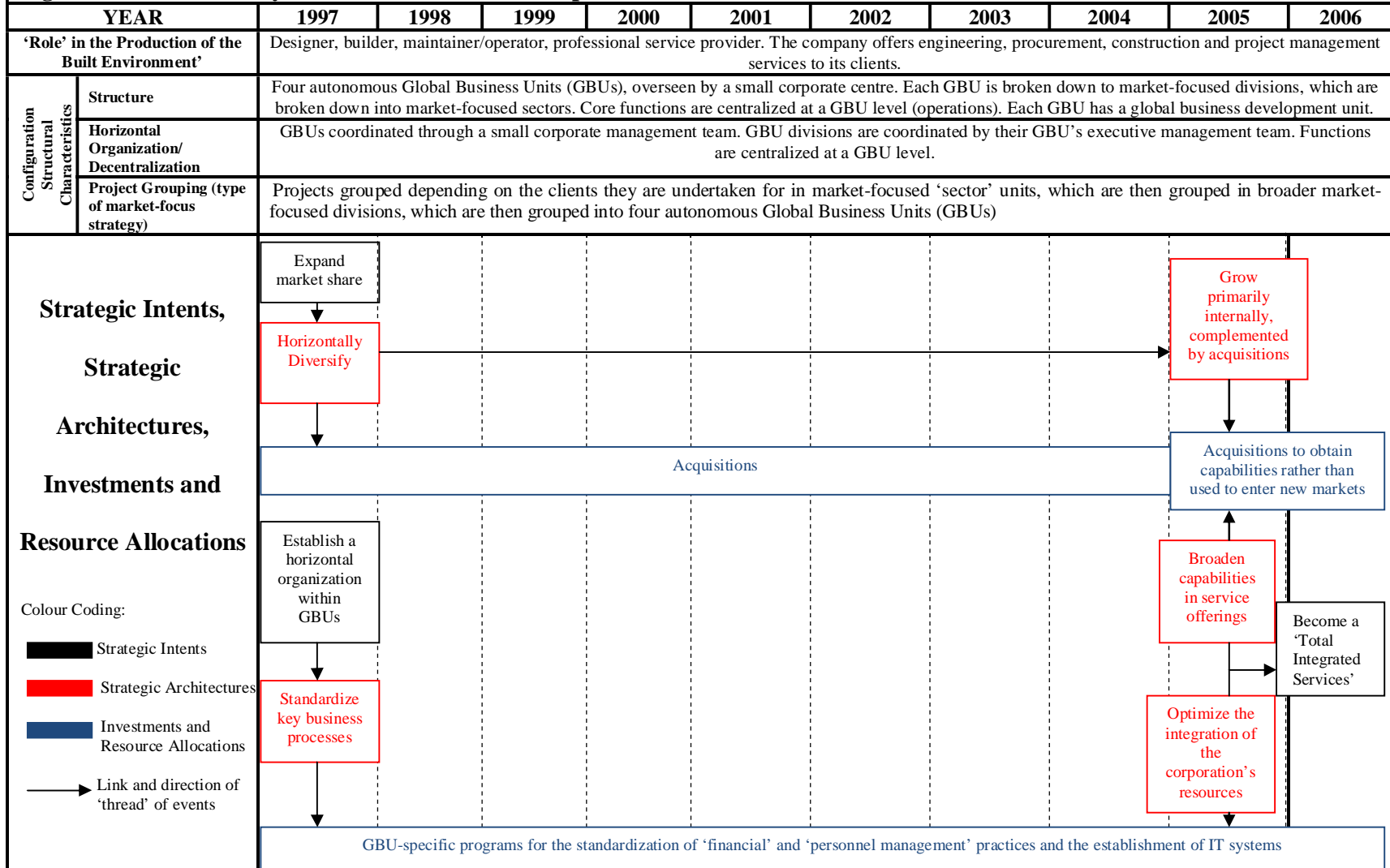
In 1997, Pacifico had just completed a restructuring program to consolidate its subsidiaries in four market-focused 'global business units' (GBUs): i) Process, ii) Infrastructure and Technology, iii) Power and iv) Transportation. Each GBU constituted market-focused divisions, which offered engineering, procurement, construction and project management services, each with their own President and executive management team. Following this organizational restructuring, Pacifico continued to pursue the strategic intent it had set from 1985 - becoming a 'total integrated service provider' - by pursuing horizontal diversification in related markets through acquisitions.

However, it had become clear that greater uniformity in terms of business practices was required. To better integrate the corporation's units, efforts towards the standardization of business processes throughout the corporation, mostly in terms of i) accounting, ii) human resource management and iii) the implementation of an enterprise resource planning (ERP) and managing information systems (MIS) were undertaken, albeit within GBUs, not across them. Furthermore, a centrally coordinated global 'business development unit' was created within each GBU.

Following some years of 'growth-oriented' acquisitions, the corporation's leadership decided in 2005 to focus primarily on internal growth, complemented by acquisitions only when a new capability was required that could not be internally developed. The intent was for the corporation to broaden its capabilities in service offerings. In the meantime, Pacifico's leadership decided to further optimize the systems in place to integrate the corporation's resources (essentially, to better leverage its core competencies, so that it could become better at providing 'total integrated services' to its clients). This led to the development of GBU-specific 'global policy manuals' and in the development of a corporate-wide, Pacifico-specific 'project management handbook'.

¹ The display is in the form of an 'event-flow network' (Miles and Huberman, 1995) and is colour coded so that its constituting elements can be easily distinguished.

Figure 8.1: Evolutionary Profile of the Pacifico Corporation



At the time of writing, Pacifico provided engineering, construction, systems and resource integration, project/program management, and environmental services to a wide range of global customers. It was a multinational company with 2,500 clients and 8,000 projects worldwide, operating in 50 US states and 80 foreign countries, with more than 11,500 employees.

The brief historical review and evolutionary profiling of Pacifico allows the following observations to be made. Pacifico started operating as a small oil refinery design firm and within a few decades diversified vertically (into construction), horizontally (into the chemicals and petroleum, metals and mining and airport markets) and internationally (with projects in Turkey, Europe and ultimately the incorporation of Pacifico Saudi Arabia), to become an international engineering and construction services provider. Diversification brought ‘divisionalization’ and a subsequent need for intra-organizational ‘integration’. As the corporation continued to grow, it complemented its capabilities with acquisitions that allowed it to offer its clients a more ‘holistic’ service. Continuous expansion, restructuring and consolidation around market-focused units based on client interrelationships brought Pacifico to its present state.

The brief historical review and a snapshot of Pacifico’s present state, indicate that its core competencies revolve around ‘offering engineering, construction, procurement and project management services to different types of ‘clients’ of the construction industry’.

In addition, the historical review and more recent evolutionary profiling of the corporation offer insights concerning the ‘dynamic capabilities’ of the corporation (Teece et al., 1997). The evolutionary profiling suggests the following dynamic capabilities are potentially present:

- Acquiring companies and successfully/appropriately integrating them into the corporation’s existing body;
- Organically developing internal systems that allow it to integrate the business activities of its various units;
- Restructuring its organization to better facilitate and serve the needs of its clients.

Others may also be present.

8.2.1 Structural, Functioning and Agency Characteristics

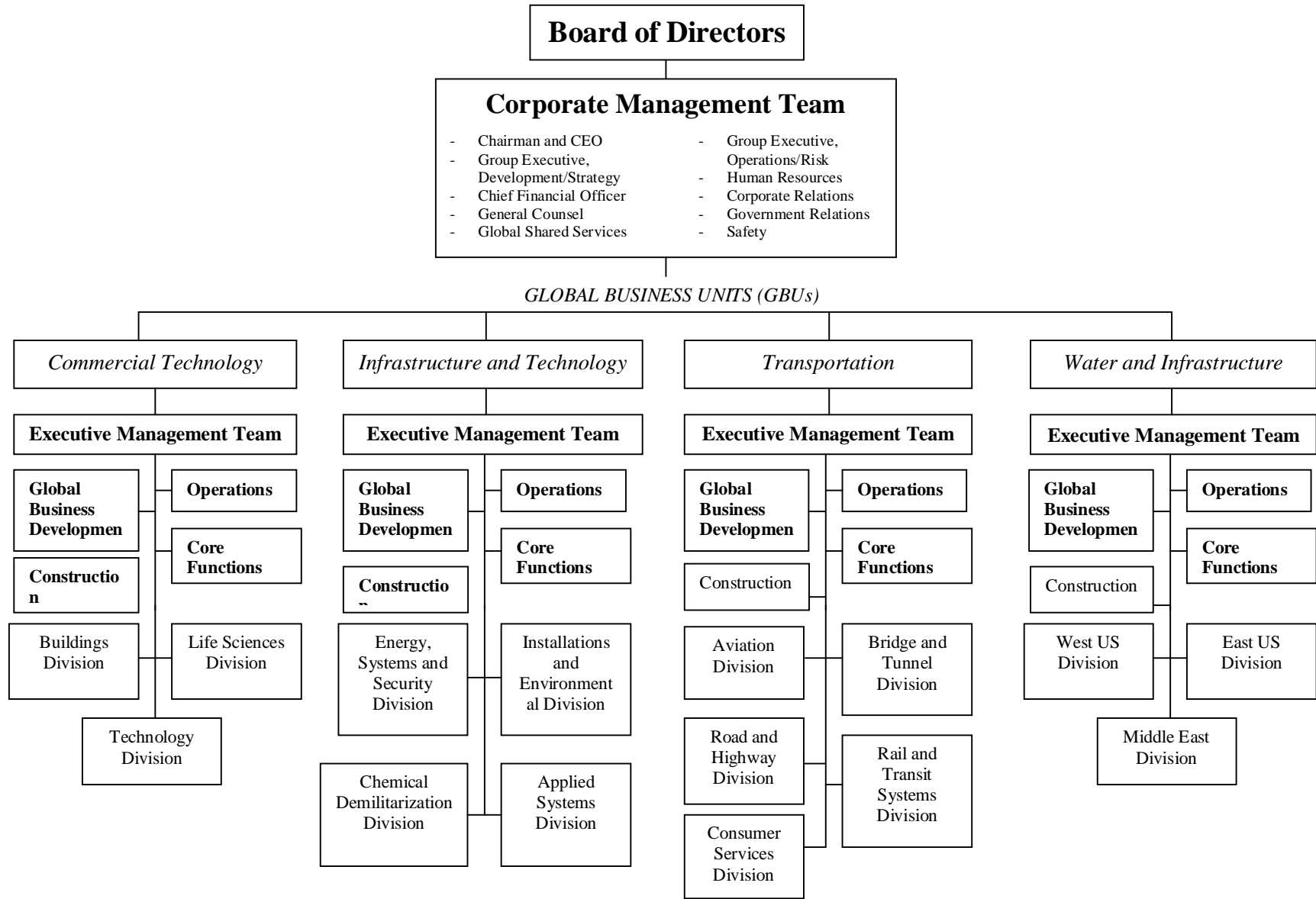
As shown on Figure 8.2, Pacifico is involved in many diverse markets, spanning all three sectors of ‘process’, ‘civil engineering’ and ‘building’². Its structure is one of four autonomously operating global business units (GBUs) overseen by a corporate centre. The four GBUs are:

- Commercial Technology: responsible for all projects related to telecommunications, both wire and wireless, biotechnology and pharmaceutical work, industrial environmental work such as industrial waste treatment processes, environmental remediation, schools, hospitals and healthcare.
- Infrastructure and Technology: responsible for all projects undertaken for US federal government institutions (e.g. Department of Defence (DoD), Department of State (DoS) and Department of Energy (DoE)).
- Transportation: responsible for all projects related to ground and air transportation, including bridges, tunnels, rail, highway, aviation and airports, as well as the systems engineering that accompanies those markets.
- Water and Infrastructure: responsible for all projects related to water, wastewater, water conveyance, as well as major infrastructure development projects.

GBUs are broken down to market-focused ‘divisions’ and these in turn to market focused ‘sector’ units. In reality, the structure is a bottom-up rather than a top-down creation (**I3:BS**) determined by client and market interrelationships. In addition, GBUs operate through a number of offices (essentially local/regional resource centres), providing their divisions and sectors with the resources they

² As these have been described by Morris (2004), viz. Chapter 2, Section 2.3

Figure 8.2: The Structure of the Pacifico Corporation



need on a project basis (**I5:GB, I11:ER**)³. Resources are ‘owned’ by divisions, although their allocation is centrally coordinated at a GBU level where functions are centralized. All GBUs have the following functions (**I2:MH**)⁴:

- Business development;
- Operations (includes quality management, project controls, safety and information systems management);
- Engineering;
- Procurement;
- Construction;
- Finance.

Of particular importance are ‘business development’ and ‘operations’. Business development (BD) was created as a result of a corporate philosophy to strive for greater client focus and, in the words of a GBU’s BD Director:

‘it is the tip of the sphere and drives the organization. Our whole structure is created around how we pursue and win work.’(**I6:TW**).

Essentially, BD is responsible for all pre-contract award activities within each GBU. Each GBU has a BD director and BD divisional managers (**I6:TW**)⁵. ‘Operations’ are responsible for all project-stages after contract award.

Engineering is centralized as a core function at the GBU level (**I8:TP**). Procurement is also centralized at a GBU level and operates almost autonomously as a support function out of regional and local offices/resource centres. Its responsibilities include both ‘subcontracting’ and ‘materials purchasing’ on behalf of the divisions (**I5:GB**). This arrangement facilitates better alignment and integration of the supply chain on behalf of the clients each GBU serves⁶ (**I2:MH, I10:JS&MT**). Finally, each GBU has its own finance function, led by the GBU’s chief financial officer (CFO), to whom ‘division’ and ‘sector’ financials controllers report (**I4:MZ**).

³ For example, Pacifico’s ‘Infrastructure and Technology’ GBU operates through three main offices: i) West of the State of Mississippi and ii) East of the State of Mississippi (in the USA) and iii) International.

⁴ Though centralized at a GBU-level, there is a core team for each function at each division.

⁵ In the ‘Transportation’ GBU, where clients are at different geographic locations, BD efforts are more centralized at a national level

⁶ It should be noted that Procurement staff allocated at projects cannot be hired or fired by the project manager, to ensure checks and balances are kept in place against corruption.

Each GBU sector-unit has a ‘sector manager’ (SM) who reports to his/her ‘division manager’ (DM), who then reports to his/her GBU president (**I6:TW, I3:BS**)⁷. GBU executive management teams comprise the directors of BD, operations, engineering, procurement, construction, finance and market-focused divisions⁸, report to their GBU President and have a global responsibility to coordinate market-focused divisions, sector units and functions. On top of the GBUs sits a small corporate centre, which coordinates, integrates and resolves conflicts between GBUs if necessary. The corporate management team constitutes of the GBU presidents, the chief executive officer (CEO), chief operating officer (COO) and a corporate CFO. (**I2:MH, I1:DR&ER, I6:TW**).

There are varying levels of communication, coordination and cooperation across GBUs. At the GBU senior management level, direct links exist between counterparts. The corporate CEO and functional directors resolve conflicts across GBUs (**I6:TW**).

Pacifico has chosen to play the roles of the ‘designer’, ‘constructor’ and ‘operator’ in the production of the built environment, in addition to being a project manager on behalf of its clients. All of Pacifico’s ‘sector-focused’ units offer engineering, procurement, construction and project/program management services to their clients, either in combination or in isolation.

Pacifico has developed into a ‘diversified’ and ‘divisionalized’ organization, which groups projects primarily under client-focused sector units. Providing a project management service to their clients, Pacifico also exhibits the characteristics of a ‘professional’ configuration. In such a configuration, the ‘operating core’ comes to the forefront and ‘standardization of skills’ and ‘norms’ emerges as an important coordination mechanism. At Pacifico, this has been pursued corporate-wide for project managers only, through the development of a ‘project management certification program’ (PMCP). Although the standardization of skills regarding project managers is corporate-wide, standardization of norms does not transcend GBU boundaries, as it is driven by each GBU’s client-focus. Finally, the inevitable standardization of work processes, when coordinating a company with such a scale of operations, gives Pacifico some characteristics of a machine bureaucracy. Due to the corporation’s decentralized

⁷ The ‘Water and Infrastructure’ GBU is the only one whose divisions represent project groupings based on geographic location. Within the other three GBUs there is a separate ‘international’ division for projects outside the USA.

⁸ In the Transportations GBU, the executive management team is led by the BD and Operations directors, who have equal authority. In all other BUs, the director of BD is the executive director of the GBU.

nature, this standardization happens at a GBU level - with the exception of project management practices.

Table 8.1 summarizes this case study's findings with respect to the 'structural', 'procedural' and 'agency' characteristics of Pacifico's configuration. The next section describes the 'organizational routines' and 'individuals/organizational bodies' involved in the implementation of the five core competence development activities through which core competence (viz. Chapter 4, Section 4.3) can be effectively controlled.

8.3 Core Competence Development Activities

This section identifies and describes - in turn - the 'organizational routines' through which Pacifico conducts each core competence development activity. As a result, it identifies and describes the role of the individuals/organizational bodies most integral to the implementation of these 'organizational routines'.

8.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture

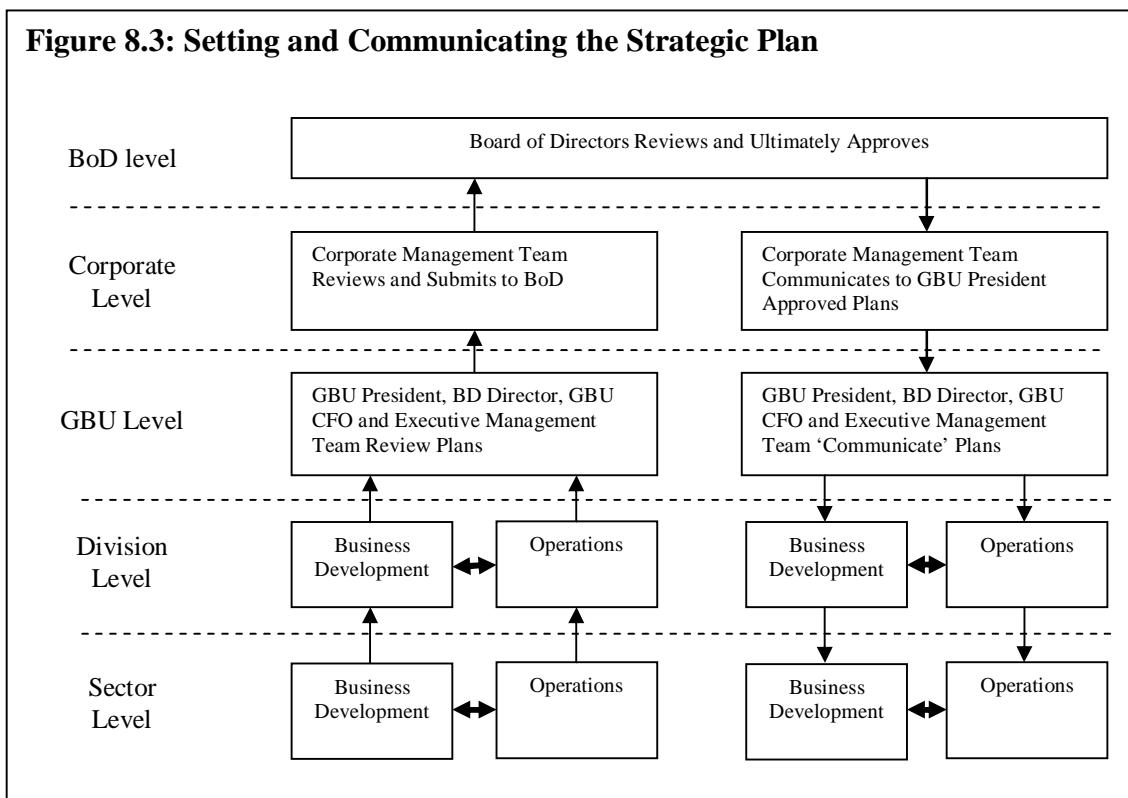
Two organizational routines regarding 'exhibiting strategic intent (SI) and crafting strategic architecture (SA)' at Pacifico have been identified. The first is that of 'setting and communicating the strategic plan' (Figure 8.3). The plan formulation happens in two parallel streams. One is related with 'business development' (BD) and the other with 'operations'.

The process is GBU-specific and takes place annually between August and December (**I7:TL**). There is an on-going two-year plan in place that is updated every year with the development of the 'annual business plan'. In reality therefore, each year a two-year plan is drafted and from that two-year plan the first year is rolled up into an annual business plan. Consequently, it can be understood that the process of creating the annual business plan also constitutes a 'feedback' mechanism through which the GBUs' and the corporation's longer term plans can be regulated.

The plan originates as a bottom-up creation that starts at the 'sector-unit' level. Business development (BD) directors and sector managers set BD targets and determine operational requirements of sector-specific annual business plans, which specify i)

Table 8.1: Pacifico’s Configuration Characteristics

Structural Characteristics	Market-Focused Strategy (project-grouping)	1. Client-focused
	Horizontal Organization/ Degree of Decentralization	<ol style="list-style-type: none"> 1. Within GBUs, interrelationships between sectors are managed by division managers, between divisions by the GBU’s executive management team. Processes stipulated in the GBU’s Global Policy Manual. 2. Between GBUs, interrelationships are managed by the corporate management team through ‘informal routines’. 3. Key business/functional processes are GBU-specific 4. HR systems are GBU-specific, transcending GBUs only in the case of the ‘leadership council’. 5. No organizational bodies exist to manage cross-GBU interrelationships in terms of value-adding activities such as procurement.
Procedural Characteristics	Coordination Mechanisms	<ol style="list-style-type: none"> 1. Standardization of outputs 2. Standardization of skills (Project Management) 3. Standardization of processes (BD and Operations albeit GBU-specific) 4. Standardization of norms (client-oriented, GBU-specific)
Agency Characteristics	Key-People/ Organizational Parts	<ol style="list-style-type: none"> 1. Corporate management team 2. GBU executive management teams 3. GBU BD director, operations directors, division managers, finance directors and HR directors.



targets and objectives, ii) client management strategies and tactics, iii) financial targets for the following year and iv) how the above influence the 2-year business plan (I6:TW, I2: MH). These sector-specific plans are then integrated at a 'division' level. Each division manager, in collaboration with sector and BD managers identifies clients and potential opportunities for the following year. Resource requirements are then projected on a monthly spend rate, adding those to the requirements of the existing back-log. Subsequently, BD managers and the GBU's BD director devise a plan as to how clients will be managed in order for each sector and division to successfully service project opportunities targeted. At that stage, information obtained from clients contributes to the creation of Pacifico's internal targets (I2:MH). The GBU finance function drives and coordinates the process, especially with respect to integrating budgets across sectors and divisions (I4:MZ).

The division-level plans are integrated by the GBU presidents and BD directors to create GBU-specific annual business plans. Subsequently, these plans are submitted to the 'corporate management team', who reviews them and then sends them to the board of directors (BoD) for approval. The approved plans are then communicated downwards through the hierarchy to the GBUs, divisions and sectors. Performance of both operations and sales/business development is then monitored and regulated against that corporate plan (I2:MH). The process introduces standardization of outputs

(Mintzberg, 1979; 1989) as a coordination mechanism through a combination of ‘output performance’ (financial targets) and ‘action planning’ (client management strategies and tactics) enforced during business plan execution.

The second organizational routine is that of ‘setting and communicating the objectives of a strategic initiative’. Strategic initiatives are almost always related to improving client satisfaction and therefore they usually emerge in a bottom-up process (I3:BS, I2:MH). Strategic initiatives may take various forms, ranging from internal programs for developing a competence or improving business processes, to acquiring companies that can enhance the breadth and quality of services the corporation can offer its clients⁹. When the need for an initiative is identified, a study is undertaken by the GBU. Depending on the capital expenditure required, the corporate management team or the BoD may have to approve it.

The findings of this section regarding the organizational routines identified and the individuals/organizational bodies involved in their implementation are summarized on Table 8.2.

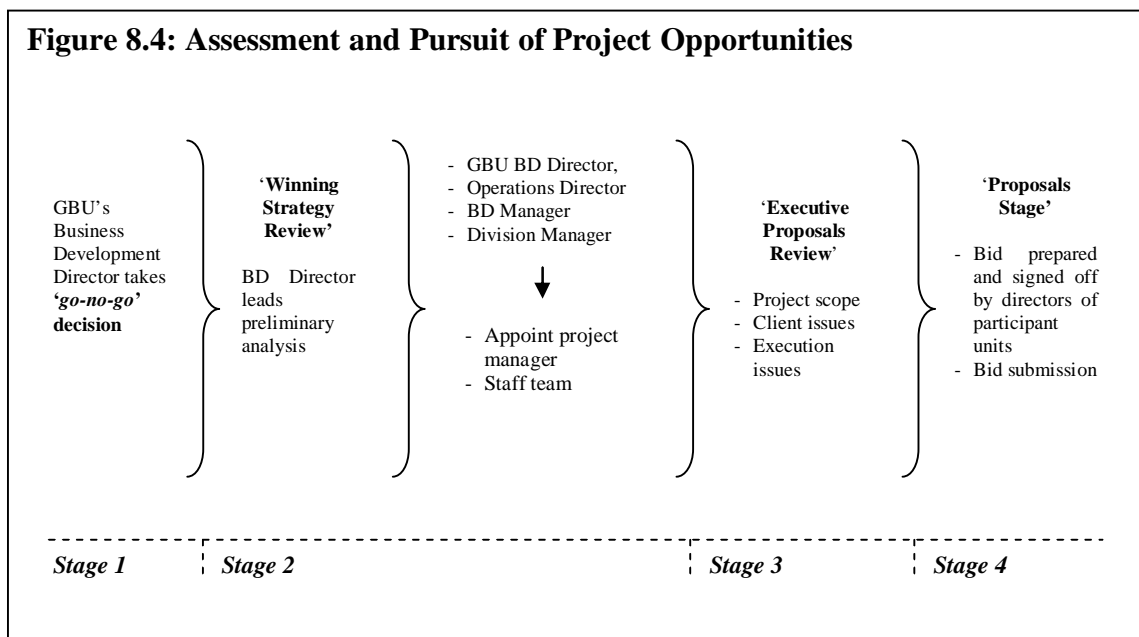
Table 8.2: Exhibiting SI and Crafting SA - Pacifico	
<i>Organizational Routines</i>	<i>People/ Organizational Bodies Involved</i>
<p><i>Setting and Communicating the Strategic Plan</i></p> <p><i>a. Two year strategic plan (while updating annual).</i></p> <p><i>b. Annual business plan</i></p>	<p>Sector Managers</p> <p>Division Managers</p> <p>GBU BD Directors</p> <p>Divisional BD Managers</p> <p>Finance function integrates (Divisional Finance Directors, GBU Finance Directors)</p> <p>GBU Executive Management Team.</p> <p>Corporate Executive Management Team</p>
<p><i>Setting and Communicating Strategic Initiatives and their Objectives</i></p>	<p>Sector Manager</p> <p>Division Manager</p> <p>GBU BD Directors</p> <p>Divisional BD Managers</p> <p>GBU Executive Management Team</p> <p>Corporate Executive Management Team (level of involvement depends on <i>risk profile</i>)</p>

⁹ How acquisitions are related to core competence leverage at Pacifico will be discussed to a greater detail in section 8.3.2.

Considering the description of Pacifico’s routines for ‘exhibiting SI and crafting SA’, in combination with the description of the corporation’s configuration from the previous section, the following could be suggested. First, the fact that each GBU sets its strategy and operates autonomously indicates that comprehension of strategy objectives remains GBU-specific. Second, Pacifico’s strong client-focus highlights the importance of each GBU’s ‘business development’ division as integral in setting the strategies that the corporation will collectively pursue.

8.3.2 Regulating Strategic Architecture Implementation

Two streams of organizational routines have been identified related to ‘regulating strategic architecture (SA) implementation’ at Pacifico. First, those related to the ‘assessment and pursuit of business opportunities’ will be described. These organizational routines can be separated between those relating to i) the assessment of project opportunities (Figure 8.4) and ii) the evaluation of specific capital expenditures (e.g. acquisitions). They will be described here in turn.



The purpose of business development (BD) managers is to find project opportunities that align both with global business unit (GBU) and corporate goals (I9:MN, I2:MH). Once an opportunity is identified, the divisional BD manager and the division manager - under whose responsibility the market-focused sector that will undertake the project falls - will decide whether the project is of interest. If deemed of interest, the opportunity is presented to the GBU’s BD Director who decides whether

the project is worth pursuing. Subsequently, preparations are made for the ‘winning strategy review’. For this review, divisional BD managers become responsible for conducting a preliminary analysis, to determine the amount of working capital required to pursue the project and provide justification regarding why the project can be won (**I6:TW**). The review’s decision-making body comprises the GBU’s BD director and the divisional BD manager and division and sector-unit managers that will undertake the project. The issues reviewed include an analysis of competitors and the level of risk that dealing with the particular client entails (**I2:MH**). The outcome of this review is then circulated to the GBU’s functional departments and then, the GBU’s BD director, operations director and the sector-unit and division managers collaboratively appoint the project’s manager and a project team to assist him/her in pursuing the project.

The next stage is the ‘executive proposals review’. At this review, the appointed project manager (PM) has to present a bidding strategy for winning the project (**I10:JS&MT**). The issues discussed are i) what the project is about, ii) familiarity with the client and iii) issues related to project execution (**I4:MZ**). To prepare the presentation, PMs draw individuals from operations to assist them.

There are risk thresholds determining whether it will be the division manager, the GBU BD director, the GBU President or the corporate CEO, who will decide during this review whether the project will be pursued. ‘Value’ and ‘type’ of contract determine risk levels (**I2:MH**). Who is the appropriate person to approve the project pursuit depends on the level of risk it exposes the company to and is specified in a corporate-wide applicable framework, known in Pacifico as the ‘Matrix of Authority’.

Subsequently, the process moves to the ‘proposal stage’¹⁰, where essentially the bid to be submitted to the client is put together. A bid director is appointed to lead the team that has been involved with the project so far. The project manager is heavily involved in the process. After the proposal has been prepared, it is signed off by everyone involved in its preparation and is then submitted to the client. If the project is won, a corporate-wide ‘matrix of authority’ specifies who is the appropriate person in the hierarchy to sign the contract with the client (**I6:TW**).

Throughout the four-stage process described, division and sector managers are involved as early as possible to review what the BD managers are proposing and to

¹⁰ In the case of the Infrastructure and Technology GBU where the bidding process is longer due to the bureaucracy involved during the tendering processes of US Federal Government organizations, that stage has 4 sub-stages.

consider issues related to ‘project execution’. The objective is for project ownership to move to the divisions as soon as possible by involving them early on in the articulation of execution management (**I6:TW, I5:GB, I10:JS&MT**).

As during the assessment and pursuit of project opportunities, evaluation of a capital expenditure follows similar steps. The most common situation of this is the case of acquisitions. Acquiring and integrating companies has been identified as a dynamic capability of Pacifico earlier in this Chapter (viz. Section 8.2.1) and the reason for this will be illustrated here with an example. If Pacifico wishes to bid for projects tendered by the Department of Energy (DoE), they have to buy a company in order to obtain the necessary accreditation¹¹ for that client. In such a case, a company is found and then a ‘letter of intent’ is written to approach it. Subsequently, ‘due diligence’ is conducted drawing both from internal (finance, contracts, HR and technical) and external (auditing and legal firms) resources. The person who is appointed to lead ‘due diligence’ during the pre-acquisition stage is preferably a BD manager or a divisional manager from the GBU where the company targeted for acquisition will be positioned. The team that will run the company once it has been acquired is picked during the pre-acquisition stage. In the case where someone with experience will be mobilized to lead the new company, there is always a successor in mind who will step up and take his place. The due diligence process on its own takes 90 days (**I4:MZ**).

The second collection of ‘regulating SA implementation’ routines is related to ‘reporting’. They constitute ‘feedback’ mechanisms (Beer, 1959; Berry et al., 1995) through which the performance of the corporation against the targets that its units have set in annual business plans (viz. Table 8.2) can be regulated (**I2:MH**)¹². Reporting occurs in two streams, with respect to:

- ‘Project execution’ (operations);
- Targets regarding ‘sales’ and ‘business development’.

Each GBU’s finance function essentially drives the reporting process, which is very formal. At the project level, the finance function has weekly and monthly meetings with the project teams. Project controllers monitor: i) financials, ii) schedule and iii)

¹¹ Which constitutes the acquisition of what Hall (1992; 1993) referred to as ‘regulatory’ and ‘positional’ capability differentials.

¹² In each of the GBUs, resources have been allocated for the whole year to be deployed in order to meet targets. Each GBU therefore, might have to adjust to any changes that might arise with respect to its annual plan.

overall project performance against targets set during the bidding stage. The ‘sector’ and ‘division’ controllers aggregate project-specific information, focusing on revenue generated and more accounting-related issues (**I4:MZ**).

Project managers are assessed with respect to the targets set at the signing of each contract (**I11:ER**). Sector-unit directors are assessed based on the performance of projects of their sectors, division directors based on the performance of their divisions and so on and so forth. BD managers are assessed with respect to whether they have met their targets regarding ‘contracts signed’, but not regarding how those projects ended-up performing.

Each GBU president gets weekly updates on the progress of projects and the status of ‘sectors’ and ‘divisions’. Monthly there are ‘executive management meetings’ looking at each one of the divisions, how they are meeting their targets and any other issue that may arise, such as challenges with clients and key issues for which the functional departments should be informed (**I2:MH**). On the monthly executive management meeting, there are some topics covered in specific business areas with the GBU Presidents. Division directors are physically there every other month. Sector managers call in. The functions most actively involved are ‘finance’, ‘contracts and procurement’ and ‘project controls’.

From the monthly executive meetings, reports are created for the corporation as a whole through an integrated reporting system called ‘PRISM’ (Pacifico Resource Information System Manager) - a finance and accounting database that ties the GBUs together from a financial point of view (**I10:JS&MT**). Project managers also use PRISM to report monthly project progress to their sector and division directors. The monthly integrated reports link ‘execution’ and BD reporting at a GBU level¹³.

Quarterly, there is an executive management team meeting per GBU, which integrates monthly reports into a GBU-specific quarterly report (**I2:MH**). These reports are submitted to the corporate management team that also meets quarterly to review progress against the corporate plan.

The findings of this section are summarized on Table 8.3. What the description provided in this section indicates is that each GBU’s business development (BD) division (and the divisional BD managers in particular) is at the *vanguard* of ‘regulating

¹³ It should be noted that the reporting process for BD is more iterative and on-going, as it is directly linked with the process followed for assessing and pursuing project opportunities. In addition, there are monthly division-specific meetings, during which the GBU goes through all of the projects in the pipeline with the division managers and the BD managers assigned to those divisions (**I6:TW**).

Table 8.3: Regulating SA Implementation - Pacifico	
<i>Organizational Routines</i>	<i>Individuals/ Organizational Bodies Involved</i>
Assessment and pursuit of Business Opportunities <ul style="list-style-type: none"> - Projects - Acquisitions/Capital Investments 	GBU Business Development Director BD Managers (Division and Sector levels) Division and Sector Directors GBU President Corporate Management Team and BoD (depending on level of investment and risk)
Reporting (BD and Operations) <ul style="list-style-type: none"> • Project reporting • Monthly executive management meetings (reports created through PRISM) • Quarterly executive management meetings • Quarterly corporate management meetings 	Project Manager, Sector-unit Director, Division Director Project controller, Sector controller, Divisional controller GBU President GBU executive management team (GBU President, Operations Director, BD Director, Division Directors) GBU Business Development Director BD Managers (Division and Sector levels) Corporate management team(CEO, COO, CFO and GBU Presidents)

SA implementation’ as they are the ones who are essentially responsible for identifying and evaluating both:

- Project opportunities their GBU may pursue;
- Investment opportunities to ensure they are in line with GBU and corporate strategies.

In addition, ‘feedback’ mechanisms allow Pacifico to ‘reflexively’ monitor strategy execution and change strategies if internally and/or externally generated circumstances necessitate it (Mintzberg, 1979; 1989; and in construction Langford and Male, 2001), linking therefore the implementation of these strategies back to the strategic intent (SI) exhibited and the strategic architecture (SA) crafted.

8.3.3 Stretching and Leveraging Resources and Core Competencies

In project-based businesses, such as ICMs in general and Pacifico in particular, the opportunity for stretching and leveraging resources and core competencies appears

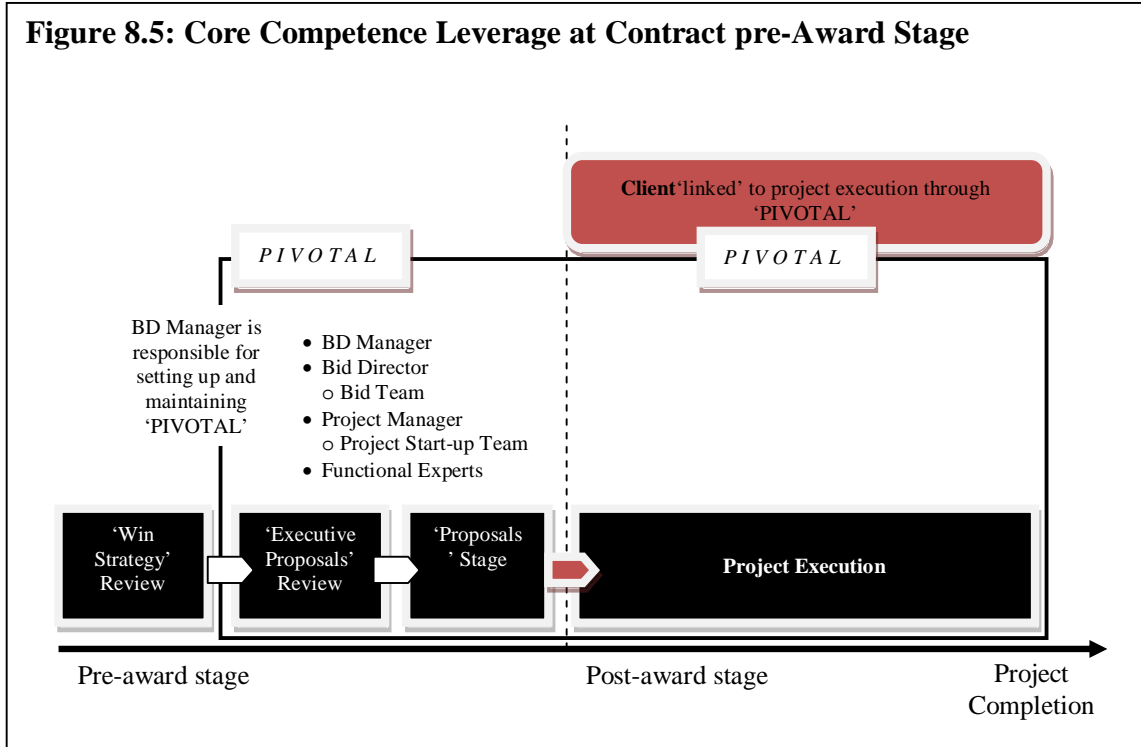
first and foremost in the case of projects. In Pacifico, this opportunity is first grasped by each GBU's business development (BD) division during 'project/investment selection'¹⁴. Once a project opportunity has been identified by a divisional BD manager, the GBU's BD director and the division's director are informed and a team is set-up, comprising experts from the division, who prepare a presentation for the GBU's BD director in what is known internally as the 'win strategy review'. Provided the decision to pursue the project is positive, the project manager is appointed and a team is set up to assist him/her. At that stage, if the appropriate people are not available within the division, communication with other divisions - across GBUs if necessary - takes place, in order to mobilize the most appropriate individuals with the specialized knowledge, skills and experience required to do the job. The project team then develops an 'execution plan', which the project manager presents at the 'executive proposals review' **(I2:MH)**.

The team working on the executive proposals review will be proposing how they will put specific processes in place to start-up the project if it is won (especially if the project is international and in a remote location). The functions most influential in this team are 'contracts and procurement', 'finance' and 'project controls' **(I3:BS, I4:MZ)**. BD plays an 'integrating' and 'coordinating' role during that stage of the project - crucial to leveraging Pacifico's 'entrepreneurial', 'estimating', 'relational' and 'technical' core competencies (Lampel, 2001) - as it is responsible for setting up and maintaining, on a project-specific basis, an on-line project-collaboration tool called 'PIVOTAL' **(I6:TW; I8:TP; I10:JS&MT)** (Figure 8.5). PIVOTAL constitutes a project-specific knowledge database and communication forum, providing the opportunity to have all the information about a project and the competition documented and accessible to project participants¹⁵.

It could be argued that PIVOTAL economizes on the communication channels required to transfer and integrate specialized knowledge of individuals (Grant, 1996b) on specific projects. It should be stressed however that its 'potential' is limited by the fact that its application is GBU-specific and the fact that it does not offer access to the specialized knowledge of organizational members who are not project participants.

¹⁴ Viz. Section 8.3.2.

¹⁵From the description so far, it can be understood that GBU BD directors, divisional BD managers and division directors, are the 'integrators' and 'coordinators' of Pacifico's core competence of 'engineering, construction, procurement and project management services' (viz. Section 8.2.1).

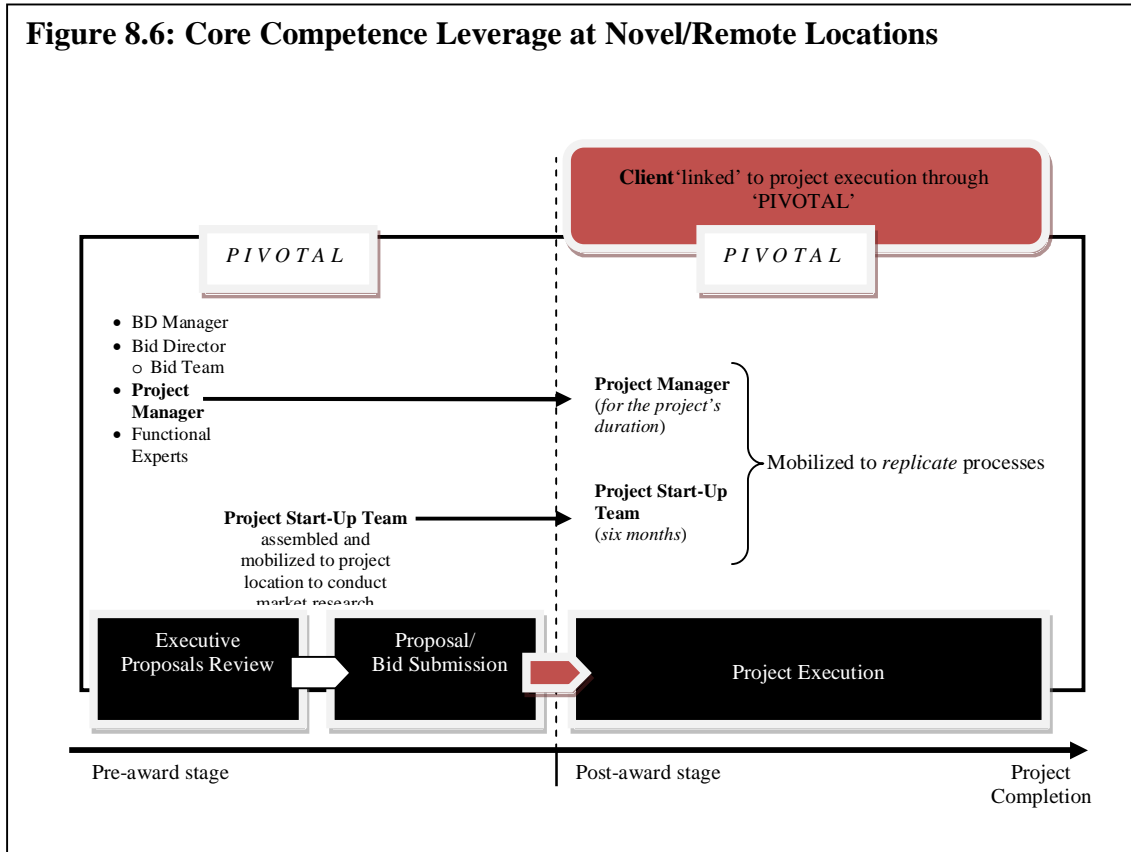


The pursuit and execution of international projects and/or projects in remote locations (Figure 8.6) exhibits certain distinguishing features with respect to stretching and leveraging resources and core competencies. In such projects, the start-up team chosen at the pre-award stage identifies specific issues related to project controls and how to put the systems in place to start the project as quickly as possible once it is awarded. After the 'executive proposal review' - but before bid-submission - a project 'start-up' team goes to the country or location where the project will be undertaken and conducts research on the local resources available. If and when the project is won, the start-up team is moved in and builds on the resources it has identified (**I2:MH**).

Obtaining resources to undertake projects in novel/remote locations is more easily achieved if an GBU office/resource centre exists nearby. If this is not the case, then the GBU's sector-unit undertaking the project may form a 'project-specific contractual agreements' with offices/resource centres belonging to another of Pacifico's GBUs that are located within close proximity to the project (**I4:MZ**). This constitutes an instance when the corporation stretches its human resources to leverage its existing core competencies, by utilizing potentially idle capacity that may exist across GBUs.

All of Pacifico's GBUs have dedicated start-up teams for international projects who will not stay for the duration of the project but will give a six-month breathing room until the people are found to stay permanently. 'Start-up' teams are responsible for

Figure 8.6: Core Competence Leverage at Novel/Remote Locations



setting-up and replicating company processes, as they constitute of individuals who have knowledge and experience of their GBU's practices, particularly those related to project controls (I9:MN). When choosing the project manager, the objective is to commit a long-term company employee who will lead initially the 'project start-up' team and subsequently - as the foot-print in terms of locals increases - train a team of locals and bring down to them the expectations existing from the corporate body.

What becomes evident therefore for this second occasion of stretching and leveraging resources and core competencies is that Pacifico's core competence of 'engineering, construction, procurement and project management services' is deployed through the mobilization of employees (the project start-up team and the project manager) who are responsible for 'reproducing' the GBU's 'social practices' (Giddens, 1984) and effective routines (Nelson and Winter, 1982) in a novel location.

Within each of Pacifico's GBUs, collaboration between 'sectors' or 'divisions' at projects is frequent and the processes through which it happens is standardized and explicitly stipulated in each GBU's 'global policy manual'. The clear allocation of responsibilities between business development and operations, as well as the deft (McGrath et al., 1995) project environment created through the application of

PIVOTAL, ensure the effective stretch and leverage of resources and core competencies at projects.

Often - as in the case when one GBU pursues and executes projects in locations or markets where resources from other GBUs are necessary - stretching and leveraging of resources and core competencies has to transcend GBUs. In such cases, intra-organizational conflicts often arise, which may lead to reduced project performance (**I2:MH; I3:BS; I4:MZ; I5:GB; I6:TW**). One senior executive from Pacifico's 'Infrastructure and Technology' GBU has described the situation as follows:

'Sometimes, other GBUs can execute or participate in government projects that are run by us. This is difficult, primarily because of personnel issues. When another GBU executes a government job, nine out of ten times they will screw it up because they do not know how the government works. On several occasions they have reduced our performance. I talk to my counterparts in other GBUs. The communication is there, but this is not the issue. The issue is that people from other GBUs are not so familiar with the processes we follow here' (**I6:TW**).

Conflicts arise due to functioning and cultural differences in the way that GBUs conduct their business. As noted in Section 8.2.1, Pacifico is 'structured' around clients, particularly with respect to the way it pursues projects. Because Pacifico's clientele is not uniform, different GBUs have developed different processes to align themselves with different clients' processes and needs. Employees, particularly those at the operating core and lower middle management levels, have become accustomed to operate with GBU-specific functional processes and norms (**I4:MZ; I6:TW**). As cross-GBU employee mobilization is not frequent at that hierarchical level, the loyalty of employees lie with their GBUs of origin. Consequently, the identity of these individuals (Giddens, 1984; Wenger and Snyder, 2000) is influenced and honed by the culture of their GBU community. As a result, when they are brought together with peers from other BUs, a clash of cultures occurs. Within Pacifico's 'departmentalized' GBU structure, the lack of a horizontal organization that enables 'process' standardization across GBUs - with the exception of project management practices¹⁶ - (**I2:MH; I5:GB**) inhibits the development of corporate-wide social networks within which cross-GBU

¹⁶ Recognizing that greater standardization in skills and processes would make easier the mobilization of employees across GBUs, Pacifico recently decided to do this for the case of project managers, by implementing a corporate-wide 'project-management certification' initiative and developing a corporate-wide 'global project management handbook'.

thinking and collaboration can be fostered. It could be argued therefore that Pacifico's 'divisionalized' diversified configuration does not allow effective corporate-wide stretch and leverage of resources and core competencies and contributes to core competencies being confined within GBUs.

Finally, stretching and leveraging resources and core competencies takes place in the case when a company has to be acquired (as this has been described in section 8.3.2), because of the efforts undertaken to integrate the company acquired in Pacifico's existing structure. That will not happen to its full extent of course, if the acquired company is immediately transformed into an autonomous 'market-sector' unit and is positioned under one of the GBUs' divisions (**I3:BS**). This is an issue decided during the pre-acquisition stage, when it is also determined who the director of the acquired company will be (perhaps from Pacifico perhaps from the acquired company) and whether any staff will be mobilized from other Pacifico units to staff it (**I4:MZ**)¹⁷. When a company is acquired, some processes need to be harmonized with the rest of the group, with financial control first, and others depending on the level of integration as this has been decided during the pre-acquisition stage. There is a transition period for this harmonization to take place, the implementation of which is also planned at the 'due diligence' stage (**I2:MH**).

The findings of this section regarding the organizational routines implemented and the individuals/organizational bodies involved are summarized on Table 8.4.

8.3.4 Improving Business Practices

Pacifico has not developed a corporate-wide program specifically to capture knowledge created that could lead to improvements in business practices. This brings the responsibility for capturing and recording knowledge created at the level of the functional departments and operating units (sectors and divisions).

As already explained (viz. Section 8.2.1), each GBU has a set of policies and procedures known as the GBU's 'global policy manual' (GPM). It is to the GPM that personnel refer to regarding the business practices they have to follow. Through the process of 'reporting', knowledge created at projects may be identified as adding value to customers and being potentially usable to future projects. This knowledge is initially

¹⁷ These processes have already been described in section 8.3.2 and link with the corporation's succession planning practices.

Table 8.4: Stretching and Leveraging Resources and Core Competencies - Pacifico

Generic Activity	Occasion	People/Organizational Bodies Involved	Type of Core Competence Leverage	Core Competencies Leveraged
<p><i>Stretching and Leveraging Resources and Core Competencies</i></p>	<p>Project Execution in a Novel Location</p>	<p>BD Manager and GBU's BD Director Project Manager Project Start-up team</p>	<p>ILCC Leverage(Project Manager, Project Start-up Team (employee mobilization) as well as 'knowledge transfer' through 'PIVOTAL'). Process Replication (GBU-Specific Global policy Manual and 'Project Management Handbook')</p>	<p>Offering engineering, construction, procurement and project management services to different types of 'clients' within different sectors of the construction industry.</p>
	<p>Project-specific Contractual JVs between GBUs</p>	<p>BD Function Division Manager Sector Manager GBU's Executive Management Team</p>	<p>ILCC Leverage (knowledge transfer through PIVOTAL)</p>	<p>Offering engineering, construction, procurement and project management services to different types of 'clients' within different sectors of the construction industry.</p>
<p><i>Competencies</i></p>	<p>Acquisitions</p>	<p>BD Divisional Manager and GBU's BD Director CFO and Divisional Controller Contracts and Procurement Divisional Manager Technical Experts New Company Management Team</p>	<p>ILCC Leverage (both in relation to the 'due diligence' process and the mobilization of the newly appointed management team) Process Replication (during the process of 'harmonization')</p>	<p>'Entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).</p>

recorded on the project-specific on-line collaboration tool (PIVOTAL) that has been set-up to facilitate communication and knowledge exchange between project participants. If in the future the opportunity to use this knowledge reappears, then it is the responsibility of the functional director under whose 'discipline area' it falls to incorporate it in the GPM, in the form of a 'policy supplement'.

In addition, each area of operations, functions and any other discipline-oriented activities will undertake some initiative of their own to improve their business practices and this will be in its majority GBU-specific. Major changes in practices happen most of the time after a 'forum' is formulated, a target date for the implementation of changes is set and all the relevant management is informed (**I2:MH**). The whole process therefore is similar to that of a 'strategic initiative' (viz. Section 8.3.1).

The findings of this case study regarding the organizational routines and individuals/organizational bodies involved in business practice improvement are summarized on Table 8.5. The observations made here indicate there are certain limitations to the extent that Pacifico can undergo self-reflective (Giddens, 1984) organizational learning (Argyris and Schön, 1978). First, the systematic processes related to storing, analyzing and disseminating information (Prencipe and Tell, 2001) are focused on 'financial performance' (PRISM) and not information related to knowledge and experience gained that could lead to potential re-negotiation of organizational norms (Cameron and Quinn, 2005). Second, as already described in Section 8.3.3, selecting new routines and generating new alternative routines (March, 1991) is something which happens at a 'project-execution' level and therefore, any revision of standard operating procedures as a function of experiential learning (Cyert and March, 1969; 1992), though it is recorded in PIVOTAL, is not widely disseminated to lead to changes in the functional/discipline practices of the GBUs, let alone the corporation as a whole. This problem is manifested due to the absence systematic processes that can update organizational level practices, as a function of project-led learning (Brady and Davies, 2004).

In the absence of a 'horizontal organization' necessary to disseminate knowledge created corporate-wide, Pacifico's diversified configuration does not effectively the reproduction of social practices (Giddens, 1984) across GBUs.

Table 8.5: Improving Business Practices - Pacifico	
Organizational Routines	Key People/ Organizational Bodies Involved
<i>Functionally-Driven Ad-hoc Efforts</i>	Functional Directors GBU Operations Directors
<i>Reporting</i>	PM and Operational or Functional Needs (- project controls and construction focused)

8.3.5 Developing Managerial and Organizational Leadership Capacity

First are the organizational routines linked to the implementation of the ‘project management certification program’ (PMCP), which aims at ensuring that all project managers are competent enough to apply project management practices in their line of work, no matter for which sector, division or GBU they are employed. The program is centrally coordinated by the corporate human resources (HR) function and is implemented with the collaboration of GBU HR functions.

During their career progression, project managers in Pacifico usually start on smaller projects and are given on the job training (unless hired at a senior management position). In parallel with on-the-job training, the PMCP offers advice on all the tools available to them (technological, articles and documents they have to be familiar with). As they become more senior, they might be directed towards an external university or business school to develop their skills. As experience builds-up, the GBU’s HR management function monitors the progress individual project managers make. When a project manager is ready to be accredited by Pacifico’s PMCP, the employee takes a number of quizzes and written tests corresponding to different project management knowledge-areas. Then the candidate PM has a final essay-type test, followed by an interview from a panel of senior experts, at which s/he either passes or fails. Table 8.6 summarizes the PMCP steps.

Table 8.6: Project Management Certification Program (PMCP) – Steps

1. Advisory role early on PM’s career on available PM tools within Pacifico
2. Advisory role in later stages on external university programs to round up individuals’ skills
3. Evaluation of PM competence in collaboration with HR.
4. PM knowledge-level evaluation, through quizzes and written tests corresponding to PM knowledge areas.
5. Final certification examinations:
 - A written essay type test
 - Interview with a panel of experts.

The second group of organizational routines related to the development of managerial and organizational leadership capacity at Pacifico are those related to the corporation’s structured ‘leadership development framework’. At its lowest hierarchical level, leadership development starts with the Hi-Po program (‘High Potential’ individuals). The program is initially responsible for identifying individuals who have certain attributes and qualities that stand above others in their performance. Its purpose is to assist those individuals in developing from project managers to successful sector managers, to division managers and to part of the corporate leadership. The implementation of this program takes place independently within each of the GBUs. The GBUs’ HR functions monitor who has what knowledge, working with division managers to identify the best and brightest (I11:ER).

Hi-Po individuals are identified on an annual basis, typically in spring, when the HR function of each GBU will ask divisions to nominate them. Each spring therefore, the personal development of existing Hi-Pos is reviewed by each GBU’s HR function in collaboration with each GBU’s leadership committee (I11: ER). This review coincides with the individual performance assessment of all employees conducted by GBU HR functions. There is a screening process for Hi-Po nominees, which is performed by what is known in Pacifico as the ‘leadership committee’. Leadership committees are GBU-specific and consist of divisional managers, the GBU President, the operations director and the business development director¹⁸.

¹⁸ The criteria for accepting employees with leadership potential are quite broad:

- Demonstrated ability for taking on a number of tasks, managing them and executing them well;
- Deductive reasoning;
- Decision making;
- Technically sound in their field;

Once Hi-Po individuals are accepted into the program, they are assigned a ‘mentor’ and they are fast-tracked and given higher responsibilities to develop their skills. Furthermore, they are taught matters of strategic importance to the company. The objective is for Hi-Pos to get a broader and quicker experience in the management disciplines with which the company is involved. Often, the development of a Hi-Po individual involves their mobilization across GBUs. Such a mobilization has to be reviewed and approved by the executive management team of the individual’s GBU. Cross-GBU employee mobilization is encouraged, because it conditions future leaders in developing an overview of the corporation and assists in the development of their ‘social capital’ and ‘intrapersonal competencies’¹⁹ (**I11: ER, I6:TW**).

From 2002 onwards, an additional phase of the leadership development framework has been put into practice. The crème de la crème of Hi-Po individuals are being nominated to participate in what is known as the ‘leadership council’. The leadership council is a group of people whose composition transcends GBUs and, at any given time, it has 18-20 participants who remain in the program for a period between 18 and 24 months (**I2:MH, I1:DR&ER, I6:TW**). Leadership council members receive assignments two-to-three times a year, for which they have to collect and analyze corporate-wide data and then collectively present a report with recommendations to the corporate management team during its regular quarterly meetings²⁰.

Finally, there is a loosely structured, GBU-specific ‘succession planning framework’ in place, which links with the identification of Hi-Po individuals. Annually- in a process that overlaps Hi-Po identification each spring - a list is put together from each GBU’s human resource (HR) function containing potential successors and Hi-Pos. The list is reviewed by the respective GBU presidents and their executive management teams, so that there is a constant awareness for the existence of successors.

The observations made in this section regarding the routines through which this activity is implemented and the individuals/organizational bodies involved in their

-
- Good people skills in interaction;
 - A willingness to relocate and learn from different situations.

¹⁹ Within that context, Hi-Po individuals are mobilized across GBUs either because:

- A position with increased responsibility that would assist in their personal development has become available;
- There is a need for their individual skills in a specific position at another GBU than the one they originally belong to.

²⁰ For example, the last assignment was to examine issues related to ‘retention of leaders’.

implementation are summarized on Table 8.6. What can be deduced is that, at the level of the GBUs the development of Pacifico’s managerial and organizational leadership capacity has been elevated to a level of ‘corporate responsibility’ with systems to:

- Track and train competent employees;
- Rotating competent employees corporate-wide.

Consequently, it could be argued that efforts at the level of the BUs are in line with the ‘core competence-mindset’ that theory proposes as appropriate to effective core competence development. These efforts however - excluding the corporate-level leadership council - remain GBU-specific and therefore fail to exploit the benefits of the core competence mindset that Prahalad and Hamel (1990) advocated in favour of. In addition, in the absence of active social networks that cut across the organization, it could be argued that the effective development of the ‘social capital’ of employees will be hindered.

Table 8.7: Developing Managerial and Organizational Leadership Capacity - Pacifico	
Organizational Routines	People/Organizational Bodies Involved
<i>Hi-Po Program</i> • <i>HR’s annual personal performance assessment.</i>	HR DMs and SMs Leadership group (DMs, GBU President, Operations Director and Senior VP for BD)
<i>The Leadership Council</i>	Executive Committee (Corporate CEO, CFO and President)
<i>Succession Planning</i> • <i>HR’s annual personal performance assessment (done in parallel with Hi-Po assessment and monitoring);</i> • <i>DMs and upwards propose successors.</i>	HR DMs and upwards GBU presidents & Executive Committee of the corporation
<i>Project Management Certification Framework</i>	Sector Managers, Division Managers, Operations Directors Corporate Committee for PM Certification

Sections 8.2.1 to 8.3.5 have described Pacifico’s organizational characteristics as well as the structural context and organizational routines through which it conducts each of

the five generic, corporate-level core competence development activities. The purpose of the next section is to describe Pacifico's configuration.

8.4 Interrelationships between Activities

The purpose of this section is to integrate the findings from sections 8.3.1 to 8.3.5 and identify the interrelationships between core competence development activities, as well as how these are influenced by Pacifico's configuration (viz. Chapter 4, Section 4.4). Findings from Tables 8.1 to 8.6 are displayed on Table 8.7.

Due to Pacifico's divisionalized, diversified and client-focused configuration, interrelationships between core competence development activities remain GBU-specific. Within each GBU however, 'setting and communicating the annual business plan' (viz. Section 8.3.1) sets the stage for 'regulating strategic architecture (SA) implementation' in line with strategy objectives. At the same time, 'regulating SA implementation' routines integrate with 'stretching and leveraging resources and core competencies' particularly through project selection processes. PIVOTAL (the project collaboration software (viz. Sections 8.3.2 and 8.3.3) is used to link at any given project the efforts of 'business development' and 'operations', creating thus project-specific collaboration platforms through which the tacit knowledge of individual organizational members can be harnessed. Routines regarding the development of managerial and organizational leadership capacity are very loosely interrelated to the other core competence development activities. First, the process of identifying promising individuals and developing plans for their professional development is not integrated with the strategy process and therefore, it cannot be controlled as such. Along those lines, it could be argued that there is no routine in place to link organizational objectives directly with the development of individuals. There is however a link between 'stretching and leveraging resources and core competencies' and 'developing managerial and organizational leadership capacity', as often, competent managers are mobilized across organizational units - including GBUs - to positions of responsibility where their expertise is required. This type of stretch and leverage contributes in addressing the corporation's resource needs while at the same time contributes to the professional development of its employees. 'Improving business

Table 8.8: Activities, their Routines and Interrelationships - Pacifico			
Generic, Theory-Based Activities	Organizational Routines	Key-People/ Organizational Bodies	
Exhibiting SI and Crafting SA	Setting and Communicating the Strategic Plan <ul style="list-style-type: none"> 2 year strategic plan (while updating annual). Annual Business Plan 	Sector Manager Division Manager Finance Division integrates (Division FDs, GBU FD) GBU Executive Management Team. Corporate Executive Management Team	
	Setting and Communicating SI and their Objectives	Sector Manager Division Manager GBU Executive Team Corporate Executive Team.(level of involvement depends on <i>risk profile</i>)	
Stretching and Leveraging Resources and Core Competencies	Project Execution in a Novel Location	BD Manager and GBU's BD Director Project Manager Project Start-up team	ILCC Leverage (Project Manager, Project Start-up Team (employee mobilization) as well as 'knowledge transfer' through 'PIVOTAL'). Process Replication (GBU-Specific Global policy Manual and 'Project Management Handbook')
	Project-specific Contractual JVs between GBUs	BD Function Division Manager Sector Manager GBU's Executive Management Team	ILCC Leverage (knowledge transfer through PIVOTAL)
	Acquisitions	BD Divisional Manager and GBU's BD Director CFO and Divisional Controller Contracts and Procurement Divisional Manager Technical Experts New Company Management Team	ILCC Leverage (both in relation to the 'due diligence' process and the mobilization of the newly appointed management team) Process Replication (during the process of 'harmonization')
Developing Managerial and Organizational Leadership Capacity	Hi-Po program <ul style="list-style-type: none"> HR's annual personal performance assessment 	HR DivisionManagers and SectorManagers Leadership group (DMs, GBU President, Operations Director and Senior VP for BD)	
	The Leadership Council	Executive Committee (Corporate CEO, CFO and President)	
	Succession Planning <ul style="list-style-type: none"> HR's annual personal performance assessment (done in parallel with Hi-Po assessment and monitoring); -DMs and upwards propose successors. 	HR DMs and upwards GBU presidents & Executive Committee of the corporation	
	Project Management Framework	Corporate HR, GBU HR	
Improving Business Practices	Functionally-Driven Ad-hoc Efforts	Functional Directors GBU Operations Directors	
	Reporting	PM and Operational or Functional Needs (-project controls and construction focused)	
	Leadership Council	Hi-Pos Corporate Executive Team (CEO, President, CFO, GBU Presidents)	
Regulating SA Implementation	Assessment and pursuit of Business Opportunities <ul style="list-style-type: none"> Projects; Acquisitions/Capital Investments. 	BD Development - GBU'd BD Director - Divisional BD director - Divisional Managers - GBU President or corporate executive management team or BoD	
	Reporting <ul style="list-style-type: none"> Project Execution (Operations); Business Development. 	PM, SM, sector FD, project controllers, divisional controller GBU President and Division Managers GBU President and GBU directors GBU Executive Committee (GBU President, Senior VP Executive, BD Director, GBU CEO, Division Managers) Corporate Executive Committee CEO, COO, CFO + GBU Presidents)	

practices' is linked to 'regulating SA implementation' through 'PIVOTAL' and 'PRISM'. However, the problem is that knowledge captured:

- May not be effectively communicated up the hierarchy;
- Is not systematically disseminated across projects.

8.5 Summarizing and Concluding Section

The findings from Pacifico's case study are summarized on Table 8.8. Pacifico is a diversified, client-focused organization. Within Pacifico's organizational context, strategic intents and strategic architectures are exhibited and crafted independently across GBUs, albeit interdependently across divisions and sector-focused units within each GBU. As a corporation, it could be argued that Pacifico has not managed to overcome the BU-mindset (Prahalad and Hamel, 1990) inherent in its market-based configuration. As identified in this case study, this could inhibit the effectiveness with which resources and core competencies are stretched and leveraged across GBUs.

Project selection, pursuit and execution routines, combined with the use of PIVOTAL, provide a project collaboration framework and knowledge database that can capture innovations and knowledge created at projects, potentially leading to the selection of new successful routines, or the improvement of existing ones as a function of 'experiential learning'. The integration of Pacifico's reporting system (PRISM) with PIVOTAL, also provides scope for innovations and knowledge created to be communicated up the hierarchy and disseminated across the corporation. However, this may not happen in practice for two reasons. First, the decentralized nature of Pacifico's configuration does not facilitate the existence of a 'horizontal organization' (Porter, 1985) that could disseminate - or make readily available - knowledge created in a corporate-wide manner. Second, the systems are not in place - not even within GBUs - to record innovations and knowledge created and re-use them on future projects, carrying the risk that knowledge will be lost once projects finish and project teams dismantle (Brady and Davies, 2004; Davies and Hobday, 2005).

In light of the above, it could be argued that the absence of a 'horizontal organization' to foster greater inter-GBU collaboration, as well as systematically transfer knowledge across projects, could inhibit Pacifico from effectively executing core competence development activities and therefore developing its core competencies.

Issues	Findings
Configuration	A diversified configuration structured in four autonomous client-focused global business units (GBUs). GBUs constitute of sector-focused managerial units grouped under market-focused divisions. GBUS are professionally oriented because of the role they have chosen to play in the production of the built environment (engineering-procurement-construction-project management). At a corporate-level, the primary coordination mechanism is that of standardization of GBU outputs. Standardization of skills and processes is pursued corporate-wide with respect to financial and project management practices. Within GBUs, business development and core functions are centrally coordinated. The strategic apex of each GBU is essentially the key organizational part of the corporation's units, as they are the designers and controllers of their strategies.
Core Competencies	<ul style="list-style-type: none"> • Offering engineering, construction, procurement and project management services to different types of 'clients' within different sectors of the construction industry.
Dynamic Capabilities	<ul style="list-style-type: none"> • Acquiring companies and successfully/appropriately integrating them into the corporation's existing body; • Organically developing internal systems that allow it to integrate the business activities of its various units; • Restructuring its organization to better facilitate and serve the needs of its clients.
<i>On the relationship between Pacifico's configuration and its ability to develop a corporate strategy, with optimal potential for implementation</i>	Strategy is formulated bottom-up and is GBU-specific. GBU strategic apexes integral in setting strategic and operational plans.
<i>On the relationship between Pacifico's configuration and the effectiveness with which it regulates its strategies</i>	Feedback mechanisms (reporting and project/investment selection processes) in place to regulate strategy implementation. Reporting is coordinated by each GBU's finance function and project/investment selection processes are led by each GBU's business development function.
<i>On the relationship between Pacifico's configuration and the effectiveness with which it stretches its resources and core competencies</i>	On-line project collaboration platforms (PIVOTAL) are set up by each business development function during the project pursuit stage and become the forum for intra-GBU coordination. Collaboration problems may during inter-GBU joint ventures due to differences in GBU cultures, inhibiting effective core competence leverage.
<i>On the relationship between Pacifico's configuration and the effectiveness with which it can reconfigure its processes, structures and norms, as a result of organizational learning</i>	Improving business practices is a responsibility undertaken by GBU functional directors, who update annually the practices related to their discipline. Knowledge created may be captured in the project-specific collaboration framework (PIVOTAL) but is not disseminated corporate-wide, due to the lack of a horizontal organization that connects different GBUs.
<i>On the relationship between Pacifico's configuration and the effectiveness with which it develops managerial and organizational leadership capacity</i>	Social capital stronger within GBUs rather than across them. Leadership development (Hi-Po program) starts as GBU-specific but individuals with potential leadership are mobilized across GBUs to different positions of responsibility in order to develop intra-organizational social capital and develop professionally.

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Chapter 9: The Cyclone Corporation

9.1 Cyclone's Early History

Founded in 1912 in California, Cyclone quickly built its reputation within the emerging petroleum industry as a small oil refinery designer. During the 1920s, Cyclone developed expertise in the oil and gas construction field. Sales steadily grew in the 1920s with Cyclone remaining a family-owned business. During the 1930s, the company won refinery construction contracts across the United States of America (USA), as well as its first overseas job in Bahrain. In the 1940s, the war effort boosted the company's domestic workload and secured contracts for refineries and natural gas plants in Canada, Venezuela and Saudi Arabia. In the early 1950s, Cyclone began working with the US Federal Government executing contracts in the nuclear field. The company also contracted for the US Air Force in Saudi Arabia, and for refineries in Puerto Rico. Cyclone slowly developed a 'design and build' capability for plants in the petrochemical industry and undertook projects in Australia, Canada, Scotland, and South Africa. By the end of the decade, Cyclone had established offices worldwide, and was a publicly traded company on the New York Stock Exchange. The 1950s also saw Cyclone investing heavily into research and development and establishing in-house training and college tuition reimbursement programs for the development of its employees. In the 1960s, Cyclone continued its international expansion into offshore drilling. In 1969 the company also got involved in the mining and metals industry.

By the 1970s, Cyclone had focused heavily on the 'natural resources' industries and the mega-projects arena and set-up business units (BUs) in Alaska, Europe, Indonesia, Saudi Arabia, and South Africa. In 1977, Cyclone acquired a corporation that was a leader in establishing the 'design and build' concept in the US. What was so significant about the acquisition was that Cyclone, as an oil & gas company primarily, acquired a company that was more construction oriented, providing synergies with respect to both 'geographic' and 'market' diversification.

The 1980s saw the two companies integrating into a single worldwide operating unit. In the 1990s the corporation expanded its international operations successfully completing many petrochemical, infrastructure, and environmental projects around the

globe. Through another strategic acquisition, the corporation expanded the provision of engineering and construction services to the electrical, pharmaceutical, commercial and manufacturing industries.

9.2 Recent Evolutionary Path and Cyclone's Present State

Figure 9.1 displays more recent developments regarding how Cyclone's 'role' in the production of the built environment and 'structural characteristics' of its configuration have evolved in relation to notable strategic intents its leadership has set, strategic architectures it has pursued and investments it has made. The display is in the form of an 'event-flow network' (Miles and Huberman, 1995) and is colour coded so that its constituting elements can be easily distinguished.

In 1998 and 1999, the company undertook a long term strategic review, concluding that it would focus on the provision of engineering, procurement, construction and management services only (Figure 9.2). Subsequently, a business plan was developed to transform Cyclone into a 'global knowledge-based diversified services company'¹. The business plan defined goals for each BU to clarify accountability across all units of Cyclone. A 'client relationship management' approach was adopted through the development of a 'global account management' centralized function. In addition, a service management strategy was pursued through investments to create an autonomous BU named 'Cyclone Global Services' (CGS), whose purpose was to provide support services both to other units of the corporation and their clients, regarding activities such as operations and maintenance, construction and procurement. Capabilities within CGS included operations and maintenance activities, small capital project engineering and construction, site equipment and tool services, industrial fleet outsourcing, plant turnaround services, temporary staffing and supply chain solutions. Services for large capital projects were provided to clients in concert with CGS and other Cyclone segments or on a stand-alone basis. The role of CGS also involved the implementation of additional strategic initiatives such as the piloting and deployment of an corporate-wide enterprise resource planning (ERP) management system. Due to its strategic importance, the creation, launch and

¹ In 2000, Cyclone successfully completed the spin-off of its coal business and acquired several companies to expand the range of services it could offer the US government, strengthening its operations and maintenance capabilities.

Figure 9.1: Evolutionary Profiling of the Cyclone Corporation

YEAR		1998	1999	2000	2001	2002	2003	2004	2005
'Role' in the Production of the Built Environment'		Engineering, Procurement, Construction, Project/Program Management, Coal Producer and Distributer		Engineering, Procurement, Construction, Operations and Maintenance, Project/Program Management Services					
Structural Characteristics	Structure	One coal mining BU and 3 market/client focused EPCM BUs		4 EPCM client-focused GBUs and one 'support services, GBU (CGS)					
	Horizontal Organization/Decentralization	Executive Management		Executive Management, Global Account management, Techno-structure					
	Project Grouping (type of market-focus strategy)	Market-focused		Client-focused					
Strategic Intent, Strategic Architectures, Investments and Resource Allocations Color Coding: ■ Strategic Intent ■ Strategic Architectures ■ Investments and Resource Allocations → Link and direction of 'thread' of events									
		Strategic Review (1998) → Acquisitions for Growth in the US Federal Market (2001) → Acquisitions for Growth in US Federal Market (2003) → Restructuring to better align acquired companies with client-base (2003) → Become a truly 'global' service provider (2004)							

Figure 9.2: Outcomes of 1998-1999 Strategic Review

- **Change in Business Profile and Value Proposition**
 - Provide Knowledge-Based Services;
 - Align Business Activities with Strategic Direction;
 - Divest all non-EPCM Businesses.
- **Fix the Bottom-Line**
 - Reduce Costs through Better Supply Chain Management;
 - Implement Knowledge Management Framework;
 - Implement Risk Management Framework;
 - Adopt a Client-Management Philosophy.
- **Focus on Adding Value Through People**
 - Focus on Developing Intellectual Capital;
 - Make Employee Development a Priority;
 - Adopt a Pay-for-Performance Philosophy.
- **Position the Corporation for Future Growth**
 - Strengthen Involvement in EPC Markets;
 - Expand Knowledge-Base Services;
 - Offer Total Asset Solutions;
 - Leverage Web-Based Technologies;
 - Tighten Project Selection Criteria for Higher Margins.

operation of CGS was initially directly supervised by Cyclone's chief executive officer (CEO). In 2003, Cyclone's strategic focus shifted towards growth in the US federal services market. Towards that end, the corporation completed two niche acquisitions to be able to compete for projects tendered from the Department of Defence (DoD) and Department of State (DoS). Subsequently, restructuring took place to better align the corporation's resources with the needs of its client-base.

Business process improvement initiatives were mostly related to project selection criteria and the 'timely provision of information to leadership', through the rolling-out of enterprise resource planning (ERP) and managing information systems (MIS). Furthermore, the integration of all of the above with a group-wide 'risk management framework' was pursued. In addition, routines for project selection were linked with an 'account management' initiative and 'human resource development' initiatives. Finally, investments were made towards the development and utilization of a corporate-wide knowledge management framework.

Having taken some steps towards the direction decided upon during the corporation's last strategic review, Cyclone exhibited in 2004 the intent to build on its

existing strengths and become a truly ‘global’ service provider of construction, engineering, procurement, operations and maintenance and project/program management services. When this research began, Cyclone had an annual turnover in excess of \$13 billion, operating out of 25 offices in as many countries and employing directly approximately 25,000 people.

Cyclone originated from an oil refinery design and construction background, from which it developed during the last 90 years into a leading international engineering, procurement, construction, operations and maintenance and project/program management service provider. Increased US Federal Government spending in the late 1990s and early 2000s allowed the company to rapidly grow in that market, many segments of which it entered through the acquisition of small, ‘accredited’ contractors; not in order to obtain core competencies it did not already possess, but in order to obtain the legal accreditations² that would allow it to compete in those markets. Investments in the oil and gas sector sparked by high oil prices (at the time) enabled the group to grow organically by providing its services to numerous clients across the globe. At the same time, the corporation invested heavily in integrating its BUs by undertaking corporate-wide initiatives related to knowledge management practices and the standardization of skills and processes. In light of these, it could be suggested that Cyclone’s core competence is that of ‘providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis’. Other core competencies may also be present.

Furthermore, Cyclone’s evolutionary path reveals that the ways through which the corporation entered and grew in the markets it wished to compete in, were a combination of acquisitions and internal development of the systems required to manage the expansion of its administrative boundaries. This suggests that Cyclone’s ‘dynamic capabilities’³ are based in being able to:

- Acquire companies and successfully/appropriately integrating them into the corporation;
- Organically develop core competencies in areas in which it has no (or little) experience;

² What Hall (1992; 1993) referred to as ‘regulatory’ and ‘positional’ capability differentials (viz. Chapter 2, Section 3.2.4).

³ Viz. Chapter 3, Section 3.2.2.1

- Standardize processes and business practices to make easier the stretching and leveraging of knowledge resources and core competencies across organizational units.

Other dynamic capabilities may also be present.

9.2.1 Structural, Functioning and Agency Characteristics

As shown on Figure 9.3, Cyclone is structured in five ‘industry lines’ (ILs): i) Energy and Chemicals, ii) Industrial and Infrastructure, iii) Government, iv) Power and v) Global Services. ILs are broken down to market (client)-focused business units (BUs)⁴. The services Cyclone provides fall into five broad categories: i) engineering, ii) procurement, iii) construction, iv) operations and maintenance and v) project management. Those services are offered independently as well as on a fully integrated basis from all BUs. They can range from basic consulting activities (often at the early stages of the project) to complete, sole responsibility, engineering-procurement-construction contracts.

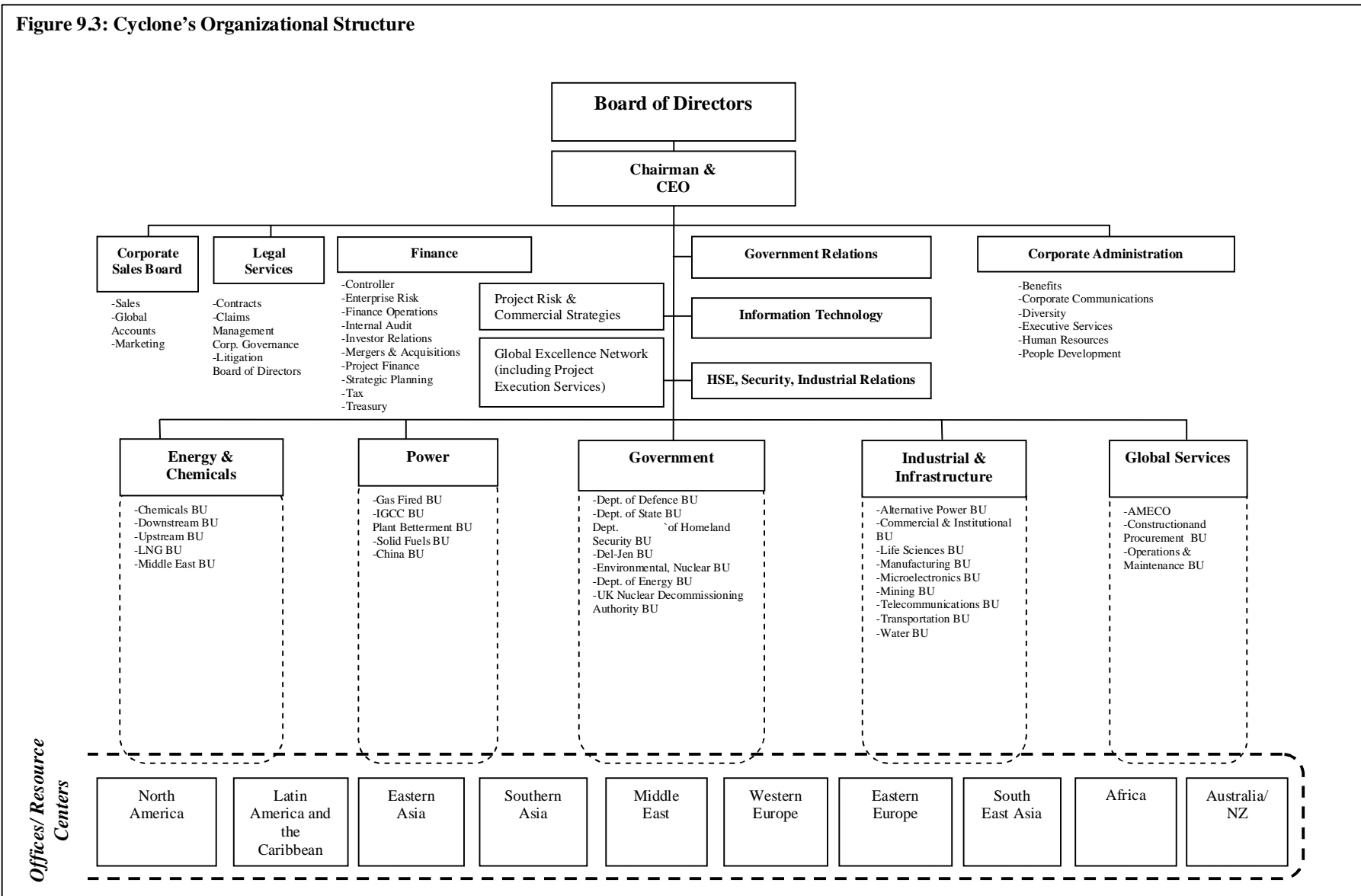
BUs draw resources from ‘functions’ situated at local/regional offices that are spread in different geographical regions throughout the world. Offices are essentially resource centres, which provide BUs of all ILs with the human resources they need for their projects. So, human resources are located in offices but, at any given time, they may be employed by the BUs belonging to any one of the five ILs. In addition to the above, Cyclone has set-up ‘engineering’ centres in the Philippines, India and Poland, in an effort to lower its base costs and become more global.

Each office/resource-centre groups human resources into functional activities and may facilitate simultaneously projects from more than one BUs - often more than one IL. This structural arrangement superimposes an IL structure and hierarchy on each office. Functions have core teams residing in each office to support each BU of each IL, but are centrally coordinated in terms of strategies and policies. Functional and business practices are standardized corporate-wide.

The functions facilitated in the offices are not stand-alone, but cut across the corporation. So do the BUs. To facilitate these links between ‘functions’ and ‘ILs’ across

⁴ For example, Energy and Chemicals is broken down to i) Upstream, ii) Downstream and iii) Chemicals BUs.

Figure 9.3: Cyclone's Organizational Structure



offices, Cyclone has set up a horizontal organization known internally as the ‘global communities network’, which constitutes of corporate-wide communities of practice known as ‘knowledge communities’. Communities align with the organization’s structure. Essentially, there is a community for every function within the company and a community for each BU within the company. So, the ‘business’ communities form a matrix structure with the ‘functional’ communities⁵. Knowledge communities corresponding to functions are grouped under a sub-unit of the ‘global community network’ called ‘project execution services’. The way that community members communicate is through a central on-line network, so that every employee, when they log in, has access to every community. Employees can sign up to any community and be a member (**I3:JMcQ; I6:PM**).

Each knowledge community has a ‘global community leader’ and a number of ‘subject matter experts’. Together, they try to establish common practices and procedures related to their community’s activities and they use the on-line network to leverage corporate-wide the knowledge of individual community members possess. For the functional communities, there is no difference in role being the global community leader and being the corporation’s functional director. Essentially, community leaders are responsible for the ‘people’, the ‘work practices’ and the ‘software tools’ of their function. Community leaders are also responsible for ‘global consistency’ of practices. Processes/protocols of disciplines are available on an on-line database - called ‘knowledge on-line’ - for employees to directly access or download. The way communities function, allows anyone to submit knowledge or ideas to a community. This knowledge will go through a ‘peer review’ process, where the peers are each community’s subject matter experts and community leader (**I3:JMcQ**).

Cyclone ensures that the functional communities remain business-focused by forcing BUs to contribute to the costs of the communities they are associated with. Through ‘project execution services’, knowledge managers are paid. The community leaders are budgeted by approximately 1/3 of their time for their role in their community.

⁵ In addition, there are a few communities, such as the ‘leadership community’ (helping develop leadership expertise in younger employees) and the ‘strategy and business intelligence’ community (provides business intelligence and strategy to group executives).

Cyclone has focused very strongly on being a ‘knowledge-sharing organization’ and for that reason requires a robust information technology (IT) infrastructure that allows every single employee global access to knowledge on-line. The emphasis includes:

- Sharing knowledge that is developed at projects;
- Creating dependable and responsible communities;
- Being able to depend on the communities to have the content employees are looking for;
- Creating an environment where employees can rely on the fact that there will be a forum in the community where they will be able to ask a question and expect they will get an answer.

To achieve this, Cyclone’s ‘knowledge management’ program is heavily leveraged (**I3:JMcQ, I6:PM**). There is a core team responsible for knowledge management, corporate-wide, which maintains the IT infrastructure supporting ‘global collaboration’.

Finally, each community is responsible for:

- The career path definition for its members, through a program called the ‘global functional track’;
- Maintaining ‘people development forums’ and helping more people through stretch assignments to develop professionally.

Although knowledge communities are allowed to emerge organically, the process of their creation is standardized and rigorous, ensuring they exist to add value. In the words of the corporation’s knowledge management director:

‘We go through a very rigorous community development process and the very first step is what we call the ‘readiness assessment’. The readiness assessment is really there to help us, as the leading team, as well as to help the business understand: is there really a legitimate business need for the community? Are the people that want the community really committed to have the community and the responsibilities that come from that? Are they acting like a community of people to begin with? So we go through this very rigorous process, and then define the community’s charter, define objectives for the community, help the community set up its structure so that their content is well organized and their discussion forums are well organized, hoping to identify the subject matter experts, getting the subject matter experts to subscribe to the appropriate places in the

communities, and then we go through what we call our formal launch.’
(I3:JMcQ)

Regarding resource coordination, certain functions are more centralized than others. First are those of ‘construction’ and ‘procurement’. These are grouped under a centralized BU with corporate-wide responsibility for managing construction and procurement resources and are positioned as a profit and loss centre under the industry line (IL) of ‘Cyclone Global Services’. The procurement part of this unit consists of ‘strategic sourcing’ and ‘procurement’. Procurement is responsible for assigning procurement-related human resources to offices, industry lines, BUs and projects. ‘Strategic sourcing’ is a centralized sub-unit, which:

- Manages relationships with key suppliers;
- Manages relationships with clients’ procurers;
- Leverages its purchasing power to achieve economies of scale;
- Leverages its knowledge and corporate-wide employee networks to advise Cyclone’s BUs on procurement issues.

This centralization works only because there is a functional matrix and an IL matrix superimposed on the offices/resource centres (**I1:RA, I7:JM, I8:DS**). ‘Construction and procurement’ has ‘core teams’ at each of the corporation’s offices (**I8:JMCK**). The existence of these teams and the communication channels between them help in better understanding the resource needs of each BU and in coordinating resource deployment in a manner that ensures: i) rapid response, ii) maximization of resource use and iii) awareness to BU managers regarding what resources are available and where (**I1:RA; I8:JMCK**).

‘Sales’ also have core teams at each office, which are linked corporate-wide through the corporate function of ‘Global Accounts’, created to integrate services that are provided by different industry lines when clients need them (**I4:LB, I4b:KS**). A supporting unit to the sales function is a small, centralized ‘marketing’ organization, whose mission is to collect information (both from within and from outside the corporation) related to markets, clients and competitors and then document them and feed them back monthly, either in the form of letters or through ‘knowledge on-line’ (**I5:LB**).

The corporate HR function centrally supports the coordination of human resources and is responsible for setting strategy and policies regarding human resource development

across the corporation. It also has a central team in each office/resource centre, to serve the BUs each office facilitates (**I12: SG, I13: RA**).

From sales and global account management, to project execution, to operations and maintenance, the relationships between the corporation's different units during their involvement at any given project are governed by rules explicitly stated in a corporate-wide 'operating systems manual' (OSM). The OSM describes in detail the responsibilities of different organizational units, the roles of key individuals and the processes and protocols for managing the interfaces between organizational units at any given project. Each IL has to maintain an IL-specific OSM which complies with the corporate one. The existence of the OSM ensures coordination through standardization of processes at a corporate level and control of the ILs through compliance of their processes with a common framework of reference.

The company's highest governing body is the Board of Directors (BoD), comprising 11 independent and one executive director. Independent board members meet regularly (at least quarterly) without members of management present. Cyclone's 'lead independent director' sets the agenda for these sessions and is elected for a three-year term by the independent directors. He also consults with the Chairman and Chief Executive Officer (CEO) of the corporation with respect to agendas, scheduling, and information needs relating to Board and committee meetings.

Underneath the BoD sits the 'corporate management team' led by Cyclone's Chairman and CEO. The team constitutes of 'corporate executives' (the Chairman and CEO, Chief Financial Officer, Chief Legal Officer and Corporate Secretary, Group President for Industrial and Infrastructure, Group President for Government and Global Services, Chief Information Officer, Corporate Health and Safety Director, Corporate Security and Construction Services Director and Corporate Human Resources Director, the President of Cyclone Constructors International, Vice President of Global Public Affairs, Vice President for Corporate Compliance, Vice President for Corporate Finance and Investor Relations, Senior Vice President for Government Relations, Vice President and Treasurer, Vice President and Controller and Vice President for Corporate Communications) and 'key operating executives' (the Presidents of each of Cyclone's ILs).

Table 9.1 summarizes the 'procedural' and 'agency' characteristics (Mintzberg, 1979; 1989) of Cyclone's configuration. Cyclone could be described as a professionally-driven, diversified, bureaucratic configuration. Although structured as a diversified

Table 9.1: Cyclone’s Configuration Characteristics

Structural Characteristics	Market-Focused Strategy (project-grouping)	<ol style="list-style-type: none"> 1. Projects grouped geographically under global market-focused BUs, which are grouped in turn under client-focused industry lines (ILs).
	Horizontal Organization/ Degree of Decentralization	<ol style="list-style-type: none"> 1. Corporate management team (across ILs) 2. IL executive management team 3. Knowledge communities of the ‘global excellence network’ 4. Human resources function 5. ‘Construction and procurement’ BU 6. ‘Functional’ and ‘business’ networks between individuals/teams located at offices/resource centres 7. ‘Sales’ and ‘global accounts’ functions
Procedural Characteristics	Coordination Mechanisms	<ol style="list-style-type: none"> 1. Standardization of outputs and action planning, with respect to setting and communicating SI and SA. 2. Standardization of skills and processes (global knowledge communities and operating systems manuals) 3. Informal corporate-wide employee networks
Agency Characteristics	Key-People/ Organizational Parts	<ol style="list-style-type: none"> 1. CEO and corporate management team (corporate and operating executives) 2. CFO 3. BU directors 4. ‘Global communities network’ core team, knowledge excellence leaders, subject matter experts. 5. Directors of corporate HR, ‘sales and account management’ and of the ‘construction and procurement’ BU.

organization, Cyclone has managed to overcome drawbacks related to market-based divisionalization by focusing on corporate-wide skills and processes standardization. The ‘global communities network’ is essentially a ‘techno-structure’ set up for that purpose, which drives discipline-oriented skills standardization and provides all necessary support for the continuous (i.e. routine) updating and routinization of practices. Standardization of work processes is also reinforced by the existence of a corporate-wide and IL-specific OSMs. Due to its corporate-wide uniformity in skills and processes related to functions, disciplines and business practices, Cyclone has developed a corporate-wide ideology and a degree of standardization of norms, which, to an extent, can be used to characterize it as a ‘missionary organization’ - according to Mintzberg’s (1979; 1983;1989) configurations.

Having described Cyclone’s background and presented its current state, the purpose of the next section is to describe the organizational routines through which it implements each of the generic, corporate-level core competence development activities proposed in Chapter 4.

9.3 Core Competence Development Activities

The purpose of this section is twofold. First, to present and describe the Cyclone-specific ‘routines’ through core competence development activities are conducted. Second, to identify and describe the role of the individuals/organizational bodies most integral to the implementation of these routines. Findings related to each activity will be presented and briefly discussed in turn.

9.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture

The routines through which exhibiting strategic intent (SI) and crafting strategic architecture (SA) takes place and the individuals/organizational bodies involved in their implementation, are shown on Table 9.2.

First are the organizational routines related to ‘strategic planning’. At Cyclone, base strategy is developed by the Chairman and BoD with input from executives. Base strategy has a 20-year horizon. On this strategy, each industry line (IL) develops a five-year strategic plan, focusing on:

- Which markets are expanding or contracting;

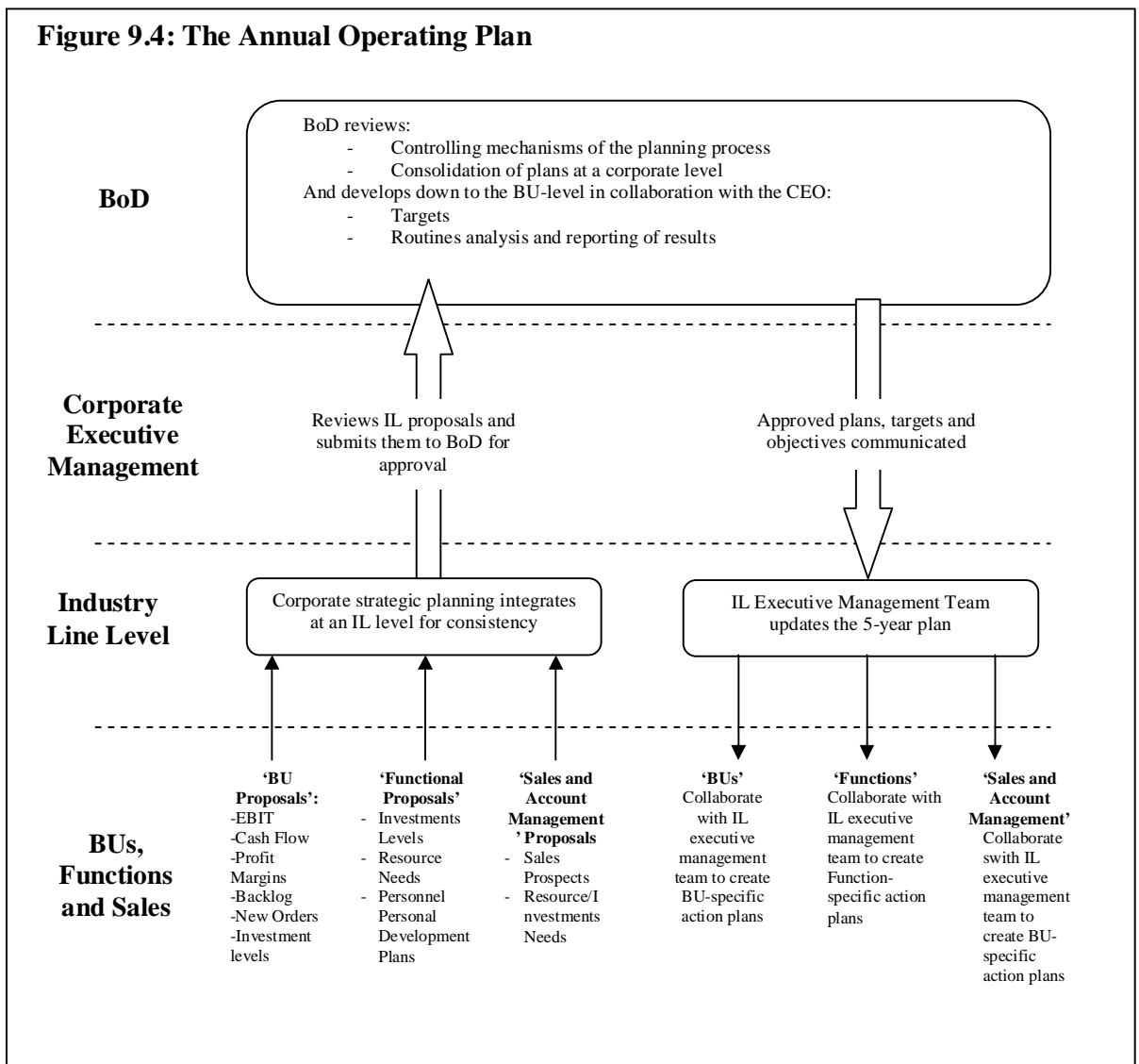
Table 9.2: Exhibiting SI and Crafting SA - Cyclone	
Organizational Routines	Individuals/ Organizational Bodies Involved
<i>Strategic Planning</i>	BoD sets strategic direction Bottom-up strategy creation from: - Executive management Team (Group Presidents ILs) Corporate Strategic Planning Division Marketing Division Provide info and gather, record, communicate to divisions - CEO - CFO
<i>Annual Operating Plan</i>	BoD (CEO) Executive Management Team CFO especially) Finance division CFO's organization ultimately responsible
<i>Strategic Reviews</i>	Chief Executive's Management Team BoD (Depending on expenditure)
<i>Internal Communications Department</i>	Internal Communication Department's Members CEO and the Corporate Management Team

- What needs to be done to respond from a 'technology' and 'resources' perspectives.

The ILs' executive management teams develop 'action-plans' and submit them to the IL Presidents for review and approval. Business plans are then submitted to the 'corporate strategic planning' department for a 'consistency review' and to Cyclone's Chief Financial Officer (CFO) and Chief Executive Officer (CEO). Subsequently, plans are incorporated into a consolidated, corporate-wide plan. The consolidated plan is in turn submitted to the BoD for discussion and approval. Once strategic plans are approved, the direction or the 'strategic intent' is communicated to the IL Presidents and through the hierarchy to the management of their BUs. This leads to the development of 'operating plans' for each year, which are reformulated annually between September and December. Strategies and operating plans are locked down and then each IL carries the communication to their management teams and to their offices. Hence, there is a formal process of communication within each group through its business-line management and resource centres. **(II:RA)**.

This brings us to the second set of organizational routines and the bottom-up creation of the corporation's 'annual operating plan' (Figure 9.4). For the annual operating plan, three streams of information are integrated. One along the IL-hierarchy, one of the 'global communities' one related to 'sales and account management'. These streams are integrated at the IL-level with the assistance of corporate strategic planning and are then submitted to the BoD for approval. This 'approval process' includes:

- Reviewing the controlling mechanisms of the planning process;
- Consolidating proposals at the corporate level;
- Developing targets with the CEO;
- Routine analysis and reporting of results, again in collaboration with the CEO.



Operating plans are detailed to the level of individual BUs, projects and sales prospects. Key ‘metrics’ used are earnings before interest and tax (EBIT), cash flow, profit margins, backlog, new order levels, investment levels, and overhead levels. After approval from the BoD, targets and objectives set are cascaded down to the ILs. Subsequently, the IL management teams update as necessary their five-year business plan and create in collaboration with BUs and functions the ‘annual operating plan’, which specifies the actions that need to be taken to meet the annual targets. The corporate finance is responsible for coordinating the creation of the annual operating plan.

Third, is the case of ‘strategic reviews’, which may lead to strategic initiatives. Strategic reviews are usually initiated by someone from the corporate management team, with input from key operating executives. Ideas are discussed and reviewed at that level and depending on the corresponding investment value for their implementation and their alignment with corporate objectives, approval from the BoD may be required. The decision making process (as well as the communication of the actual decisions of the reviews) and the individuals/organizational bodies involved, are the same as those of the ‘strategic planning process’⁶.

The interdependence of strategic planning and the annual operating plan suggests that the latter may act as a feedback mechanism that allows Cyclone’s management and leadership to better regulate the implementation of its intended strategies. Third, the existence of a horizontal organization that can integrate and then disseminate information corporate-wide during exhibiting strategic intent and crafting strategic architecture, ensures that management develops comprehension⁷ as to:

- Which are the corporate objectives to be met;
- Where the resources to pursue them exist within the organization and how they can be obtained (corporate-wide).

Finally, in addition to the communication that takes place during the setting and communicating of long-term strategy, annual operating plans and strategic initiatives, there is a ‘communications department’ within Cyclone, with the responsibility to communicate -

⁶ An example of a strategic review, which led to the development of multiple strategic initiatives was the one described in section 9.2.

⁷ A pre-requisite to organizational competence and effectiveness in task execution - viz. Chapter 3, Section 3.2.3

corporate-wide - to Cyclone's management any outcome of periodic meetings of the CEO with his management team that may have an impact on strategy (**I1:RA**).

9.3.2 Regulating Strategic Architecture Implementation

Two 'groups' of organizational routines have been identified with respect to regulating strategic architecture (SA) implementation (Table 9.3). First, are the organizational routines related to 'reporting' and contain information on schedules, costs and resources utilized from offices/resource centres on projects (**I3:JMcQ**). These are created bottom-up and start at the project level. BU directors get weekly project-reports. Monthly, ILs create informal reports by integrating the reports of their BUs and comparing them to the targets set in their annual operating plan. The monthly reports are not circulated corporate-wide, but are intended to provide BU 'sales', 'operations' and 'managing directors', as well as BU and IL Presidents, information on how their unit performed against targets. They are discussed at the BU level by each BU's management team and at IL level by each IL's executive management team. In addition, they are circulated to the directors of the offices/resource centres from which the ILs' BUs draw their human resources from (**I1:RA**).

Every quarter, each IL creates a formal report regarding its performance and that of its units against the 'annual operating plan'. Based on these reports, annual targets are re-forecast at a corporate level. The same process is repeated, until the time comes for the following year's 'annual operating plan' to be created⁸. Significant 'quarterly' or 'mid-year' changes normally do not result in changing BU, IL or corporate strategic plans, but rather to update them during the following year's planning process. The focus on change conditions is therefore on the annual operating plan. If the change is growth, a business case is developed, supporting the new investment/risk levels and then submitted for approval to the appropriate decision-making body, depending on the levels of expenditure and risks involved. If the case is one of rapid decline in workload secured, actions plans are developed and implemented by IL and BU management to limit the financial impact on the operating plan (**I1:RA**).

⁸ It is worth noting that all executive management of Cyclone (approximately 700 employees within the corporation) are rated quarterly and annually against 'corporate goals', individual BU goals and their own 'personal development' goals, as will be explained later in this Chapter, links strategy execution with the development of managerial and organizational leadership capacity.

Table 9.3: Regulating SA Implementation - Cyclone	
Organizational Routines	Key People/ Organizational Bodies Involved
<p><i>Reporting</i></p> <ul style="list-style-type: none"> • <i>Annual Reviews</i> • <i>Quarterly Reviews</i> • <i>Monthly Reviews</i> • <i>Project reporting</i> 	<p>IL President, CFO, IL-BU directors, BU FDs, Project Controllers Project Excellence Network</p> <ul style="list-style-type: none"> - knowledge communities - gathering lessons learned
<p><i>Project Selection Process</i></p> <ul style="list-style-type: none"> • <i>bid-no-bid</i> • <i>S.O.T.</i> 	<p>a) During Sales</p> <ul style="list-style-type: none"> - The Marketing Organization. - Client account manager - Sales VP - Bid coordinator - Director of Engineering (technology) <p>b) During Execution</p> <ul style="list-style-type: none"> - Project Manager - Operations - Engineering - Construction - Procurement

The second routine identified is related to ‘project selection’. This routine starts with the establishment of what is known internally to Cyclone as the ‘Sales-Operations-Technology’ (SOT) team and a ‘bid-no-bid’ review (**I4: LB**). Both are standardized processes stipulated in Cyclone’s operating systems manual (OSM). The SOT team is first brought together by the ‘client account manager’ or the ‘sales director’ of the BU associated with a project opportunity once it is identified. This project-specific SOT team will continue to exist for the whole duration of the project (if this is pursued, won and awarded) and may cut across BUs and ILs depending on whether the client requires services from different BUs of the corporation.

Apart from a ‘sales’ representative, the SOT team includes a representative from ‘operations’ of the BU that will undertake the execution of the project who knows ‘what’ the company is capable of doing and ‘whether’ resources are available. In addition, the team will include a ‘technology/technical’ expert from the same BU, who is capable of identifying the critical technological challenges of the project. The ‘sales’ individual will look at the project from a sales and client-management point of view, a project controller (usually) from a cost point of view and an engineer from an engineering point of view

(I1:RA). In addition, SOT members can use the ‘on-line’ facilities of the global communities to access the specialized knowledge of individual employees (Grant, 1996b) corporate-wide.

Following the establishment of the SOT team, an individual from the sales function undertakes the responsibility to coordinate the bid-no-bid review. If pursuit of the project is approved, then a ‘bid director’ is appointed who is responsible for coordinating the SOT team’s efforts until contract award. Usually, the bid director will be the same individual from sales who coordinated the team’s efforts during the bid-no-bid review. During the bid-no-bid review the sales, technology and operations directors of the BU(s) involved with the project are responsible for defining specific initiatives of the team and deciding on personnel participation. In addition, the project manager responsible for project execution is identified. There is a transition in responsibility from ‘sales’ to ‘operations’ when the contract is won and signed, during which the responsibility for coordinating the SOT team is also transferred to the project manager. Sales people will continue however to have an involvement throughout the project’s life-cycle and will be involved in project meetings to understand the project’s progression and resolve any client management-related issues that may arise. The input from sales, operations and technology therefore is continuous **(I5:LB)**.

The SOT team contributes to understanding what the client wants and how to align internal resources and competencies with client needs to add value **(I1:RA, I8:DS)**. In addition, early involvement of employees from Cyclone’s units that will undertake project execution, creates a trusting relationship with the client and a trusting relationship within the company itself by helping to break down silos between functions and project participants from early project stages **(I4:LB)**.

From this section it can be identified that both ‘reporting’ and ‘project selection’ routines constitute ‘feedback’ mechanisms through which management and leadership can regulate strategy implementation towards corporate objectives. The standardization of processes regarding what Davies and Brady (2004) referred to as ‘project capability’ (Viz. Chapter 3, Section 3.2.2.2), combined with the global resource reach that the global communities provide regarding the knowledge that can be leveraged, offer the opportunity for Cyclone’s management to ‘reflexively’ (Giddens, 1984) monitor its conduct both at the upper middle management/strategic apex and operating core, allowing the corporation’s

strategic apex to be more 'reflective'. Through 'project selection' routines in particular, the stage is set for 'stretching and leveraging resources and core competencies' corporate-wide.

9.3.3 Stretching and Leveraging Resources and Core Competencies

The findings of this case study with respect to the routines and individuals/organizational bodies involved in stretching and leveraging resources and core competencies are summarized on Table 9.4. They will be discussed here in turn.

As in all project-based businesses, resource and core competence stretch and leverage is most important when managing projects. It is in this case where the opportunity arises to stretch resources across organizational units to leverage the corporation's core competencies. At Cyclone, how a project will be received, pursued and - if won - facilitated within the organization, happens through specific processes applicable corporate-wide, explicitly specified in Cyclone's 'operating systems manual' (OSM) and the OSMs of its constituent industry lines (ILs). According to the OSMs, all activities of individuals and organizational units involved in a project throughout its life-cycle revolve around the 'Sales-Operation-Technology' (SOT) team, whose process of creation has been already described in section 9.3.2.

The existence of the SOT team, in combination with the horizontal organization that core centralized functions (human resources, procurement) and the 'global community network', act as an opportunity to leverage corporate-wide the core competencies the client and the project need. Construction and procurement stretches resources to leverage 'technical' and 'relational' core competencies (regarding suppliers/sub-contractors), 'sales' stretches resources to leverage 'entrepreneurial' and 'relational' (regarding clients) core competencies and through the collaboration that the SOT team facilitates, BUs can leverage 'estimating' core competencies to pursue and execute the project profitably⁹. In addition, it links project strategy to the client's organization from the very early stages of the project's lifecycle. As one global account manager stated:

'It is an absolute mandate that Cyclone goes through the SOT process, as it brings all of our resources to bear' **(I4:LB)**

⁹ In addition, the SOT team links directly 'stretch and leverage' with 'regulating SA implementation', ensuring resource allocation in line with operating and strategic plans and corporate strategies and objectives.

Table 9.4: Stretching and Leveraging Resources and Core Competencies - Cyclone

Organizational Routines	Key People/Organizational Bodies Involved	Type of Core Competence Leverage	Core Competencies Stretched and Leveraged
Sales-Operations-Technology (SOT) Team	BU Sales Director and/or Client Account manager BU 'Technology' Director Operations Representative (Construction and Procurement representative: maybe)	Process Replication ILCC Leverage (both through 'employee mobilization' as well as 'knowledge transfer' through the knowledge communities)	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis. • 'Entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
Sales and Account Management	BU Sales Director Client Global Account Manager (if applicable) Bid Director	Process Replication (initially set-up SOT team)	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis. • 'Entrepreneurial' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
Informal Functional, BU and IL Employee Networks	All project participants	ILCC Leverage through employee mobilization	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis.
Human Resource Function	BU Human Resource Directors and teams Corporate HR Director Office managers	ILCC Leverage through employee mobilization	<ul style="list-style-type: none"> • 'Entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
Global Excellence Network - Project Execution Services - Knowledge Communities	All project participants	ILCC Leverage (both through 'employee mobilization' and 'knowledge transfer' (through knowledge on-line)) Process Replication through 'knowledge on-line'	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis. • 'Entrepreneurial', 'estimating', 'technical' and 'relational' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
Global Execution Centers	Engineering/Technology	Design 'work packages' given to execution centres (a case where work is mobilized to the ILCCs that can do it)	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis. • 'Technical' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).
Construction and Procurement	BU-specific Construction and Procurement Director and team Office Construction and Procurement link and team Construction and Procurement BU Director Construction Director Strategic Sourcing Team Procurement Director	ILCC Leverage (both in terms of 'employee mobilization' as well as 'knowledge transfer') Process Replication (knowledge communities and knowledge on-line)	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis. • 'Technical' core competencies' (from Lampel, 2001, viz. Chapter 3, Section 3.2.6).

Immediately after it has been decided that a project is worth pursuing at the bid-no-bid review, an on-line ‘project collaboration platform’ is set-up by Cyclone’s ‘project automation group’, a sub-unit of its internal information technology (IT) organization. This on-line platform becomes the collaboration space for all project participants (clients, suppliers, potential partners etc.) (I3:JMcQ).

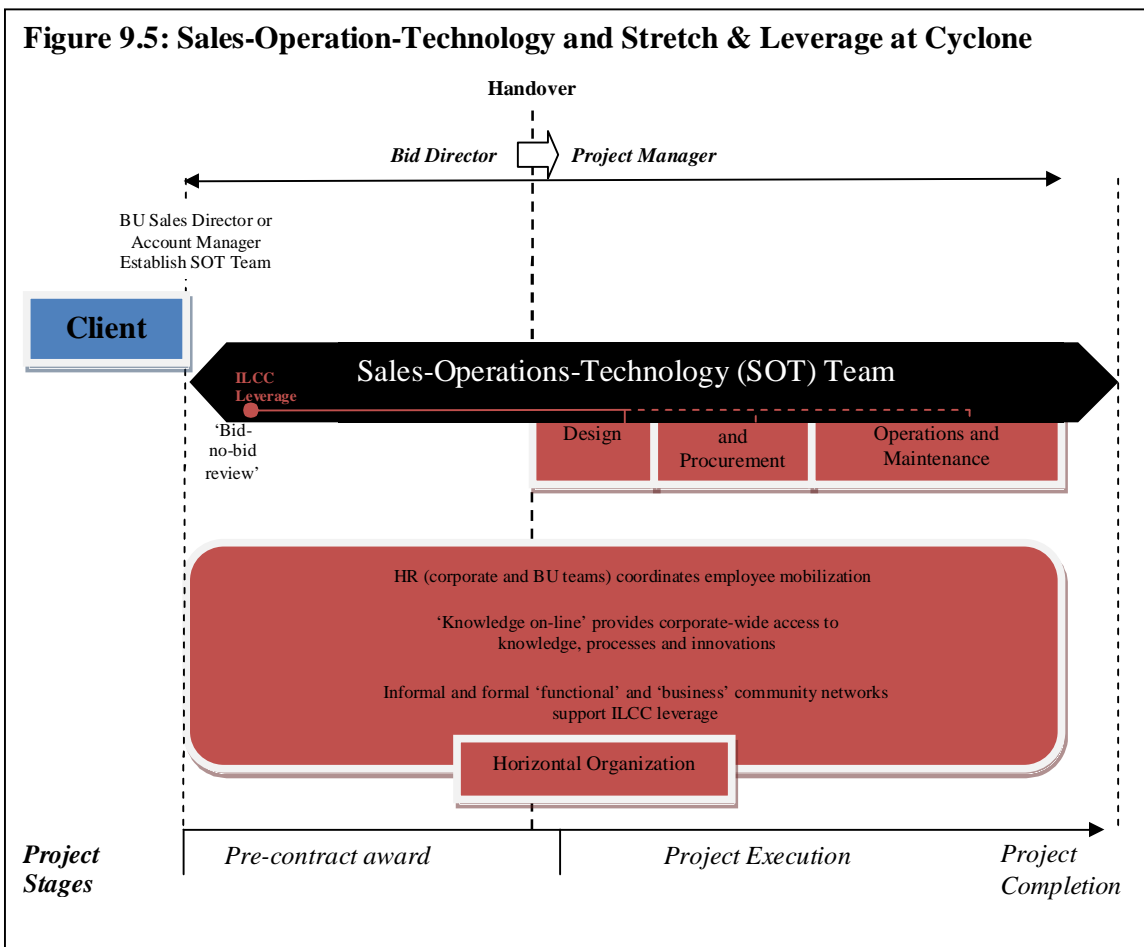
A better understanding of how the SOT team, in combination with Cyclone’s horizontal organization, can facilitate stretching and leveraging of resources and core competencies, can be achieved with the help of Figure 9.5. The figure shows that from the ‘bid-no-bid’ review stage, the contribution of the ‘horizontal organization’ (Porter, 1985) set-up corporate-wide, is critical to mobilizing the appropriate individuals to staff the project. Human resources (HR) uses the ‘formal’ and ‘informal’ networks existing between employees at functions, offices and BUs, industry lines and global communities to ensure the most appropriate (and available) employees to staff the project are identified. By being centralized at a corporate-level while at the same time having a central team located at all offices it tries to leverage human resources across BU and industry line boundaries.

The mobilization of employees across BUs and ILs is made easier by ‘skills’ standardization related to both ‘functional’ and ‘business’ practices that the group’s global communities have achieved. In addition, employee mobilization across organizational boundaries is made easier due to the corporate-wide consistency that exists in employee benefits, compensation and relocation.

Community-specific social networks, a culture of corporate-wide cross-BU employee mobilization and the informal networks this helps create and maintain, are integral components of Cyclone’s ability to leverage human resources and the intangible, human-dependent element of its core competencies¹⁰, embodied in individual employees. Social networks facilitate informal communication channels across offices and ILs, through which the most appropriate individuals to staff a project are often identified. Indicatively, one senior executive stated:

‘We talked about the resources that we have and the fact that in most cases they are long term, Cyclone resources. That helps a lot because those resources are transferred sometimes from Oil & Gas to Industrial and Infrastructure, to

¹⁰ Viz. Chapter 3, Section 3.2.4.



Government and back again. So these folks have a good understanding of the company across the board. To understand and interwork in relationship with this company is to be successful. There is a tremendous amount of things that are going on in other parts of the group that someone may or may not know unless there is good communications across the board. So, the competencies that we have are first of all: there needs to be a trusting relationship across the board and in all inter-workings that we have. I have to be able to trust other people that they will help me and others have to trust in me that I will support them. We both have to have a good appreciation about the competencies and the core services that we offer. We all bring something to bear. I bring the sales. You bring the operations, she brings the technology, over here they bring construction; and we all have to ensure that we all bring strong competencies to the table and we will all back them up.' (I4:LB).

At Cyclone, the development of informal inter-BU employee networks is also linked with the long 'tenure' of employees with the organization. Indicatively:

'The success of this company and any major EPC company is a function of networking. I have been with the company for 34 years. The average tenure of the people who are at my hierarchical level and upwards, on average exceeds 20 years.

And so as a result communication is very strong simply because we have been around and together for a very long period of time, we have been at a series of projects at any time all around the world, we have all worked together at various points.’ **(I1:RA)**.

In addition, ‘knowledge on-line’ is a very important medium through which the specialized knowledge of individuals can be accessed and harnessed (Grant, 1996b) globally and at any given project. This brings to the forefront the importance of an information technology (IT) infrastructure that facilitates corporate-wide communication as crucial to global core competence leverage. Integrating every ‘project on-line collaboration’ framework with the global communities’ on-line databases further supports this potential.

Following the 1998-1999 strategic review that Cyclone undertook (viz. Section 9.2), it was decided to invest in creating ‘Global Execution/Low Cost Engineering Centres’ in Manila, New Delhi and Poland **(I1:RA, I3:JMcQ, I6:PM)**. There, engineering work packages were sent from offices all over the world and then returned, integrated and used on projects **(I6: PM)**. These centres therefore emerged as a ‘hub’, in a ‘horizontal organization’ that coordinated the breaking down of design work to manageable packages and transferred them where they could be conducted at equivalent quality but lower cost. In this role, low cost engineering centres were instrumental in the corporate-wide standardization of design practices. The low cost engineering centres were in the unique position to identify differences in practices and interpretations across offices and BUs, so they collaborated with the engineering global communities to standardize practices corporate-wide.

Following project award, design execution takes place. To leverage its ‘technical’ core competencies, Cyclone often executes design by breaking up and assigning work packages to teams at different geographic locations where employee costs (salaries) are lower. The geographically dispersed engineering teams that are placed at each low cost engineering centre collaborate through the on-line project collaboration platforms, so that ‘design execution’ is undertaken on a 24 hour basis. Consequently, it can be understood that the corporate-wide standardization of design practices is paramount to the efficient/effective collaboration of geographically dispersed design teams and to the overall efficiency of the design process.

In the following stage of the project’s life-cycle, construction is undertaken. The construction director of the BU associated with the project serves as the primary interface

between the ILs and the ‘construction and procurement’ organization. Usually, s/he will have been involved with the project from as early as the bid-no-bid review, although this varies depending on the complexity of ‘constructability issues’ of the project undertaken **(I6: JM, I8: DS)**¹¹.

Apart from construction-related core competencies, the construction and procurement BU is also responsible for leveraging ‘strategic sourcing’ competence at any given project through participation in the sales-operation-technology (SOT) team. For that reason, in projects where procurement represents a high proportion of the project’s budget, or it has been identified as a major risk issue, strategic sourcing will be closely involved with the SOT team to provide its expertise as required.

The standardized ‘operating process’ of the OSM, the knowledge transfer and process replication made possible by the global community networks’ on-line communication tools, the global consistency in practices that both ‘business’ and ‘functional’ knowledge communities have developed and the ‘integrative’ nature of the SOT team at any given project, are collectively responsible for what is known in Cyclone as ‘One Cyclone’ **(I3:JMcQ)**. In light of this, it can be understood why Cyclone’s horizontal organization does not only facilitate the stretching and leveraging of resources and core competencies across markets and client-focused global and corporate-wide organizational units, but can also integrate and control them once they have been transferred (Melin, 1992) . The reason behind this is that Cyclone’s configuration enables it to:

- Simultaneously pursue skills and process standardization with respect to both functional and business practices;
- Develop IT and knowledge management systems that allow it to access and transfer globally the knowledge of individual employees who embody the ‘intangible’, ‘human-dependent’ element of the corporation’s core competencies¹²;
- Create an environment where employees can be mobilized across BUs and ILs and operate using the same systems and practices, creating thus a ‘deft’ environment (McGrath et al., 1995) where common language and practices allow the specialized knowledge of individual members to be integrated more effectively.

¹¹ In the last three years there has been an intentional effort to involve construction and procurement as early as possible, to reap the greatest benefits with respect to constructability.

¹² Viz. Chapter 3, Section 3.4.

All of the above contribute to the corporation being able to overcome the push for divisionalization that its diversified configuration creates, while at the same time overcoming issues of waste and duplication of resources that are inherent in market-focused, diversified organizations (Mintzberg, 1979; 1989).

9.3.4 Improving Business Practices

The findings regarding the routines and individual/organizational bodies involved in ‘improving business practices’ are shown on Table 9.5. These routines will be discussed in this section in turn.

Table 9.5: Improving Business Practices - Cyclone	
<i>Organizational Routines</i>	<i>Key People/ Organizational Bodies Involved</i>
<p><i>‘Value Awareness Program’ and ‘Gathering Lessons Learned’</i></p> <ul style="list-style-type: none"> - <i>monthly project review</i> - <i>alignment sessions</i> 	<p>Value awareness coordinator (large project) Project Manager (smaller project) Project Excellence Network Knowledge Communities Functional Leads Knowledge Community Leaders Knowledge managers Core Project Excellence Network Team Subject matter experts</p>
<i>Functional Discipline Audits</i>	<p>Knowledge community leader Subject matter experts Assigned technical experts from the knowledge community</p>
<i>Ad-hoc, ongoing individual requests and contributions</i>	All knowledge community members
<i>Operating Systems Manual</i>	<p>Chief Executive’s Management Team IL Senior management</p>

First, is the routine known in Cyclone as ‘capturing lessons learned’. This routine is part of Cyclone’s corporate-wide ‘value awareness program’. The value awareness

program happens through standardized processes, described in the corporate and industry-line (IL)-specific operating system manuals (OSMs). The purpose of the ‘value awareness program’ and ‘capturing lessons learned’ routines is to monitor throughout the duration of a project how processes could have been implemented differently and report these observations to the ‘global communities’ they relate to. The integration of the value awareness program with the feedback mechanism of ‘project reporting’ in particular (viz. Section 9.3.2), is critical to capturing innovations and knowledge created at projects (**I6:PM**)¹³. For the project monthly review, a specific individual is responsible for identifying where improvements in routines could have generated additional value, decide how many can be usable to future projects and submit/record these at ‘knowledge on-line’. (**I3:JMcQ**).

On large projects, there is often a ‘value awareness coordinator’ on a full-time basis, who is responsible for identifying, gathering and uploading to ‘knowledge on-line’ the lessons that could be usable to future projects and then following through in how many should result in a modification of standards and practices¹⁴. The value awareness coordinator leads ‘alignment sessions’ on projects to make sure that all project participants support the program. Once knowledge captured is uploaded to each global community’s body of knowledge - through knowledge on-line - it is the responsibility of the community’s leader and subject matter experts to ensure that ‘practices’ are updated, and changes communicated and made available corporate-wide - again through knowledge on-line (**I4: PM**).

The ‘value awareness’ program and the process of ‘capturing lessons learned’ in particular, are mechanisms that facilitate self-reflective (Giddens, 1984) organizational learning (Argyris and Schön, 1978) and are integrated with routines regarding ‘regulating strategic architecture (SA) implementation’, allowing Cyclone to reconfigure its practices as a function of its experience.

In addition to the value awareness program and capturing lessons learned, community leaders and subject matter experts organize community-specific audits. These audits are implemented on selected projects - as part of the corporation’s annual operating

¹³ Capturing lessons learned runs a monthly cycle and coincides with the ‘monthly project review’, a part of the reporting process (**I3:JMcQ; I6:PM**).

¹⁴ On smaller projects, the responsibilities of the value awareness coordinator often become part of the project manager’s role.

plan - and their outcomes are reported to the local office manager. The global community leaders receive copies of all the audits and look for systemic issues that might come up to determine what is the root cause of seeing these issues across multiple offices and multiple projects. Subsequently, they may decide that a modification in practices is necessary (**I3:JMcQ**). If changes in 'functional' and/or 'business practices' take place, then it is the responsibility of each community's leader and subject matter experts to appoint and train individuals from within their community, who will go around offices/resource centres and train functional experts on the application of the new practices.

On top of all this, each global community systematically reviews one third of its practices each year. Consequently, every three years, all practices are reviewed and potentially improved (**I3:JMcQ**). These 'audits' and 'reviews' not only constitute an opportunity for self-reflective organizational learning, but also provide an opportunity to renegotiate established organizational norms (Cameron and Quinn, 2005) through which the global communities operate.

Improvements identified through the routines described in this section, may lead to updating the corporation's operating systems manual (OSM) (**I1:RA**). Changes in business practices resulting from 'gathering lessons learned', or changes in business practices that have been a result of efforts intended to improve the corporation's functional capabilities may lead to or necessitate changes in the processes that are followed to manage the interrelationships between organizational units and projects, or organizational change. When the necessity for such changes is identified, it is the responsibility of the corporate management team to update the OSM. This 'updating' process typically takes place annually. The corporate management team is informed of changes in business practices through the reporting process, as 'lessons learned' is an issue that is discussed by corporate management during their quarterly reviews. After the OSM has been updated, it is the responsibility of each industry line's executive management team to update their industry-line-specific OSM so that they comply with corporate-wide practices.

From the description provided in this section it can be understood that the 'value awareness program', the 'global communities network' and the process of 'updating the operating system manuals' are the three stages of 'feedback' through which the value awareness coordinators, the knowledge community leaders and subject matter experts, as well as executive management can decide whether and how they can change the practices and structural properties of Cyclone as a function of organizational learning.

9.3.5 Developing Managerial and Organizational Leadership Capacity

Regarding the development of managerial and organizational leadership capacity at Cyclone, three groups of organizational routines have been identified and summarized on Table 9.6. They will be described here in turn.

Table 9.6: Developing Managerial and Organizational Leadership Capacity - Cyclone	
Organizational Routines	Key People/ Organizational Bodies Involved
<i>Global Excellence Network (knowledge communities)</i> - <i>Global Functional Track</i> - <i>Personnel Development Performance Plan</i>	Functional Directors and Office Representatives Knowledge Community Leaders Knowledge managers Core Project Excellence Network Team Subject Matter Experts (GFT)
<i>Leadership Development Framework Functional Forums</i> 1) <i>Regional Development Forums</i> 2) <i>Leadership Development Forum (elected on a 3 year basis, 3 new every two years)</i> 3) <i>Executive Development Forum</i>	1) Functional Directors of office and BU directors 2) Sales Directors, Functional Directors and BU Directors at a regional level. 3) Seven members from the Chief Executive’s Management Team. Coordinate with the help of IL Presidents 4) The corporate management team
<i>Succession Planning</i> - <i>CEO and HR coordinate annually</i>	Functional Leads Knowledge Community Leaders Knowledge managers Core Project Excellence Network Team Subject matter experts (GFT)

First, are the organizational routines of the knowledge communities related to the professional development of employees (I1:RA, I3:JMcQ, I6:PM, I8:DS). Each community implements a structured professional development program for its members, known as the ‘Global Functional Track’ (GFT). The GFT defines career progression steps. They are community-specific and are developed by the knowledge community leader and subject matter experts. They describe the individual level core competencies (ILCCs) that people need to develop related to their function or discipline. In addition, the GFTs link the ILCCs employees should possess with the hierarchical level they can attain and their

compensation levels. The global communities have the responsibility to undertake, monitor and regulate the ILCC development of their members through drafting and pursuing ‘Personal Development and Performance Plans’ (PDPPs). PDPPs are tied to knowledge management and the knowledge communities of each function. So, at any hierarchical level, an employee is linked with certain competencies of his/her function that he/she should possess. That would roll into his/her PDPP and then the employee would have to describe how he/she developed these competencies. That would then have to be reviewed by his/her supervisor (**I6:PM, I9:WH**).

Second is the case of a ‘leadership development framework’ implemented in Cyclone (Figure 9.6). ‘Feeder forums’ (Level 1) exist at each office/resource centre, where local management will look at employees and try to distinguish between those who have considerate ‘potential’ and those who are ‘strong performers’. Those who have ‘potential’ are most likely to become part of the corporation’s executive management. Those who are strong performers are more likely to develop at a more ‘technical’ role and may become experts in their field or related fields.

Above the office-level feeder forums are the ‘functional forums’¹⁵ (Level 2). All of the functional communities (project services communities) have regional development forums that collectively look at the global resource-base. On top of these sit the ‘regional development forums’ (Level 3). There, the entire population from all the functions, disciplines and business groups are looked at by a group of executives that cover a specific geography. The people who chair these forums are senior executives with full-time responsibilities in other parts of the organization¹⁶. The ‘regional development forums’ will use the information on individuals gathered at the ‘feeder’ and ‘functional’ forums and will assess who have the potential to become part of the group’s leadership and who are better equipped to become ‘technical’ leaders in their field. It is at this stage that mentors are ‘identified’ and individual professional development programs with a focus on leadership development are put in place.

¹⁵ For example, in the case of construction, the ‘Construction Development Forum’ looks at all the construction people at Cyclone and tries to decide how the next generation of leaders will be developed.

¹⁶ For example, the Chairman of the Central Western Regional Forum, which includes the offices of Houston, California and Calgary, is currently the director of Procurement at the Construction and Procurement division. This is a situation where Cyclone stretches its human resources to develop individuals who may embody core competencies of the corporation as a whole.

The process followed by the ‘regional forums’ is very formal. Sixty to seventy people per region will be identified annually as potential leaders and the regional development forums will assume responsibility for developing them. The individuals identified as potential future leadership will continue to work in the various offices/resource centres that have to ensure these individuals get the training and the assignments they need.

The regional forums are in turn overseen by Cyclone’s ‘leadership development forum’ (Level 4). The leadership development forum has responsibility for developing the processes through which the feeder forums, the functional forums and the regional development forums operate and has the ultimate responsibility for the development of executive management. So, when individuals are being identified by the regional forums as showing executive potential, those individuals are surfaced to the leadership development forum and if they are approved, then they become executive management and bonus-based¹⁷. In order for the ‘leadership development forum’ to consider a candidate, a senior officer of the company has to openly endorse and support him/her. Then, s/he must go through a number of ‘readiness assignments’ that are chosen based on the specific work history of the individual.

On top of the leadership development forum sits the ‘executive development forum’ (Level 5), which constitutes of Cyclone’s CEO, corporate and operating executives. Their responsibility is to manage the development of the executive managers. Cyclone has developed an ‘executive management certification guidebook’, where the processes followed and requirements that need to be met for accepting an individual to the ‘executive development forum’ are made explicit. In short, these are:

- Evidence of his functional experience, through a:
 - Curriculum Vitae;
 - Readiness endorsement letter from a senior company executive.
- A recommendation letter on the individual, describing:
 - Financial impact;
 - Execution excellence;
 - Customer focus;
 - People development skills;
 - Leadership;

¹⁷ It should be noted that the leadership development forum has greater authority than a group president in deciding ‘who will become what’, if they feel he/she does not fulfil the criteria.

- Driving strategic initiatives.

The four forums described here are sub-units of the leadership development framework Cyclone has in place. From the 'regional forum' upwards, they transcend BUs and industry lines. This signifies the existence of a 'horizontal organization' that transcends the corporation with respect to the development of managerial and organizational leadership capacity.

For the five years prior to the beginning of this study, an additional program has been established - the 'Global Business Leadership Track' - which operates simultaneously with the leadership development forum (I1:RA).¹⁸ This program focuses on 'star performers' and is coordinated by corporate HR. There are around 30 participants in the program at any point in time, more or

Finally, there is a program in place focusing specifically on 'succession planning'. Succession planning is an annual process led by the CEO with the support of corporate HR. The CEO circulates a letter to all executives of the company asking them to propose (with arguments) their potential successors in one, two, three and five years time. Corporate HR then gathers the responses and updates the list of potential successors. Within a month, it closes the loop by communicating with the HR counterparts at all company units and updating the personal development plan of each employee with 'leadership potential', as well as seeing how s/he has met (or not) his/her growth objectives.

It can be understood from what has been described in this section so far that Cyclone has designed and implemented 'leadership development' and 'succession planning' frameworks directly linked with its structure and functioning characteristics, through which feedback mechanisms and controllers exist to channel the professional development paths of management and organizational leadership. The frameworks are implemented through the direct involvement of Cyclone's knowledge communities and are corporate-wide. This indicates they contribute to management and organizational leadership developing the desirable 'social capital' (Drath, 2000; McCawley, 2000) through participation in corporate-wide communities of practice and both formal and informal employee networks. In an environment that fosters corporate-wide joint-thinking,

¹⁸ This program, monitors competent individuals who are put in 'stretch' positions of extremely increased responsibility, or portfolio assignments..

collaboration, trust and a willingness to learn from others (Penrose, 1959; 1995; Javidan, 1998).

9.4 Interrelationships between Activities

This section integrates findings from sections 9.3.1 to 9.3.5 and identifies interrelationships between the individual core competence development activities, as well as how these are influenced by Cyclone's configuration. Findings from Tables 9.1 to 9.6 are displayed on Table 9.7.

Cyclone's configuration facilitates strong and complementary links between core competence development activities. The 'exhibiting strategic intent (SI) and crafting strategic architecture (SA)' routine of 'setting and communicating the annual operating plan' not only sets the stage for 'regulating SA implementation', but also sets integrated targets in terms of sales prospects, execution performance, as well as the use and development of resources. The reporting routines of regulating SA implementation pick-up on how projects, BUs, ILs and the corporation as a whole performs against these targets and, in addition to measuring performance against sales and execution targets, they capture knowledge created at projects, effectively facilitating experiential learning. Fed with this knowledge captured, the 'knowledge communities' can disseminate it corporate-wide, through their on-line infrastructure.

At the same time, the standardized process of the 'Sales-Operations-Technology' (SOT) team (as stipulated in Cyclone's corporate and IL-specific operating system manuals (OSMs)) in combination with the horizontal organization linking Cyclone's ILs, BUs, functions and office/resource centres, ensure that core competencies are leveraged in parallel with evaluating whether each project is aligned with the corporation's targets.

9.5 Summarizing and Concluding Section

The findings of this case study regarding the issues this research addresses are summarized on Table 9.8.

Cyclone's configuration consists of:

- Geographically dispersed offices/resource centres;
- Client-focused business units grouped under industry lines;

Table 9.7: Activities, their Routines and Interrelationships - Cyclone

Generic, Corporate Level Activity	Organizational Routines	People/Organizational Bodies Involved	
<p>Exhibiting SI and Crafting SA</p>	<p><i>Strategic Planning</i></p>	<p>BoD CEO and Corporate Management Team Corporate Strategic Planning Division Marketing Division Sales and Account Management Function IL and BU Executive Management Global Excellence Network</p>	
	<p><i>Annual Operating Plan</i></p>	<p>CFO's organization ultimately responsible IL and BU Executive Management Global Excellence Network Sales and Account Management Function Offices/Resource Centres</p>	
	<p><i>Strategic Reviews</i></p>	<p>Chief Executive's Management Team BoD (Depending on expenditure)</p>	
	<p><i>Internal Communications Department</i></p>	<p>Internal Communication Department's Members CEO and the Executive Management Team</p>	
<p>Regulating SA Implementation</p>	<p><i>Reporting</i></p> <ul style="list-style-type: none"> • Annual Reviews • Quarterly Reviews • Monthly Reviews • Project reporting 	<p>IL President, CFO, IL-BU directors, BU Finance Directors Global Excellence Network</p> <ul style="list-style-type: none"> - knowledge communities - gathering lessons learned 	
	<p><i>Project Selection Process</i></p> <ul style="list-style-type: none"> • SOT Team and the bid-no-bid review 	<p>a) During Sales</p> <ul style="list-style-type: none"> - The Marketing Organization. - Client Account manager - Sales VP - Bid coordinator - Director of Engineering (technology) <p>b) During Execution</p> <ul style="list-style-type: none"> - Project Manager - Operations Director - Engineering Director - Construction Director - Procurement Director 	
<p>Stretching and Leveraging Resources and Core Competencies</p>	<p><i>Sales-Operations-Technology (SOT) Team</i></p>	<p>BU Sales Director and/or Client Account manager BU 'Technology' Director Operations Representative (Construction and Procurement representative)</p>	<p>Process Replication ILCC Leverage (both through 'employee mobilization' as well as 'knowledge transfer' through the knowledge communities)</p>
	<p><i>Sales and Account Management</i></p>	<p>BU Sales Director Client Global Account Manager (if applicable) Bid Director</p>	<p>Process Replication (initially set-up SOT team)</p>
	<p><i>Informal Functional, BU and IL Employee Networks</i></p>	<p>All project participants</p>	<p>ILCC Leverage through employee mobilization</p>
	<p><i>Human Resource Function</i></p>	<p>BU Human Resource Directors and teams Corporate HR Director Office managers</p>	<p>ILCC Leverage through employee mobilization</p>
	<p><i>Global Excellence Network</i></p> <ul style="list-style-type: none"> • Project Execution Services • Knowledge Communities 	<p>All project participants</p>	<p>ILCC Leverage (both through 'employee mobilization' and 'knowledge transfer' (through knowledge on-line)) Process Replication through 'knowledge on-line'</p>
	<p><i>Global Execution Centres</i></p>	<p>Engineering/Technology</p>	<p>Design 'work packages' given to execution centers (a case where work is mobilized to the ILCCs that can do it)</p>

	<i>Construction and Procurement</i>	BU-specific Construction and Procurement Director and team Office Construction and Procurement link and team Construction and Procurement BU Director Construction Director Strategic Sourcing Team Procurement Director	ILCC Leverage (both in terms of 'employee mobilization' as well as 'knowledge transfer') Process Replication (knowledge communities and knowledge on-line)
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Table 9.7: Core Competence Development Activities – The Cyclone Corporation (continued)		
Generic, Corporate Level Activity	Organizational Routines	People/Organizational Bodies Involved
Improving Business Practices	<i>'Value Awareness Program' and 'Gathering Lessons Learned'</i> <ul style="list-style-type: none"> • <i>monthly project review</i> • <i>alignment sessions</i> 	Value awareness coordinator (large project) Project Manager (smaller project) Project Excellence Network Knowledge Communities Functional Leads Knowledge Community Leaders Knowledge managers Core Project Excellence Network Team Subject matter experts
	<i>Functional Discipline Audits</i>	Knowledge community leader Subject matter experts Assigned technical experts from the knowledge community
	<i>Ad-hoc, ongoing individual requests and contributions</i>	All knowledge community members
	<i>Operating Systems Manual</i>	Chief Executive's Management Team IL Senior management
Developing Managerial and Organizational Leadership Capacity	<i>Global Excellence Network (knowledge communities)</i> <ul style="list-style-type: none"> • <i>Global Functional Track</i> • <i>Personnel Development</i> • <i>Performance Plan</i> 	Functional Leads Knowledge Community Leaders Knowledge Community Subject Matter Experts Knowledge managers
	<i>Leadership Development Framework</i> <ul style="list-style-type: none"> • <i>Functional Forums</i> • <i>Regional Development Forums</i> • <i>Leadership Development Forum (elected on a 3 year basis, 3 new every two years)</i> • <i>Executive Development Forum</i> 	<ul style="list-style-type: none"> • Functional Directors of office and BU directors • Sales Directors, Functional Directors and BU Directors at a regional level. • Seven members from the Chief Executive's Management Team. Coordinate with the help of IL Presidents • Chief Executive's Management Team
	<i>Succession Planning</i> <ul style="list-style-type: none"> • <i>CEO and HR coordinate annually</i> 	CEO and Corporate Management Team Human Resource Function Functional Directors and Office Representatives Knowledge Community Leaders Knowledge Managers Global Excellence Network Subject matter experts (GFT)

- A horizontal organization of function- and business-oriented communities of practice facilitating corporate-wide standardization of skills and processes and the development of formal and informal employee networks that contribute to the establishment of a uniform corporate culture,

The existence of corporate-wide community networks, a centrally coordinated human resources function and the integrative nature of the SOT team, provide scope for the

corporate-wide mobilization of employees, not only optimizing human resource utilization, but also providing more opportunities for managers to gain experience in different parts and positions within Cyclone. Corporate-wide standardization of processes (through the OSMs and knowledge communities) assists in the mobilization of employees across organizational units, thus reducing waste from duplication of resources, a characteristic inherent in diversified, divisionalized organizations.

In Cyclone, competence development activities can be effectively conducted and their interrelationships managed in a manner that could allow the ICM to proactively develop its resources and core competencies in the face of constantly changing market environments. Compared to the other three ICMs studied therefore, Cyclone is more appropriately configured to effectively develop its core competencies. The findings of the case study are summarized on Table 9.6.

Table 9.8: Cyclone: Summarizing	
Issues	Findings
Configuration	Client-focused BUs and ILs drawing resources from offices/resource centres. Standardization of skills and work processes is pursued corporate-wide through ‘function’ and ‘business’ oriented knowledge communities, which operate as communities of practice and are collectively structured as a horizontal organization that connects the corporation’s BUs. Processes through which intra-organizational, cross-BU coordination is achieved are standardized at corporate-wide ‘operating systems manual’ (OSM). Uniform corporate-wide culture.
Core Competencies	<ul style="list-style-type: none"> • Providing globally engineering, procurement, construction, operations and maintenance and project management services, individually or integrated on a project-basis.
Dynamic Capabilities	<ul style="list-style-type: none"> • Acquire companies and successfully/appropriately integrating them into the corporation; • Organically develop core competencies in areas in which it has no (or little) experience; • Standardize processes and business practices to make easier the stretching and leveraging of knowledge resources and core competencies across organizational units.
<i>On the relationship between Cyclone’s configuration and its ability to develop a corporate strategy, with optimal potential for implementation</i>	Strategies for resource development, sales/account management and BUs are developed in parallel. The interdependence of strategic planning and the annual operating business plan suggests that the latter may act as a feedback mechanism that allows Cyclone’s management and leadership to better regulate strategy execution. The centrally coordinated horizontal organization that gathers, integrates and then disseminates information corporate-wide during exhibiting strategic intent and crafting strategic architecture, ensures that management comprehends corporate objectives to be met and where the resources to pursue them exist within the organization.
<i>On the relationship between Cyclone’s configuration and the effectiveness with which it regulates its strategies</i>	Reporting routines constitute ‘feedback’ mechanisms through which management and leadership can regulate strategy implementation towards corporate objectives, in all three ‘planning’ streams that were described in the previous section (i.e. industry lines, global excellence network, sales and account management). The SOT process contributes to effectively aligning internal resources and competencies with client needs. Early involvement of the client creates a trusting relationship with the client and a trusting relationship within the company itself by helping to break down silos between functions and project participants from the project initiation stage.
<i>On the relationship between Cyclone’s configuration and the effectiveness with which it stretches its resources and core competencies</i>	Through the efforts of a centralized ‘sales’ unit cutting across BUs, a centralized construction and procurement unit, centralized HR, global functional and business communities with standardized skills and processes for their members, a corporate-wide OSM that connects these at a corporate level and an SOT team process that integrates these at a project level, Cyclone is able to stretch and leverage its resources corporate-wide, overcoming the push for divisionalization that the corporation’s diversified configuration creates.
<i>On the relationship between Cyclone’s configuration and the effectiveness with which it can reconfigure its processes, structures and norms, as a result of organizational learning</i>	The ‘value awareness program’, the ‘knowledge communities of the global excellence network’ and the process of ‘updating the operating system manuals’, are the three stages of ‘feedback’ through which the value awareness coordinators, the knowledge community leaders and subject matter experts, as well as executive management decide whether and how they can change the practices structural properties of Cyclone as a function of learning.
<i>On the relationship between Cyclone’s configuration and the effectiveness with which it develops managerial and organizational leadership capacity</i>	Corporate-wide employee mobilization throughout an employee’s career and inter-BU formal and informal employee networks, contribute to management and organizational leadership developing social capital. ‘Leadership development’ and ‘succession planning’ programmes build on this to channel the professional development paths of management and organizational leadership.

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Chapter 10: Cross-Case Analysis and Discussion

10.1 Introduction

The purpose of this chapter is to compare and contrast the findings from the individual case studies and discuss them in light of the extant literature and the theoretical frameworks developed for the purpose of this research. Similarities and significant differences between the international construction majors (ICMs) studied will be highlighted and this will lead to the identification of potential causal links between ‘configurations’ and ‘effective core competence development’. First, how the configurations of the ICMs studied came to be and their characteristics will be discussed across cases. Second, the way the ICMs studied conduct core competence development activities and manage their interrelationships will be compared and discussed. The nature of the cross-case comparison allows findings to emerge regarding the research issues this thesis has brought forward (viz. Chapter 1, Section 1.5-1.6.1 and Chapter 4, Section 4.4) as the chapter unfolds. The chapter will conclude by evaluating the research and the findings.

10.2 Configurations Developed Revisited¹

In all ICMs studied, entrance and growth into a specific market was followed by the creation of a market-based unit, concurring with Chandler’s (1962) observations that ‘structure follows strategy’. The ICMs pursued their growth strategies either through acquisitions to obtain capabilities they could build on (such as the acquisitions of Greek contractors by Aegean-Cyprus) or through internal development (such as the incorporation of Albion Management Ltd, the establishment of ‘business development’ divisions at Pacifico and the creation of ‘Global Services’ at Cyclone). The creation of market-based units was either accompanied or followed by initiatives to ‘standardize’ practices across them (e.g. the ‘enterprise resource planning’ initiative at Aegean, the ‘risk and opportunity management framework’ at Albion, the ‘project management certification framework’ at Pacifico and the corporate-wide standardization of ‘functional’ practices at Cyclone, through the ‘global communities network’) in order to achieve a higher degree of intra-organizational integration.

¹ This section draws from sections 6.2.1, 7.2.1, 8.2.1 and 9.2.1 of case-study chapters 6, 7, 8 and 9 respectively.

Throughout their evolutionary path, all companies pursued a strategy of related diversification in all three directions of vertical integration, horizontal diversification and internationalization. Aegean and Albion, which began as construction contractors, ended-up diversifying to adopt the roles of ‘developer’, ‘builder’ and ‘operator’ of built assets, whereas Pacifico and Cyclone, which began as engineering firms, diversified gradually to adopt the roles of engineer-procurer-constructor and project manager on behalf of their clients. The latter two therefore, developed a more ‘professionally’ oriented configuration compared to the former two.

Table 10.1 summarizes and contrasts the case study findings regarding the ‘configuration’ that each ICM studied had developed. This allows highlighting of significant similarities and differences between them². All ICMs exhibit characteristics of an ‘entrepreneurial’ configuration (as they continuously strive to secure new work), an ‘innovative’ configuration (as they continuously create and dismantle project-based adhocracies) and a ‘machine’ configuration, as their scale necessitates a degree of process standardisation for effective coordination. In addition, all ICMs are ‘diversified’ organizations, having to deal with the pull for ‘divisionalization’ that diversification creates.

Their differences give scope for a more in-depth discussion. Considering the ‘structural’ and ‘functioning’ characteristics of the configurations the ICMs studied have developed, their major differences lie in:

- The extent to which they are ‘divisionalized’ and the type of ‘horizontal organization’ they have developed to coordinate and manage the interrelationships between their market-focused business units (BUs). Aegean and Albion on the one hand, have developed a configuration of greater divisionalization and BU-autonomy forming market-focused units to integrate the efforts of other BUs when necessary (e.g. PPP/PFI BU at Aegean Greece and Albion ‘Investments’ and ‘Management’), adopting a structure similar to the one Chandler (1962) had described as the multidivisional form (M-form). Pacifico has developed a similar structure at a corporate level, but, within its ‘Global Business Units (GBUs), it has centralized core functions and built on developing

² These descriptions were derived from data, which, in part, was obtained from the ‘Desk Studies’ conducted to construct the ‘Evolutionary Profiles’ of the ICMs studied. In retrospect, it should be noted that although the intent of the evolutionary profiling (viz. Chapter 5, Section 5.6) was primarily context building, it led to the identification of similarities and differences between the ICMs studied.

Table 10.1: Configurations Revisited				
Company	Aegean Group	Albion plc	The Pacifico Corporation	The Cyclone Corporation
Configurations	Entrepreneurial Innovative Bureaucratic Diversified	Entrepreneurial Innovative Bureaucratic Diversified	Entrepreneurial Innovative Bureaucratic Diversified Professional	Entrepreneurial Innovative Bureaucratic Diversified Professional Missionary
Structural Characteristics	2 regions, market-focused, no horizontal organization.	Portfolio of BUs grouped into four Industry groups, no horizontal organization.	Portfolio of market-focused sector units, grouped in Divisions, grouped in GBUs (industry-focused). Centralized functions at GBUs maintaining a horizontal organization, across divisions and sector-units. Business development distinct from operations, both centralized at a GBU level.	Market-focused BUs grouped into 'industry-focused' business lines, superimposed on globally spread regional/local offices/resource centres; Corporate-wide network-like functions, with core teams at each office and business line; Global functional/business community networks.
Functioning Characteristics	Non-standardized intra-organizational coordination, informal, near ad-hoc.	Standardized financial management practices corporate-wide; Standardization of outputs and BU-specific standardization of skills.	Standardized processes related to project selection (GBU level); Standardized project management practices (corporate-wide); Standardization of leadership skills.	Standardized processes for management of interrelationships between BUs (OSM); Standardization of function and business related skills; Standardization of leadership skills
Agency Characteristics	Strategic apex – upper middle management key part	Strategic apex key part; Not interfering with BU management; Oversees relationships between BUs.	GBU strategic apex and middle management key part; Business development division high authority.	Middle management, operating core and techno-structure key parts; Techno-structure analysts constitute 'stretch' positions of upper middle management and strategic apex.

a structure that can reap the benefits of ‘social capital’ existing in intra-GBU employee networks. Cyclone has moved beyond the M-form, to develop a network-based structure with characteristics similar to the ones described in theory (Ghoshal and Bartlett, 1990; Tsai and Ghoshal, 1998; Brass et al., 2004) as characteristics of network-based multinational corporations (MNCs)³. Cyclone has focused on ‘formalising’ and embedding in the organizational structure informal cross-BU employee networks;

- The degree to which they pursue ‘skills’, ‘process’ and ‘norms’ standardization as coordination mechanisms (Mintzberg, 1979; 1989). All ICMs studied use standardisation of ‘outputs’ as a coordination mechanism for their BUs. However, the extent to which they use skills, process and norms standardisation varies. Aegean does not pursue ‘skills’ standardization and processes are standardized (intra-regionally) regarding procurement and financial management only. At Albion, skills standardization is pursued within each BU autonomously, apart from skill standardization regarding future leadership, where this is pursued corporate-wide by corporate succession planning. Standardization of processes is again BU-specific with the exception of the ‘risk and opportunity framework’ and the ‘internal audit’ function, which are implemented uniformly across all BUs apart from Albion Hong-Kong and Albion Dubai. At Pacifico, GBU-specific standardization of skills and processes is pursued by the ‘business development’ divisions and the core functions. Corporate-wide standardization of skills and practices is pursued through the ‘project management certification framework’. Culture and norms are GBU-specific. Finally, at Cyclone, standardization of skills and practices is pursued corporate-wide through the global knowledge communities. Standardization of norms is also corporate-wide and is maintained through a corporate-wide ‘operating systems manual’.

10.3 Addressing the Research Question

This section compares and contrasts how the ICMs studied conduct each generic, corporate-level core competence development activity. The cross-case contrasting and comparison, offers the opportunity to discuss findings in light of the

³ Viz. Chapter 2, Sections 2.6 and 2.8.

extant literature and draw inferences regarding the issues this research explores (viz. Chapter 1, Section 1.5-1.6.1 and 1.9; Chapter 4, Section 4.4).

10.3.1 Exhibiting Strategic Intent and Crafting Strategic Architecture

The ‘relationship’ between configurations that ICMs adopt and their ability to develop corporate strategies with optimal potential for effective implementation will be addressed in this section through the cross-case comparison of the way the ICMs studied ‘exhibit strategic intent (SI) and craft strategic architecture (SA)’.

Comparing and contrasting across cases⁴ (Table 10.2), it can be observed that all the ICMs studied have well established routines for setting long-term strategic plans and developing shorter-term plans for their implementation. Their differences revolve around how:

- Facilitating is their organization-specific context in developing a commitment to linkages across BUs for a core-competence mind-set (Prahalad and Hamel, 1990) to develop and value to be created during strategy execution;
- Corporate objectives are linked with the objectives of individual employees (Kaplan and Norton, 1994; 1996 and Gratton, 1996).

These will be discussed here in turn.

Each ICM’s ‘structural’ and ‘functioning’ characteristics allow different types of commitments to be made when ‘exhibiting SI and crafting SA’, to set the stage for intra-organizational collaboration during strategy execution. At Aegean, regional resource ownership and incentives for management to focus on ‘regional’ performance establish a regional-mindset⁵ that could inhibit inter-regional collaboration, employee mobilization and sharing of resources. This leads to the entrapment of core competencies within regions and potentially ‘duplication’ of efforts (Mintzberg, 1979; 1989) when these have to be reproduced across them.

At Albion, BU-autonomy and resource ownership, combined with ‘standardization of outputs’ as a primary coordination mechanism used by the plc’s corporate centre, does not incentivize BU directors to develop an inter-BU collaborative spirit. This creates an environment where BUs operate as ‘silos’ and where individuals

⁴ This section draws from sections 6.3.1, 7.3.1, 8.3.1 and 9.3.1 of case study chapters 6, 7, 8 and 9 respectively.

⁵ Equivalent to Prahalad and Hamel’s (1990) ‘BU-mindset’- viz. Chapter 3, Section 3.2.6

Table 10.2: Exhibiting SI and Crafting SA

	Aegean	Albion	Pacifico	Cyclone
Planning Horizon	3-5 years	3-5 years	5 years (Corporate) 2 years (GBUs)	20 years (Corporate) 5 years (Industry Lines)
Routines	<ul style="list-style-type: none"> • Annual business plan (action planning) - <i>Region-specific</i>; • Long-term strategic plans (3-5 years) - <i>Region-specific</i>; • Strategic initiatives - <i>Region-specific</i>. 	<ul style="list-style-type: none"> • Annual business plan (performance control) - <i>BU-specific</i>; • Long-term strategic plans - <i>Corporate-wide</i>; • Strategic initiatives - <i>BU-specific and Corporate-wide</i>. 	<ul style="list-style-type: none"> • Annual business plan (action planning, resources allocated for sales and operations) - <i>GBU-specific and Corporate-wide</i>; • Two-year plan - <i>GBU-specific and Corporate-wide</i>; • Strategic initiatives - <i>GBU-specific and Corporate-wide</i>. 	<ul style="list-style-type: none"> • Strategic planning (20-years) - <i>Corporate-wide</i>; • Annual operating plan (action planning) - <i>BU-specific, integrated to Corporate-wide</i>; • Strategic reviews (ad-hoc basis) - <i>Corporate-wide</i>.
Commitment to Linkages Across BUs for ‘Value’ to Be Created	<ul style="list-style-type: none"> • Resources owned by regions, shared within them, not across them; • Directors incentivized to focus on regional performance; • Employees rotated ‘within’ regions, not across them; • Communities’ and ‘social networks do not exist within, or across regions. 	<ul style="list-style-type: none"> • Human resources owned by BUs; • BU directors incentivized to focus on own BU performance; • Rotation of employees does take place – particularly between UK and US and mostly for employees having been identified by succession planning as potential future leadership; • Competent managers tracked and trained: <ul style="list-style-type: none"> - Within BUs by human resources (HR); - Corporate-wide (for potential future leaders) by central succession planning. 	<ul style="list-style-type: none"> • Human resources owned by GBUs; • Directors incentivized to focus on their GBU’s performance; • Rotation of employees takes place within GBUs routinely, across GBUs only for competent managers and potential future leadership; 	<ul style="list-style-type: none"> • Human resources owned by offices, shared by ‘functions’ and BUs; • Directors need to collaborate with other BUs, since they share resources; • Employees are rotated corporate-wide; • Competent managers are tracked and trained; • Formal and informal networks maintained by ‘global communities’ and enabled through corporate-wide IT systems.
Aligning Corporate Objectives with the Objectives of Individual Employees	<ul style="list-style-type: none"> • Competent managers not tracked or trained; • From middle management upwards, alignment with corporate objectives achieved through executive remuneration. 	<ul style="list-style-type: none"> • Middle management aligns most with BU-objectives; • BU senior management aligns with corporate-objectives (corporate succession planning involved). 	<ul style="list-style-type: none"> • 100% employee owned corporation; • Competent managers are tracked and trained: <ul style="list-style-type: none"> - Within GBUs by HR and ‘leadership development’ program; - Across GBUs by corporate HR and leadership development program. • Potential future leadership offered increased responsibility, further career progression, rotation across BUs. 	<ul style="list-style-type: none"> • Performance objectives of individuals linked with performance of BUs, personal development linked with ‘community-specific’ career progression paths, uniform corporate-wide.

who embody the plc's construction-related core competencies may be trapped within BUs.

At Pacifico, resource ownership and centralized decision-making regarding resource allocation at the GBU level, incentivizes directors to collaborate across market/client-focused units, albeit within GBUs only. Intra-GBU collaboration is led by the directors of the two centralized units of 'business development' and 'operations', who have ultimate decision-making authority over resource allocation during 'pre-contract' award and 'execution' stages of projects respectively.

Finally, at Cyclone, the 'structural' characteristics of its configuration are such that resources are owned by local/regional offices/resource centres and are shared - by default - by all functions and BUs corporate-wide. Commitment to linkages across BUs for value to be added is therefore embedded in the SA crafted. This is further re-enforced by the corporation's global communities, of practice. These, facilitate the development and maintenance of global, corporate-wide, formal and informal employee networks. Such social networks - which are absent in all other ICMs studied - are leveraged when strategies are being set, to set the stage for strategy execution to take place in an organizational environment that cross-BU relationships can be actively managed. Theory (Nayyar, 1992; Tsai, 2000; Markides, 2002) would suggest that this allows Cyclone to actualize the latent economic potential of related diversification⁶.

Reviewing the practices of the ICMs studied, it could be argued that the existence of inter-BU employee networks contributes to the creation of 'mutual obligations' across BUs when setting strategies, which in turn contributes towards the development of a collaborative environment of mutual-trust across BUs during strategy execution, thus contributing to greater effectiveness when developing core competencies. This finding is in line with previous findings of core competence theory research (Fairtlough, 1994; Ritter and Gemünden, 2002) - albeit from production-oriented industries - which have highlighted the importance of inter-BU communication and employee networks in effectively promoting exchange of ideas and fostering innovation. What this identifies is that the 'existence' of intra-organizational networks contributes to effective core competence development in more than one industry. This, contributes to our knowledge regarding the contexts in which core competence theory can be applied, and strengthens the theory's overall breadth of application.

⁶ Viz. Chapter 2, Sections 2.6 and 2.8

Regarding the alignment of corporate objectives with the objectives of individual employees, evidence from the case studies suggests this is also influenced by the configuration the ICMs studied have adopted. At Aegean, where formal mechanisms do not exist to track and train competent employees, and where retaining them is pursued through informal promises of career advancement and executive remuneration, it could be argued that alignment of corporate objectives with the objectives of individual employees below the middle management level will be tenuous.

At Albion, BU autonomy and ‘standardization of outputs’ as a primary inter-BU coordination mechanism, create an environment within BUs where ‘middle management’ and ‘operating core’ employees are more aligned with BU, rather than corporate objectives. To overcome this issue at a BU upper-middle management and strategic apex levels, corporate ‘succession planning’ tracks potential future executives, develops training plans with the human resources (HR) management teams of the BUs they belong to and monitors their mobilization and development across BUs. The professional development of these individuals is part of each BU’s annual business plan, further enabling the alignment of their individual objectives with the plc as a whole.

At Pacifico, competent employees are tracked and trained from a bit earlier in their career, due to the existence of the corporate-wide ‘project management certification framework’. For potential future leaders, centralized units in each GBU develop personal development plans - which are integrated with GBU annual business plans - in line with corporate objectives set.

At Cyclone, each ‘global community’ has developed standardized personal development plans, which it customizes for its individual members in collaboration with the human resource (HR) management teams of the offices and BUs employees belong. Employees are tracked and trained from the beginning of their career to better align their individual development with the long-term resources the corporation intends to develop. Career progression depends on how individuals perform against their personal development targets and this in turn is linked with the targets of the BU and ‘global communities’ they belong to.

This section’s cross-case comparison identifies that the existence of a ‘horizontal organization’ linking autonomous, yet related, BUs, allows SI to be exhibited and SA to be crafted in a manner that enables ICMs to overcome the limitations that the ‘BU-mindset’ inherent in their diversified configuration creates (Mintzberg, 1979; 1989). When accompanied by a centrally coordinated HR

management strategy, the existence of a horizontal organization can assist in better linking corporate objectives with the objectives of individual employees, improving thus the conditions through which organizational agents can effectively pursue corporate strategy execution.

The way SI is exhibited and SA crafted determines whether the organisation effectively establishes a roadmap that employees, managers and executives can each look to for guidance in daily and long-term decisions (viz. Chapter 4, Section 4.3.1). In addition, it presents a unique opportunity for each firm to integrate under all activities related to core competence development execution (viz. Chapter 4, Section 4.4). The findings from this section, complement mainstream core competence theory on ILCC and OLCC alignment (Gratton, 1996; Lahti, 1999; Gilgeous and Parveen, 2001)), by identifying structural and procedural characteristics – from the ICMs context - which actually allows for this alignment to occur. The structural and functioning similarities between ICMs, MNCs and project-based organizations (PBOs)⁷, allow generalizing these findings to MNCs and PBOs - following contextual modifications. The consequences of what has been identified in this section for the cases, for theory and for practice in general, will be revisited and discussed in light of the cross-case comparison of the remaining activities and their interrelationships, in Section 10.4 of this Chapter.

10.3.2 Regulating Strategy Implementation

The relationship between the configurations that ICMs adopt and the effectiveness with which they regulate their strategies will be addressed in this section through the cross-case comparison of the way the ICMs studied ‘regulate strategic architecture (SA) implementation’⁸.

As noted in Chapter 4 (viz. Section 4.2), in ‘cybernetic’ and ‘management control’ theory (Beer, 1959; Berry et al., 1995) terms, ‘regulating strategic architecture (SA) implementation’ routines constitute ‘feedback’ mechanisms through which management and organizational leadership can monitor strategy implementation and deal with emerging issues when necessary (Mintzberg, 1979; 1989; and in construction: Langford and Male, 2001). For the ICMs studied here, it was identified that ‘regulating’

⁷ Viz. Chapter 1, Section 1.6.1 and Chapter 2, Section 2.6, 2.7 and 2.8.

⁸ This section’s cross-case comparison draws from Sections 6.3.2, 7.3.2, 8.3.2 and 9.3.2 of Chapters 6, 7, 8 and 9 respectively.

routines fall under three categories (Table 10.3): i) reporting, ii) project selection and iii) investment selection (predominantly related to acquisitions).

Regarding 'reporting', differences were identified in the speed of 'responsiveness' they allow ICMs to changes in their markets. Aegean, Albion and Pacifico all have routines that permit them to update their strategies on a monthly and quarterly basis, whereas Cyclone - due to the corporate-wide integration of resource management and coordination - will alter them in the following annual business plan it develops. This observation concurs with mainstream strategic management literature (e.g. Chandler, 1962; Mintzberg, 1979; 1989; Bartlett and Ghoshal, 1993) in that 'divisionalization' allows diversified organizations to adapt quicker to changes in their business environment⁹. At the same time however, it does not provide any explanation, nor proposition, as to how they can avoid compromising their ability to 'proactively develop' their resources in the long term¹⁰.

Regarding 'project selection' the differences between the ICMs studied revolve around 'structural' and 'functioning' characteristics that allow them (or inhibit them from) harnessing intra-organisationally the specialised knowledge of individual employees (Grant, 1996b). Aegean does not have the intra-organizational mechanisms to do this across regions. Consequently, project selection is implemented following the input of a pool of individuals confined by the 'vertical' line of hierarchy of regional divisions. Albion faces similar issues when BUs evaluate construction-related projects, but not in the case of PPP/PFI and front-end, 'professional service' contracts. For such contracts, a centralized unit (Albion Investments and Albion Management respectively) draws and integrates corporate-wide the efforts of individual employees, on a project-basis. At Pacifico, the 'business development' divisions of each GBU are responsible for coordinating and integrating GBU-specific resources in order to evaluate project opportunities. Integration is achieved through a project-specific collaboration framework (PIVOTAL), which the business development division has the responsibility to set-up and maintain on a project-basis.

At Cyclone, the standardized - corporate-wide - process of the 'Sales-Operations-Technology' (SOT) team (viz. Chapter 9, Section 9.2.1), in combination with corporate-wide 'functional' and 'business-line' networks - both 'formal' and 'informal' - and a corporate-wide knowledge management framework, allow the

⁹ In Giddens' (1984) terms, this means that divisionalized diversified organisations can be more 'reflexive' to changes in their environment.

¹⁰ This addresses an issue that will be discussed in section 10.3.4.

Table 10.3: Regulating SA Implementation

	Aegean	Albion	Pacifico	Cyclone
Reporting	<p><i>Region-specific</i> (driven by regional finance function)</p> <ul style="list-style-type: none"> • Weekly project reporting; • Monthly reviews; • Quarterly reviews; • Annual business plan. 	<ul style="list-style-type: none"> • Weekly project reviews (<i>BU-specific</i>); • Monthly reviews (<i>Industry sector BU groups</i> – reports to SMDs discussed with CEO); • Quarterly reviews (<i>integrated by finance to update plc’s annual business plan</i>); • Four month reviews (<i>CEOs in person</i>); • Annual business review. 	<ul style="list-style-type: none"> • Reporting routines used to adjust to changes in resources allocated for the year; • Two reporting streams: ‘operations’ and ‘sales’; • Business development directors, project managers, sector managers and division managers accountable for targets set (regarding sales, projects, sectors and divisions respectively); • Project-sector-division weekly reports to GBU President (though PRISM.¹¹). • Monthly (<i>GBU executive management meetings</i>), PRISM used to link ‘execution’ and ‘BD’ reporting at a GBU-level; • Quarterly (<i>GBU-specific management meetings</i>), monthly reports integrated and submitted to corporate centre, which meets quarterly to review corporate plan. 	<ul style="list-style-type: none"> • Three reporting streams: ‘sales’, ‘execution’, ‘offices/resource centres’; • Weekly project reports to Bu directors; • Monthly BU reports on project performance and sales, integrated at an IL level (IL President, BU MDs and sales directors review how they perform against targets); • Quarterly, IL formal reports submitted to corporate centre and annual targets are re-forecast at a corporate-level; • Target changes do not lead to BU strategy changes; • In case of rapid decline in workload secured, action plans are developed and implemented by ILs and BUs to limit financial impact on ‘operating plan’.
Project Selection	<ul style="list-style-type: none"> • Project selection region-specific; • Construction division director evaluates opportunity with ‘executive management team’, but BoD has ultimate decision making authority; • “pursuing and securing projects’ function heavily involved in pre-contract award stages 	<ul style="list-style-type: none"> • Project tender review (<i>BU-specific</i>); • Transcend BUs only for PPP/PFI projects (Albion Investments) and ‘professional service’ projects (Albion Management). 	<ul style="list-style-type: none"> • Four-stage process (<i>GBU-specific</i>) • GBU business development director leads, GBU President responsible, corporate CEO or BoD depending on level of expenditure and risk. 	<ul style="list-style-type: none"> • Sales-Operations-Technology (SOT) team and ‘bid-no-bid’ review standardized processes corporate-wide, links ‘sales’, ‘operations’ and ‘global communities’, as well as ‘knowledge on-line’.
Investment Selection (Acquisitions)	<p>Ad-hoc, no standardized routines, although ‘acquiring’ has been identified as one of Aegean’s ‘dynamic capabilities’ (viz. Section 6.2.1).</p>	<ul style="list-style-type: none"> • Corporate planning and development division consults on ‘fit’ of acquisition and coordinates due diligence and pre-acquisition efforts. 	<ul style="list-style-type: none"> • Four-stage process (<i>GBU-specific</i>) • GBU business development director leads, GBU President responsible, corporate CEO or BoD depending on level of expenditure and risk. 	<ul style="list-style-type: none"> • Ad-hoc, not standardized

¹¹ ‘PRISM’ stands for ‘Parsons Resource Information Systems Management’.

corporation to harness corporate-wide the specialized knowledge of its individual members when selecting projects.

The findings regarding project selection indicate that only in the presence of i) a centrally leveraged 'horizontal organization' and ii) systematic processes designed to transfer and control resources across BUs (Melin, 1992; Markides and Williamson, 1994; Grant, 1996b), can ICMs effectively leverage intra-organizationally the knowledge of their individual members, to make better informed project selection decisions. This cross-case comparison therefore, highlights the importance of a 'horizontal organization' to maintain the 'linkages' between autonomous, yet related BUs, in order for latent economic potential of their relatedness to be actualized (Nayyar, 1992; Tsai, 2000).

Considering the significance of these findings outside the context of ICMs, it should be stressed that they exhibit the greatest potential for application for the case of project-based organizations (PBOs). The findings of this section are in line with research on that domain, particularly regarding the links across autonomous, yet related BUs, structured as project portfolios (Artto, 2002; Artto and Dietrich, 2004; Davies and Hobday, 2005)

In addition, considering the findings on project selection in light of what was observed on the influence of configurations to the speed of 'responsiveness' to market changes, it is suggested here that, although 'divisionalization' reduces response times to market changes for the ICMs studied, this might come at the cost of limiting inter-BU deployment of the specialised knowledge of individuals, who could contribute to better decisions regarding the projects the organisation pursues. It could be argued therefore that 'divisionalization' reduces the effectiveness with which the ICMs can stretch their resources to leverage their 'entrepreneurial', 'estimating' and 'relational' (regarding 'clients') core competencies (Lampel, 2001), for effective project selection. The implications of this are that 'divisionalization' does allow diversified multi-BU organisations to adapt quicker in their environment, but, may reduce their ability to make the 'best' decisions as to the direction they change towards, potentially making them vulnerable in the long run. This finding constitutes a contribution to knowledge regarding the 'applicability' of core competence theory in. It should be noted however that smaller construction firms may not have the luxury of being so proactive. More research is required to determine whether the principles can be applied similarly to

other types of project-based firms, and production oriented organizations - of the same scale and diversity as ICMs.

Third, are the routines related to 'selecting investments' and, particularly for the purpose of this study, acquisitions. At Aegean, no systematic processes exist, and in the case where a company will be acquired, the process will be managed directly by the regional executive management team concerned. At Albion a centralized unit at the plc level (the 'planning and development division') is vested with the responsibility to coordinate intra-organisationally efforts related to evaluating companies acquired, with the authority - only for this occasion - to pull human resources corporate-wide, who are considered the most knowledgeable to conduct the due diligence on the company to be acquired. Albion's planning and development division, coordinates efforts up and until the company is indeed acquired. At Pacifico, 'investment selection' processes are identical to 'project selection' processes. Finally, at Cyclone, some skills related to pre-acquisition evaluation (such as financial feasibility) are centralized under a single corporate unit called 'Investments'. However, Cyclone does not routinely acquire companies - a conscious decision of its leadership - since it prefers to organically develop the resources and technologies its core competencies are based on. Consequently, teams to evaluate and decide on potential acquisitions are created on an ad-hoc basis, are led by a senior executive and include members both internal and external to the organization.

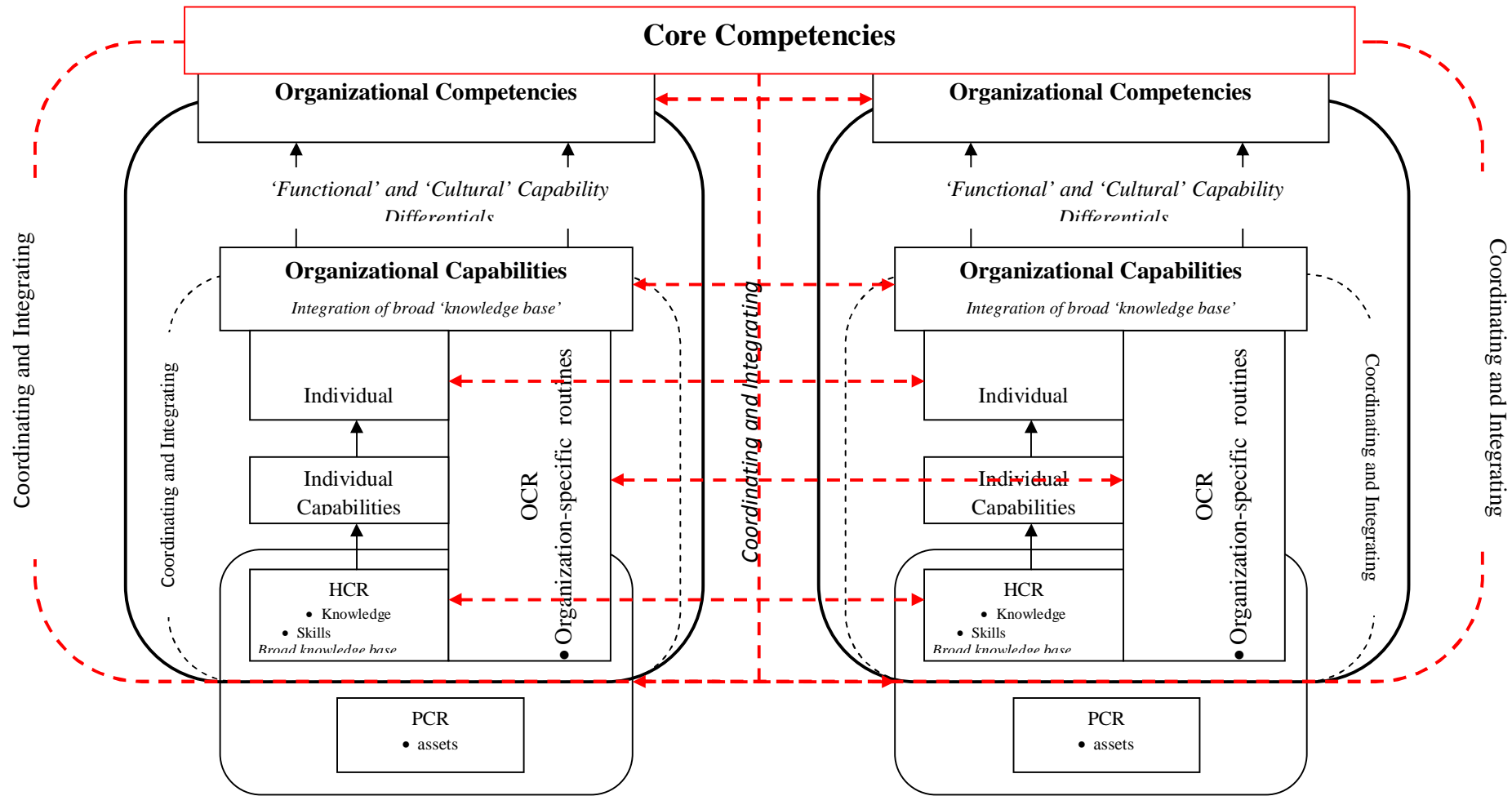
The consequences of what has been identified in this section for the cases, for practice in general and for theory, will become clearer if they are discussed in relation to how ICMs improve their business practices through self-reflective organizational learning. Therefore, the discussion of this section will be revisited and further developed in section 10.3.4 of this chapter, where the activity of 'improving business practices' will be discussed.

10.3.3 Stretching and Leveraging Resources and Core Competencies

In Chapter 3 (viz. Section 3.4), core competencies were described and positioned within an organizational context (Figure 10.1)¹². It was identified that stretching and leveraging resources and core competencies involves intra-organizational coordination at various organizational levels, in a manner that effectively facilitates:

¹² Figure 3.8, reproduced here from Chapter 3.

Figure 10.1: The New Competencies Hierarchy



Where:
 HCR = Human Capital Resources,
 OCR = Organizational Capital Resources,
 PCR = Physical Capital Resources, from Barney (1991)

Source: Author Generated

- Knowledge transfer;
- Employee mobilization;
- Process replication;
- BU-level competence integration.

Comparing and contrasting the practices of the ICMs studied¹³, both similarities and differences are identified. As expected, ‘stretch and leverage’ always involved the intra-organizational harnessing of the specialized knowledge of employees, in order to ‘replicate’ effective routines and social practices (Giddens, 1984).

In Aegean this was confined within regions, not allowing the organization to fully exploit the potential of its core competencies and the resources that constitute them. In Albion and Pacifico, effectively stretching and leveraging resources and core competencies was inhibited when it involved the collaboration of organizational members from organizational units that operated in an environment with different processes and norms. In such cases, inter-BU ‘procedural’ and ‘cultural’ differences created a ‘lack of trust’ (particularly in Albion) and absence of ‘joint-thinking’ between employees. In both companies, these problems were accentuated because of little inter-BU employee mobilization and the absence of inter-BU employee networks at the level of the operating core. Both companies managed to overcome these obstacles in the cases where they developed organizational units to actively manage inter-BU relationships. Pacifico on the one hand centralized and standardized ‘functional operations’ at a GBU-level - creating a common frame of reference for GBU employees - and established GBU-specific centralized ‘business development’ divisions responsible to coordinate and integrate organizational efforts on a project-basis. Albion on the other hand, created market-based units (Albion ‘Investments’ (e.g. Figure 10.2) and Albion ‘Management’) whose responsibility was to manage inter-BU relationships on specific types of projects where inter-BU collaboration was necessary.

The cases of Albion and Pacifico highlight the importance of actively managing inter-BU relationships for effective stretching and leveraging of resources and core competencies to occur. However, they do not provide an answer as to which are the ‘structural’ and ‘functioning’ characteristics that enable this in the case of ICMs.

An answer to this issue can be obtained if the case of Cyclone is considered. At Cyclone, a collaborative environment of joint-thinking, mutual trust and where

¹³ This section draws from sections 6.3.3, 7.3.3, 8.3.3 and 9.3.3 of case study chapters 6, 7, 8 and 9 respectively.

Figure 10.2: BU-Mindset at Albion Plc

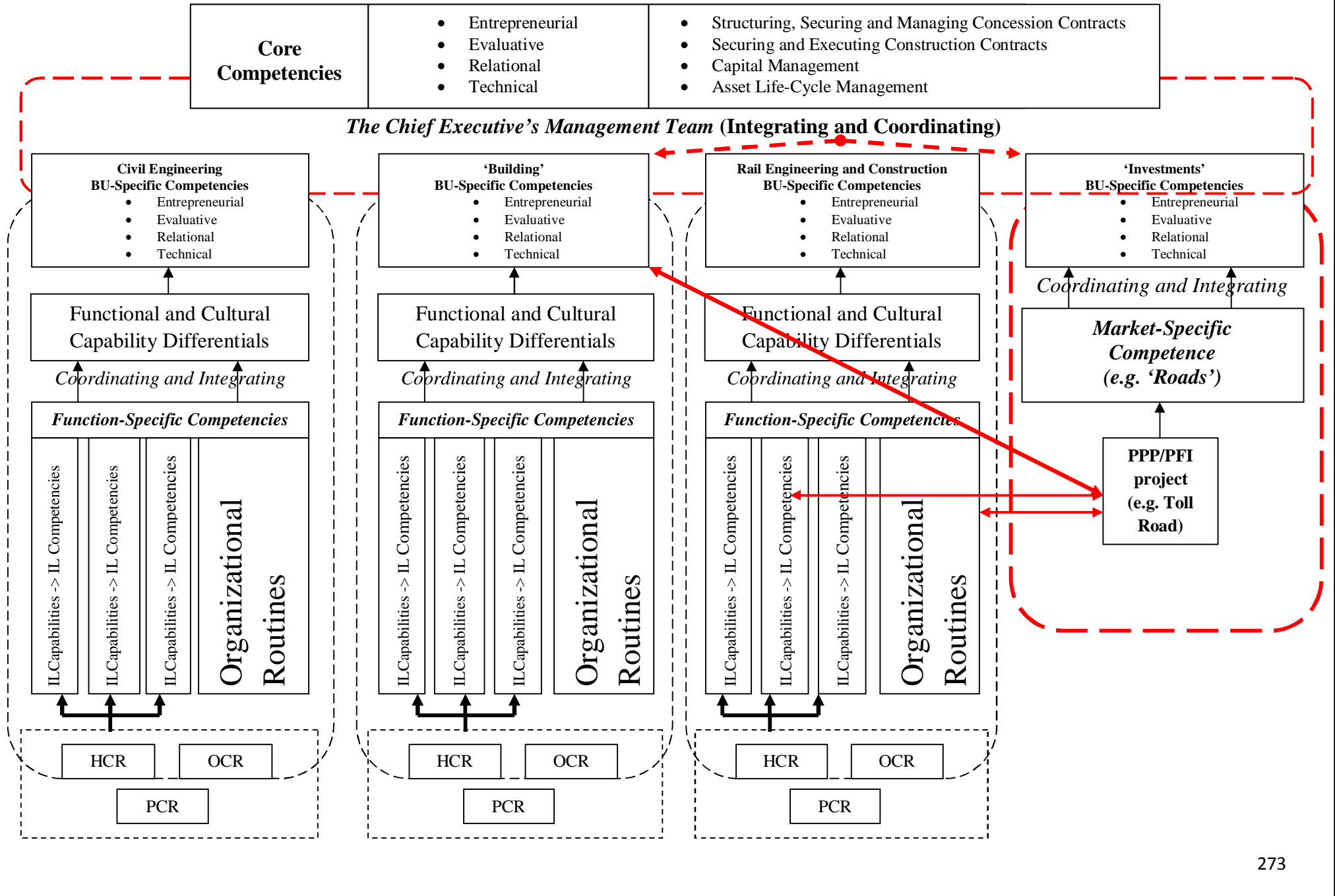
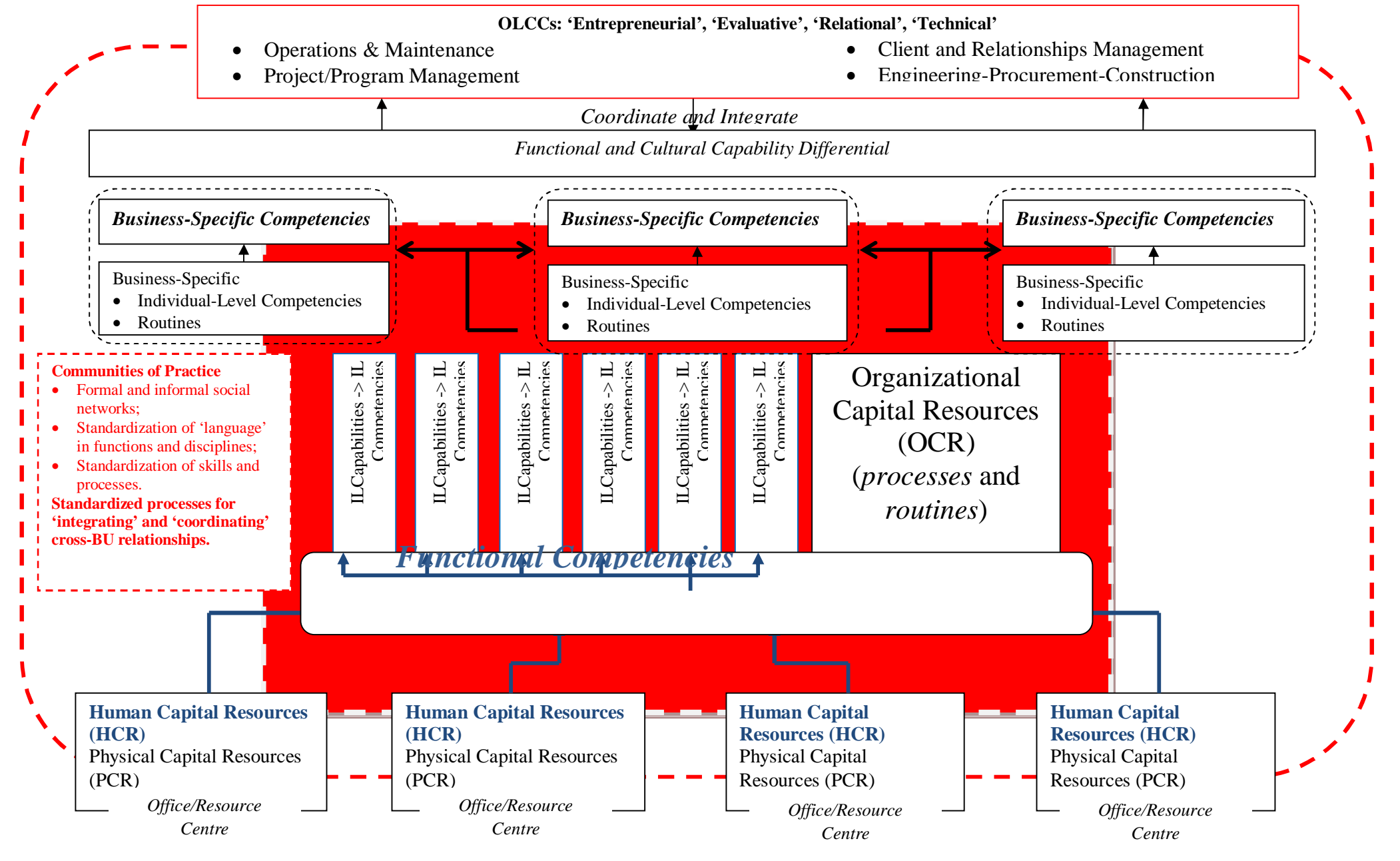


Figure 10.3: Core Competence Mindset at the Cyclone Corporation



employees are willing to learn from one another (Javidan, 1998) is enabled by an organization-specific context with the following characteristics (Figure 10.3):

- Functional resources owned by local/regional offices and shared between BUs;
- Informal cross-BU employee networks developed due to frequent employee mobilization across BUs on projects;
- Informal employee networks formalized, maintained and developed by corporate-wide ‘functional’ and ‘business’ communities of practice;
- Corporate-wide on-line knowledge databases and communication networks - maintained by a centralized ‘knowledge management’ unit, part of the corporation’s ‘global communities network’;
- Corporate-wide standardization of function-related skills and processes pursued by functional ‘global communities’;
- A corporate-wide ‘operating systems manual’ (OSM) standardizing processes and norms within BUs and across them;
- A standardised process (the Sales-Operations-Technology team) followed during both intra- and inter-BU integration and coordination of project teams.

Such a configuration enables leveraging what Lampel (2001) (viz. Chapter 3, Section 3.2.6) referred to as ‘entrepreneurial’ and ‘relational’ core competencies through a centralized ‘sales and account management’ function and what he referred to as ‘evaluative’ and ‘technical’ core competencies on a project-basis, highlighting thus specific intra-organizational ‘structural’ and ‘functioning’ characteristics through which resources and core competencies could be effectively stretched and leveraged in ICMs.

At Cyclone, the ‘structural’ and ‘functioning’ characteristics that support its ability to manage a ‘network’ of specialized practitioners in order to deliver a global offer (Langford and Male, 2001) are also what makes its competitiveness more ‘sustainable’ as they are hard for competitors to imitate. This is an issue of ‘path dependency’ (Eisenhardt et al., 1997; Helfat and Peteraf, 2003 and Tyler, 2001) and stems from Cyclone’s focus on the organic development of its capabilities and core competencies. In the words of Cyclone’s knowledge management director:

‘Cyclone had worked on employee networks for about 15 years prior to starting a formal knowledge management process, so the department managers, the experts at the different offices, they have all been collaborating for 15 years prior to starting knowledge management. Now, certainly there have been transitions and people have moved up in the organization or moved to other roles, but because of

that strong emphasis on networks I think you will find that people know their counterparts in other parts of the organization and other people in their offices, on a much higher degree that they would in many other organizations.’
(I3:JMcQ)

In light of Cyclone’s description, it can be understood why in Aegean’s, Albion’s and Pacifico’s organizational contexts of departmentalization, divisionalization and lack of a corporate-wide horizontal organization to link distinct, yet related, organizational units:

- Corporate-wide stretch of resources cannot be effectively achieved on occasions and the knowledge of individuals who embody the human, intangible element of their organization’s core competencies can be confined within the units they belong;
- Conflicts may arise during intra-organizational collaboration, due to differing ‘cultures’ and ‘norms’ across BUs;
- Effective routines and social practices through which core competencies are deployed cannot - on occasions - be reproduced in different localities.

The findings from this section’s cross-case comparison concur with core competence theory postulations derived from research on production-oriented industries (Prahalad and Hamel, 1990; Hamel and Prahalad, 1994; Fairtlough, 1994 and Higgins, 1996), in that effective manifestation and deployment of core competencies necessitates communication across BUs, involvement and a deep commitment working across boundaries. This suggests that core competence theory principles regarding ‘stretch and leverage’ can be applied in an additional industry context, which contributes to the overall strength and breadth of application of core competence theory.

In addition, this section has highlighted the positive influence of actively managing inter-BU relationships and employee networks on the effective stretching and leveraging of resources and core competencies. This finding concurs with organisation theory on multi-BU firms (e.g. Ghoshal and Bartlett, 1990; Nayyar, 1992; Tsai, 2000), in that relationships between BUs need to be actively managed for the latent economic benefits of related diversification to be actualised. Moreover, it concurs with findings of organization theory of ‘network-based’ multinational corporations (MNCs), regarding the following issues:

- A shared ‘vision’, ‘values’ and ‘norms’ between BUs are positively related to resource exchange and combination across BUs (Tsai and Ghoshal, 1998);
- Inter-BU networking among managers increases the quality of intra-organizational communication (Ghoshal et al., 1994) and the effectiveness of sourcing and transferring knowledge and critical competencies (Ghoshal and Bartlett, 1990; Tsai, 2000);
- Social interaction, trust and social capital developed in inter-BU networks facilitates inter-BU collaboration within diversified organisations (Tsai and Ghoshal, 1998);
- Knowledge existing in one BU may not be harnessed by another BU of the same organization (Tsai, 2000) due to a lack of ‘motivational disposition’ (Gupta and Govindarajan, 2000).

Finally, findings suggest that ‘resource ownership’ is linked with the disposition to share resources (intra-regionally at Aegean, intra-BU at Albion - except in the case of Albion Investments and Albion Management - intra-GBU at Pacifico and corporate-wide at Cyclone), concurring with earlier findings in the field of organization theory (Pfeffer and Salancik, 1978; Pfeffer, 1981), which have shown that organizational processes are contingent upon the ‘internal distributions’ of organizational resources.

All of the above suggests that the branch of organization theory developed by conceptualizing MNCs as ‘network-based’ organizations could have significant application potential to construction organisations such as ICMs. Vice versa, research on ICMs can find application in the field of mainstream strategic management, which examines issues of intra-organizational collaboration and coordination in MNCs.

Finally, the findings of this section constitute a major advancement in the field of project-based management, as they identify particular organizational characteristics through which knowledge can be diffused across projects and portfolios of projects (Arto and Dietrich, 2004), without interfering with project management practices nor disrupting the existing organization’s power-knowledge balance (Bresnan et al., 2005).

10.3.4 Organizational Transformation through Learning

In Chapter 4 (viz. Sections 4.2 and 4.3.1), it was proposed that for any organization to be able to effectively develop its core competencies, it would have to

have established mechanisms through which it can reconfigure its structure and processes and re-negotiate organizational norms, as a result of experiential learning. Drawing from project-based theory (Davies and Brady, 2000; Prencipe and Tell, 2001; Brady and Davies, 2004), the importance of organizational learning mechanisms (OLMs) that allow organizations to systematically collect, analyze, store and disseminate information in order to avoid knowledge and experience gained at projects being lost was highlighted. The characteristics of the ICMs studied in this research with respect to the mechanisms they have in place for improving their business practices, are summarized and contrasted on Table 10.4¹⁴.

Stark differences are identified across cases. At Aegean, the absence of OLMs allows to suggest - from theory (Prencipe and Tell, 2001) - that this ICM is not well configured to select successful routines and/or generate new ones as a function of experiential learning. At Albion, the responsibility for what Brady and Davies (2004) initially described as 'project-led learning' falls in the hands of project managers who may be undertaking knowledge management responsibilities in addition to their role. The 'risk and opportunity management framework' and the 'internal audit function' (both part of Albion's 'assurance framework'¹⁵) could incidentally lead to the improvement of existing routines or the development of existing ones. However, neither functions are implemented systematically with that objective in mind, nor a horizontal organization exists across BUs to allow communication and dissemination of any improvements. Improving business practices becomes therefore the responsibility of centralized corporate functions, which, however, have no authority over BUs and are in no position to impose, or effectively diffuse improvements to the BUs. This, combined with the fact that embedding change in project-based organizations is difficult as it: i) interferes with project management practices and ii) disrupts the existing organisational power-knowledge balance (Bresnan et al., 2005), indicates that Albion is not well configured to 'improve its business practices' as a function of experiential learning.

At Pacifico, individual project team-members identify and record knowledge created at projects related to their discipline. They communicate this, informally, up the hierarchy, and functional directors are responsible for updating at the end of each year the 'operating manual' of their function. These improvements however, remain GBU-specific. The only exception is project management practices, the upgrading of which is

¹⁴ This section is based on the comparison of sections 6.3.4, 7.3.4, 8.3.4 and 9.3.4 of Chapters 6, 7, 8 and 9 respectively.

¹⁵ Viz. Chapter 7, Section 7.2.1

Table 10.4: Improving Business Practices

		Aegean	Albion	Pacifico	Cyclone
<i>Project-led learning</i>	<i>At projects</i>	<ul style="list-style-type: none"> No mechanisms; 	<ul style="list-style-type: none"> Ad-hoc; More frequent in large (e.g. PFI) projects; Responsibility of project managers; Knowledge captured and recorded in project-specific intranets. 	<ul style="list-style-type: none"> Knowledge captured in client-specific databases (PIVOTAL); Functional members informally communicate knowledge captured to their managers. 	<ul style="list-style-type: none"> 'Capturing lessons learned' is a program implemented at all projects; Value awareness coordinators are responsible to capture and record knowledge (in 'knowledge on-line' of global communities).
	<i>Project-to-organization</i>	<ul style="list-style-type: none"> Informally through information that moves up the management hierarchy (region-specific). 	<ul style="list-style-type: none"> Informally through information that moves up the hierarchy of BUs (BU-confined); Issues identified discussed between BU MDs and SMDs at 'monthly reviews'; Risk and opportunity management framework may capture (from the BUs it is applied) knowledge at the corporate-centre. 	<ul style="list-style-type: none"> Functional directors responsible for updating annually the practices of their discipline (GBU-specific); 	<ul style="list-style-type: none"> 'Global community leaders' update discipline-oriented practices in collaboration with community 'subject-matter experts';
<i>Business-led learning (diffusing knowledge to BUs and projects)</i>		<ul style="list-style-type: none"> Informally and ad-hoc, through executive authority of management. 	<ul style="list-style-type: none"> Ad-hoc through management hierarchy; Routinely through annual fora, organized by some corporate functions: <ul style="list-style-type: none"> mostly US and UK BUs participate; corporate functions have no authority to improve changes. 	<ul style="list-style-type: none"> Functional directors responsible for updating annually the practices of their discipline (GBU-specific); 	<ul style="list-style-type: none"> Implemented by way of compliance to the corporate-wide OSM; Global community leaders and subject-matter experts are part of executive management and therefore have authority to implement changes.
<i>Re-negotiation of organizational norms</i>		<ul style="list-style-type: none"> Through 'reflection' during 'regulating SA implementation routines; Following informal communications at regional strategic apexes; Changes 'region-specific'; Through strategic reviews. 	<ul style="list-style-type: none"> Through reflection during 'regulating SA implementation (BU-specific); Corporate centre functions advise on improvements but have no authority over implementation; Through strategic reviews. 	<ul style="list-style-type: none"> Through reflection during 'regulating SA implementation (GBU-specific); Through informal communication between sector, division, operation and BD directors; Through strategic reviews. 	<ul style="list-style-type: none"> Through reflection during 'regulating SA implementation (GBU-specific); Through strategic reviews; Through on-going negotiation within global communities of practice; Through the annual updating of the OSM.
<i>Reconfiguration of structural properties</i>		<ul style="list-style-type: none"> Through exhibiting SI and crafting SA routines; 	<ul style="list-style-type: none"> Through exhibiting SI and crafting SA routines; Updating BU-specific business manuals. 	<ul style="list-style-type: none"> Through exhibiting SI and crafting SA routines; Updating GBU-specific policy manuals. 	<ul style="list-style-type: none"> Through exhibiting SI and crafting SA routines; Updating corporate-wide and IL-specific OSM.

the responsibility of the ‘project management certification program’, also responsible for updating Pacifico’s ‘global project management handbook’. This corporate-wide application made it easier to enforce the application of improved project management practices, overcoming some of the obstacles theory (Bresnan et al., 2005) has found are faced by project-based organizations. In addition, ‘PIVOTAL’ (the project-specific on-line communication tool and knowledge database) may act as a database where knowledge created can be recorded. However this is again confined within the boundaries of GBUs, another testament to the BU-mindset (Prahalad and Hamel, 1990) that Pacifico’s divisionalized configuration creates. In the absence of a horizontal organization to diffuse across autonomous organizational units knowledge created and successful routines identified, the ability of Pacifico to reconfigure corporate-wide its social practices and potentially ‘structural properties’ (Giddens, 1984) can be expected to suffer.

Finally, at Cyclone, OLMs are integrated with operating procedures (the ‘value awareness program’ and ‘capturing lessons learned’¹⁶) and more importantly, with routines for regulating strategic architecture implementation. At the project-level, the value awareness coordinators are appointed to manage the process. Lessons captured are ‘integrated’ in Cyclone’s reports and uploaded to the on-line body of knowledge of the ‘communities’ that they relate to. Community practices, in turn, are systematically monitored and evaluated by community leaders and subject matter experts, who decide whether they should be disseminated corporate-wide. Knowledge managers at the global communities are responsible for updating functions and BU-related processes and make them available corporate-wide to employees through access to the on-line community databases. The existence of corporate-wide communities, each having the authority to standardize ‘processes’ and ‘skills’ related to their body of knowledge, make their diffusion easier, as they are in a position to exert authority over Cyclone’s operating core. Furthermore, improvements could also come from the routine reviews global communities go through to update their practices. As community leadership consists of individuals who are at the same time part of the upper middle management and strategic apex of their organization, the process also provides scope for the improvements made in practices to lead to renegotiation of organizational norms and potentially changes in Cyclone’s ‘structural properties’ by updating the corporation’s ‘operating systems manual’ (OSM). Finally, improvements could come from executive

¹⁶ Viz. Chapter 9, Section 9.3.4.

management reviews, which form part of ‘reporting’ routines identified in Section 10.3.2. During these reviews, informed decisions are made to improve processes, structure and norms of the organization. These are then made explicit through updating the corporation’s OSM.

What this section’s cross-case comparison identifies, is that the ability of the ICMs studied to re-negotiate their organizational norms and reconfigure their social practices and structural properties as a function of organisational learning, seems to diminish when:

- No mechanisms exist to capture, store, analyze and disseminate information and knowledge created through experiential learning - as management and organizational leadership will re-evaluate the effectiveness of routines, norms and social practices not based on ‘informed awareness’, but on their ‘subjective’ perception of reality, which may be detached from the reality of their organization’s operating core¹⁷;
- No mechanisms exist to disseminate knowledge created across autonomous BUs inhibiting what Brady and Davies (2004) referred to as ‘project-led’ learning¹⁸;
- BUs possessing the knowledge related to improvement in routines could not diffuse it to other BUs (e.g. as in the case of the ‘risk and opportunity management framework’ at Albion and its relationship with Albion Dubai and Albion Hong Kong), because of a) lack of authority and b) lack of ‘motivational’ disposition on the part of the receiving BU to receive it.
- ‘Regulating strategic architecture implementation’ routines are not integrated with ‘improving business practices’ routines¹⁹.

The findings of this section find particular application in the case of project-based organizations (PBOs). In fact, they complement and extend the works of Brady and Davies (2000), Prencipe and Tell (2001), Davies and Brady (2004 and Davies and Hobday (2005), by identifying organization-specific mechanisms through, which not only ‘project-led’, but also business-led learning²⁰ can take place in multi-BU PBOs. In

¹⁷ e.g., Aegean, viz. Chapter 6, Section 6.3.4

¹⁸ As in Aegean (Chapter 6, Section 6.3.3 and 6.3.4), Albion, (Chapter 7, Section 7.3.3 and 7.3.4) and Pacifico (Chapter 8, Section 8.3.3 and 8.3.4)

¹⁹ As in Aegean (Chapter 6, Sections 6.3.2 and 6.3.4), Albion (Chapter 7, Sections 7.3.2 and 7.3.4) and Pacifico, (Chapter 8, Sections 8.3.2 and 8.3.4)

²⁰ Viz. Chapter 3, Section 3.2.2.3 and Chapter 4, Section 4.3.5

addition, the multi-BU context of ICMs expands the range of the application of findings to the field of MNCs.

Finally, the observation that the integration of ‘organizational learning’ with ‘reporting’ mechanisms (viz. Cyclone) influences the effectiveness with which ICMs can transform through learning, is in itself a significant contribution to knowledge. This ‘integration’, lends support to Band and Scanlan’s (1995) theoretical postulations - from core competence theory - that pursuing core competence development is an effective means for ‘controlling’ the strategy process, as it links business strategy with organizational learning.

10.3.5 Developing Managerial and Organizational Leadership Capacity

As noted in Chapter 4 (viz. Section 4.3.5), effective managerial and leadership development programs should be oriented towards the development of ‘social capital’ of managers and leadership, built in inter-BU social networks that foster an environment of ‘mutual trust’, ‘joint-thinking’ and a ‘willingness to learn from one another’ (Penrose, 1959; 1995; Javidan, 1998; Chinowsky and Meredith, 2000; Drath, 2000; McCawley, 2000; Rothwell, 2006). It is management and leadership with ‘social capital’ that can effectively manage intra-organizational relationships and steer the organization towards the achievements of its objectives²¹.

Contrasting the ICMs’ characteristics (Table 10.5)²², the following can be observed. At Aegean’s, no systematic processes exist to identify, track and train competent employees, let alone structured ‘succession planning’ and ‘leadership development’ frameworks to develop them. The process is informal and happens on the job. This carries the risk of management and leadership not being developed based on objective criteria, but based on the subjective criteria and motives of their superiors (Rothwell, 2006). Second, there are no social networks such as communities of practice (Wenger 1998; Wenger and Snyder, 2000), which can contribute to the development of ‘intra-personal’ competencies and the social capital of employees.

²¹ Viz. Chapter 4, Section 4.3.5.

²² This section draws from sections 6.5, 7.4.5, 8.4.5 and 9.4.5 of Chapters 6, 7, 8 and 9 respectively.

Table 10.5: Developing Managerial and Organizational Leadership Capacity

	Aegean	Albion	Pacifico	Cyclone
<i>Structured 'Succession Planning' and 'Leadership Development' Programs</i>	<ul style="list-style-type: none"> • No structured framework; • Region-specific responsibility to develop. 	<ul style="list-style-type: none"> • Structured leadership development - corporate responsibility. • Leadership skills standardized 	<ul style="list-style-type: none"> • Two tier system <ul style="list-style-type: none"> - Potential leadership (GBU-specific); - Executive leadership (corporate responsibility); 	<ul style="list-style-type: none"> • Structured leadership development and succession planning framework • Development direction given by functional and business communities, resources provided by offices
<i>Employee Social Networks</i>	<ul style="list-style-type: none"> • Region-specific at operating core and middle management levels, group-wide at strategic apex; • Little cross-regional employee mobilization • Networks informal, based on employees' career paths. 	<ul style="list-style-type: none"> • Responsibility to develop individuals BU-specific; • Potential leadership mobilized corporate-wide for individual level core competence and social capital development; • Networks BU-specific • Weak cross-BU informal networks, facilitated mainly by corporate functional fora. 	<ul style="list-style-type: none"> • Potential leaders mobilized across divisions and GBUs for individual level core competence leverage and social capital development. • GBU-specific functional networks; 	<ul style="list-style-type: none"> • Potential leadership mobilized corporate-wide and given stretch positions of dual responsibilities. • Social capital development inherent in global communities and organizational culture.

At Albion, a centrally coordinated ‘succession planning’ framework is in place (viz. Chapter 7, Section 7.3.5), which actively promotes the mobilization of competent employees in positions of responsibility across BUs and sector groupings. However, not only formal and informal networks this could facilitate are limited by the autonomy of BUs and the plc’s decentralized nature, but case evidence related to another activity (viz. Chapter 7, Section 7.3.3) indicates that ‘trust’ between employees who work across different BUs is low. The consequences for Albion is that it lacks the social networks at a middle management level to enable the development of the social capital of its employees, who are in turn perpetuating the BU-mindset (Prahalad and Hamel, 1990) inherent in ‘divisionalized’ configurations.

At Pacifico, mobilization of employees across market-focused sectors and divisions is frequent, but confined within GBUs. Informal networks between employees exist, however, they remain largely GBU-specific. In the case of Pacifico, there is evidence from the examination of ‘stretching and leveraging resources and core competencies’ (viz. Chapter 8, Section 8.3.3), to indicate that this is responsible for the development of GBU-specific cultures, which create conflicts between ‘operating core’ and ‘lower middle-management’ employees working for different GBUs.

At Cyclone, the global communities facilitate formal and informal corporate-wide employee networks and contribute to the corporate-wide mobilization of employees from early on in their career. Hence, a horizontal organization is set-up by design at Cyclone, to effectively facilitate the development of social capital of employees. In addition, a corporate-wide ideology built on the corporate-wide standardization of processes, skills and norms, pursued by global communities and a corporate-wide ‘operating systems manual’ (OSM), contribute to an organizational environment where theory (Giddens, 1984; Wenger and Snyder, 2000) would suggest individual employees can shape their identity and influence the identity of their networks. Furthermore, the corporation’s leadership development practices are a corporate-wide responsibility, involving a cohort of BU heads working horizontally across the organization, and the routines through which it is implemented are embedded within the configuration’s operating procedures. Cyclone’s leadership development program leverages inter-BU sharing of resources to choose the individuals who show leadership potential and utilize their skills while simultaneously offering them opportunities for personal growth.

The findings of this section’s cross-case comparison suggest that the less ‘divisionalization’ inherent in the diversified configuration, coupled with a corporate-

wide horizontal organization that enforces corporate-wide uniformity in business and functional processes, the greater would be the:

- centralization of human resource coordination;
- inter-BU employee mobilisation leading to stronger informal networks between employees;
- ‘social capital’ developed by management and organizational leadership.

Consequently, the greater would be the effectiveness with which the organization will develop its managerial and organizational leadership capacity.

These findings, drawn from the ICMs’ context, constitute contributions to the strategic management of large construction groups, as they identify organization-specific characteristics that allow leadership with desirable qualities to be developed. They complement particularly the work of Chinowsky and Meredith (2000), who stressed the importance of organizational leadership for effective core competence development for the case of engineering and construction organizations.

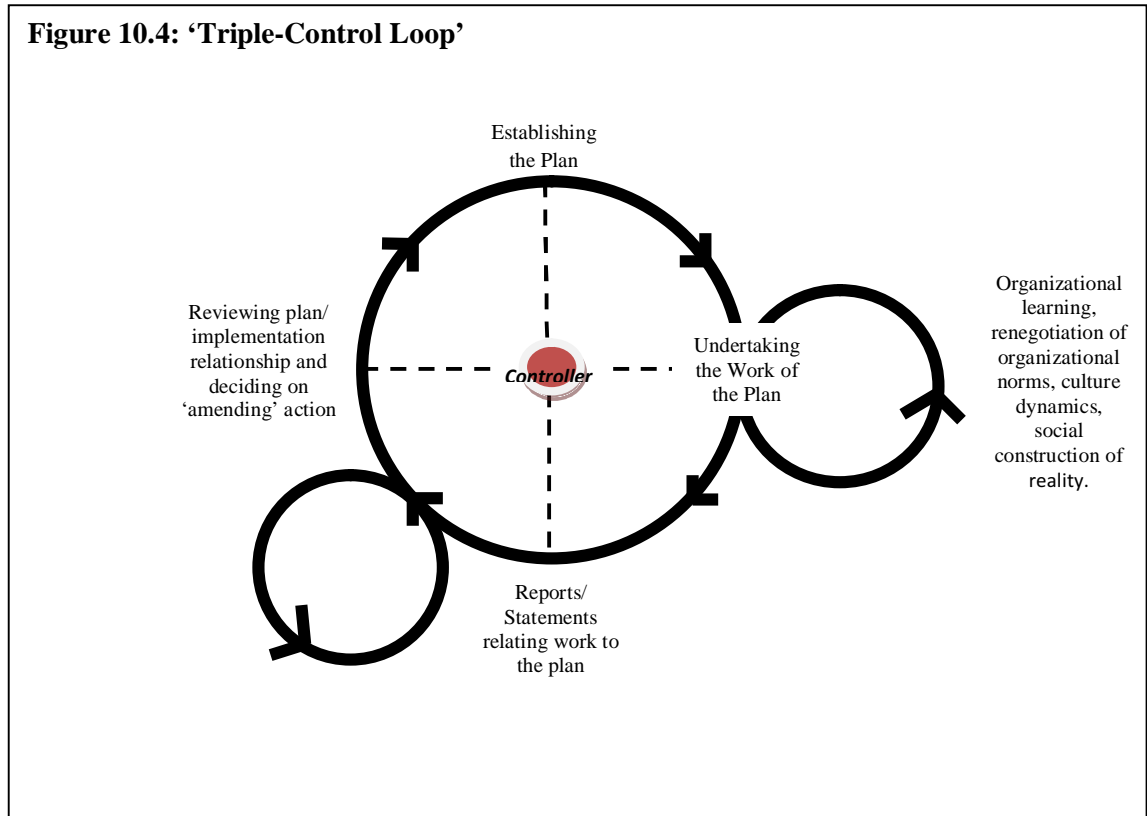
In addition, they lend support - and provide additional and enhanced empirical evidence from the ICMs’ context - to core competence theory research (Gratton, 1996; Capelli and Heffer, 1996 and Hagan, 1996) regarding the significance of human resource management tools in the effective development of organizational leadership and consequently, core competence development.

Finally, due to the ICMs’ nature as organizations, these findings may apply to the strategic management of multi-BU organizations, such as MNCs, as well as the management of project-based organizations in general.

10.4 Interrelationships between Activities

In Chapter 4, core competence development was described as a ‘triple-control loop’ strategy process (Figure 4.5, reproduced here as Figure 10.4). Subsequently (viz. Chapter 4, Section 4.4), it was proposed that the effectiveness with which ICMs can develop their core competencies is not only a function of how effectively they can execute each core competence development activity, but also of how ‘enabling’ their configuration is in effectively integrating and managing interrelationships between the five activities (Figure 10.5). Along those lines, this section will compare and contrast across cases ‘whether’ and ‘how’ this takes place in the ICMs studied

Figure 10.4: 'Triple-Control Loop'

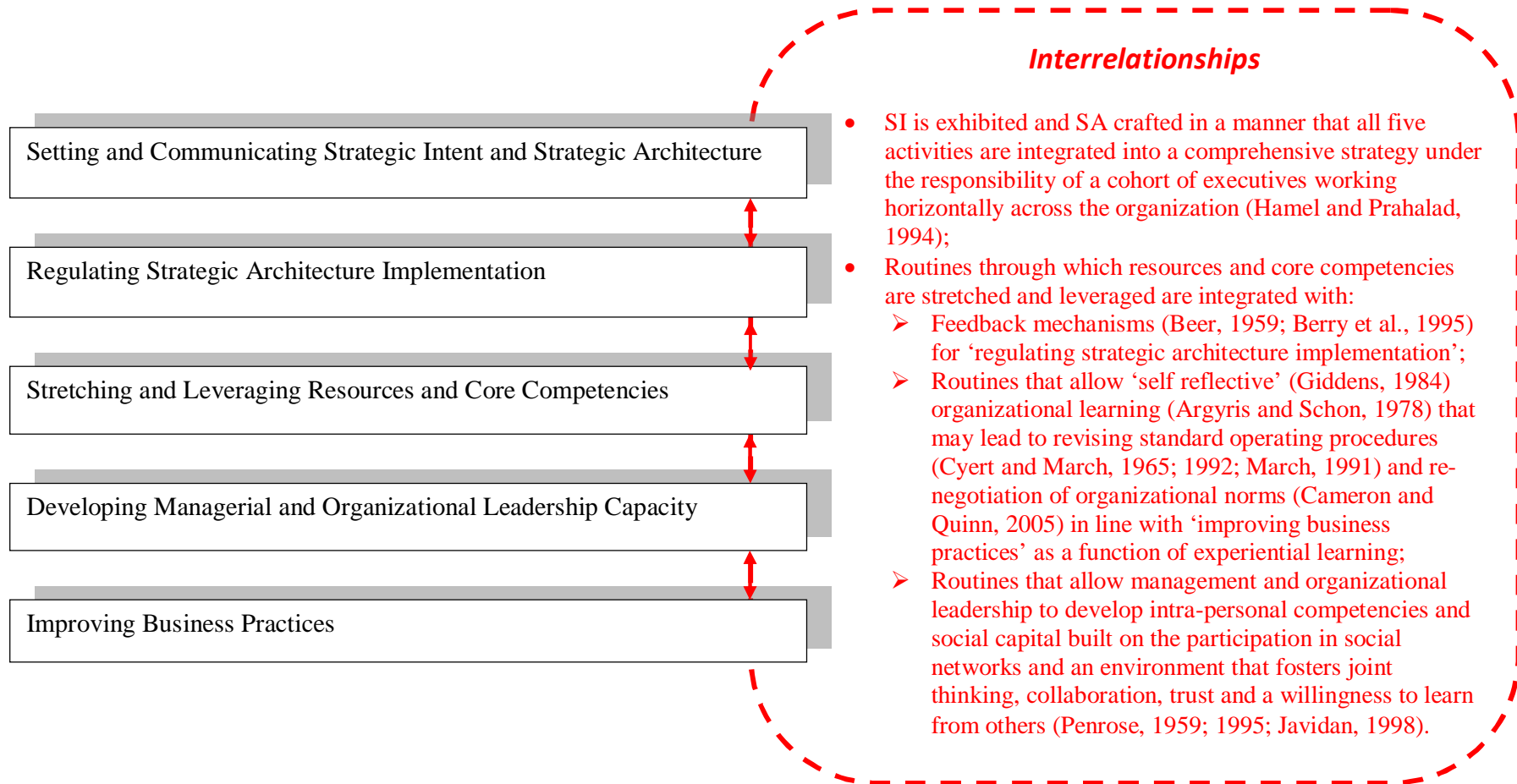


In Aegean, 'exhibiting SI and crafting SA' occurs independently in the two regions the group is active in. Consequently, two simultaneous, loosely interdependent SIs are exhibited and SAs are crafted. Within each region, 'exhibiting SI and crafting SA' is integrated with routines for 'regulating SA implementation' - through the 'annual business plan' routine (viz. Chapter 6, section 6.3.1). This allows management to establish feedback mechanisms in order to regulate strategy execution in line with corporate objectives, integrating emerging with intended issues when necessary. However, Aegean lacks:

- A horizontal organization connecting the two regions;
- Institutionalized structures and systematic processes that can put experiential knowledge in future use by capturing and disseminating it corporate-wide;
- Systematic processes to track, monitor and train competent employees.

Consequently, core competence development activities are not - and cannot, without structural and functioning alterations - be integrated and managed by a cohort of executives as a uniform, comprehensive corporate strategy.

Figure 10.5: Interrelationships between Activities



Source: Author Generated

In Albion, SI is exhibited and SA crafted in a more ‘centralized’ manner at the plc level by the organization’s executive management team and BoD. Similarly to Aegean, in Albion, ‘exhibiting SI and crafting SA’ routines link with ‘regulating SA implementation’ routines, in this case through ‘setting the annual business plan’²³. The development of managerial and organizational leadership capacity is also integrated in the strategy process through that routine and is pursued - across BUs - by corporate ‘succession planning’. Consequently, the ‘development of managerial and organizational leadership capacity’ can be monitored and regulated in line with strategy execution. Provisions for stretching and leveraging resources and core competencies as part of ‘exhibiting SI and crafting SA’ are made, albeit only as part of the strategies set by BUs with authority to manage intra-organizational (inter-BU) relationships (i.e. Albion ‘Investments’ and Albion ‘Management’). As evidenced from the case study, this could lead to ineffective stretch and leverage between construction-related BUs, due to poor inter-BU relationships and the lack of ‘trust’ between employees. Finally, the absence of systematic processes to store, analyze and disseminate knowledge captured at projects, indicates that Albion has not integrated, and therefore cannot conduct in line with its corporate strategy, routines through which it can improve business practices.

At Pacifico, ‘exhibiting SI and crafting SA’ is undertaken by the leadership of each of the corporation’s four GBUs independently, and then integrated at a corporate level for consistency. Within Pacifico, GBU-specific provisions are made regarding:

- Stretching and leveraging resources through routines integrated with ‘regulating SA implementation’;
- Developing managerial and organizational leadership capacity through routines integrated with ‘stretching and leveraging’ resources and core competencies and ‘regulating SA implementation’.

In addition, SA crafted makes provisions for ‘routines’ through which knowledge and experience gained at ‘projects’ is captured and stored in project/client-specific databases (PIVOTAL), to be integrated with the routines related to ‘stretching and leveraging resources and core competencies’. However, in the absence of:

- Systematic processes to communicate this knowledge at higher hierarchical levels (i.e. project-to-organization learning (Brady and Davies, 2004));

²³ Viz. Chapter 7, Section 7.3.1.

- Cross-divisional ‘structures’ and ‘processes’ to disseminate and make it accessible to other projects (i.e. project-to project learning, (Brady and Davies, 2004)) undertaken for other clients, both within and across GBUs,

Pacifico’s configuration does not enable management and organizational leadership to integrate routines for the improvement of its business practices as part of its corporate strategy.

Finally, at Cyclone, ‘SI exhibited and SA crafted’ allows the integration of all corporate-level core competence development activities under the responsibility of a group of corporate officers working horizontally across the organization. Cyclone is able to achieve this by ‘horizontally decentralizing’ resource-allocation authority between offices/resource centres, a professional and bureaucratic techno-structure (i.e. the ‘global communities network’) and BUs. The fact that ‘global community’ members and leadership are at the same time part of the corporation’s executive management, contributes to the successful operationalization of this arrangement²⁴.

Within Cyclone’s context, when SI is exhibited and SA crafted, provisions are made for ‘human’ and ‘procedural’ development issues to be incorporated into the strategy process, as well as for feedback mechanisms to be established to regulate their implementation in line with corporate objectives and corporate strategy execution. Standardized corporate-wide practices for integrating project teams (the Sales-Operations-Technology (SOT) team) ensure that strategy objectives are pursued while resources and core competencies are stretched and leveraged at projects.

Within that context, Cyclone has also integrated with its corporate strategy, mechanisms that link projects with the ‘middle line’ and the ‘strategic-apex’ of the organization, through which:

- Knowledge created can be captured, stored and disseminated corporate-wide, in a manner that may lead to the improvement of practices, the re-negotiation of organizational norms and potentially the re-configuration of its structural properties;
- Management and leadership is developed with the necessary qualities to support the corporation’s core competence development efforts and existing core competencies;

²⁴ At Cyclone therefore, the ‘role’ of different organizational parts does not fit neatly within Mintzberg’s (1979; 1989) theoretical descriptions, where ‘analysts’ of the organization’s techno-structure are not involved in management execution.

From this section's cross-case comparison, it is demonstrated that the configuration ICMs adopt has a clear influence on whether they can integrate core competence development activities and control them as a 'triple control loop' process. In addition, it identifies 'structural' and 'functioning' characteristics that could facilitate 'activity integration' and management of activity interrelationships. These are:

- Shared resource ownership between BUs;
- Lateral links across BUs at various hierarchical levels for:
 - Corporate-wide consensus of corporate objectives to be built.
 - Visibility and accessibility of resources and core competencies to exist during strategy implementation;
- Lateral links across BUs for corporate-wide resource coordination and mobilization;
- Standardisation of processes through which 'succession planning' and 'leadership development' can take place;
- Standardisation of systems to capture knowledge created at projects, and communicate them 'vertically' up the organization's hierarchy, and 'horizontally' across BUs.

This section's comparison contributes to our knowledge regarding the strategic management of ICMs. In the 'strategic management in construction' tradition of Langford and Male (1991; 2001), Male and Stocks (1991) and Chinowsky and Meredith (2000), this section identifies organization-specific characteristics that enable ICMs to effectively execute their strategies through core competence development. In addition, this section identifies specific structural and functioning organizational characteristics which allow Band and Scanlan's (1995) theoretical postulation (that pursuing core competence development is an effective means for 'controlling' the strategy process) to be applied in practice. Finally, considering the ICMs' project-based nature and their similarities with MNCs and PBOs (viz. Chapter 2, Sections 2.6-2.8), it could be argued that this section's findings can find application - following 'contextual' modifications - to the case of MNCs and PBOs. Considering all of the above, this section's findings contribute to our understanding of the organizational characteristics which enable core competence development to be effectively pursued.

10.5 Configurations of ICMs and their Potential for Effective Core Competence Development

The purpose of this research has been to conduct an exploratory study in order to examine the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies. The focus has been on the 'relationship' and the identification of potential causal links. Following the ICMs' cross-case comparison in sections 10.2 to 10.4, the purpose of this section is to highlight and propose - in line with this research's epistemological approach of critical realism²⁵ - 'structural' and 'functioning' characteristics that could 'empower' effective core competence development in ICMs.

From the cross-case comparison, it emerged that the configurations of Aegean, Albion and Pacifico, reduce their capacity to effectively control core competence development. Cyclone on the other hand has developed a configuration that 'enables' organizational agents to effectively do so. Similar characteristics to Cyclone's are shared by the other three ICMs (i.e. some form of horizontal organization linking autonomous organizational units, some type of techno-structure that pursues process and skills standardization, some extent of standardization of norms), but not to the extent that they can create an organizational context that 'empowers' organizational agents to effectively develop their organisation's core competencies.

Cyclone's case study in particular has allowed the identification of 'structural' and 'functioning' characteristics, whose presence is a condition that enabled this ICM to overcome the obstacles faced by the other three ICMs studied²⁶. These conditions stem from the principle of 'resource ownership and sharing' that Cyclone adheres to. Human resources (in which core competencies are ultimately embodied) are owned by 25 local/regional offices/resource centres around the world. On these offices, corporate-wide functions are superimposed, which operate as global communities of practice. Each is responsible for establishing corporate-wide the standardization of related skills and processes. Offices facilitate at the same time the operations of more than one BU, which share between them functional resources. This leads to the development of informal, inter-BU social networks between employees, from as low as the level of the corporation's operating core. On top of these networks, 'global

²⁵ Viz. Chapter 5, Section 5.2.1

²⁶ This does not mean that internal conflicts and tensions do not exist at Cyclone, but rather than institutional mechanisms and outlets exist to better manage them and diffuse them.

communities' maintain the on-line tools to facilitate direct communication between employees, making their knowledge accessible corporate-wide. To deal with conflicts that may arise due to BU-specific cultures, the corporation has developed a corporate-wide 'operating systems manual' that all BUs must adhere to, standardizing thus norms across autonomously operating managerial clusters within it. Finally, to better control the corporate-wide deployment and integration of its resources, Cyclone has standardized the processes - as well as the roles and responsibilities of individuals involved in their implementation - through which project teams are fused and operate throughout the life-cycle of projects the corporation pursues and undertakes, through what is known in Cyclone as the process of the 'Sales-Operations-Technology' (SOT) team. Having developed these structural and functioning characteristics, Cyclone has managed to overcome the BU-mindset inherent in diversified configurations and stretch and leverage its resources and core competencies more effectively than the other three ICMs studied.

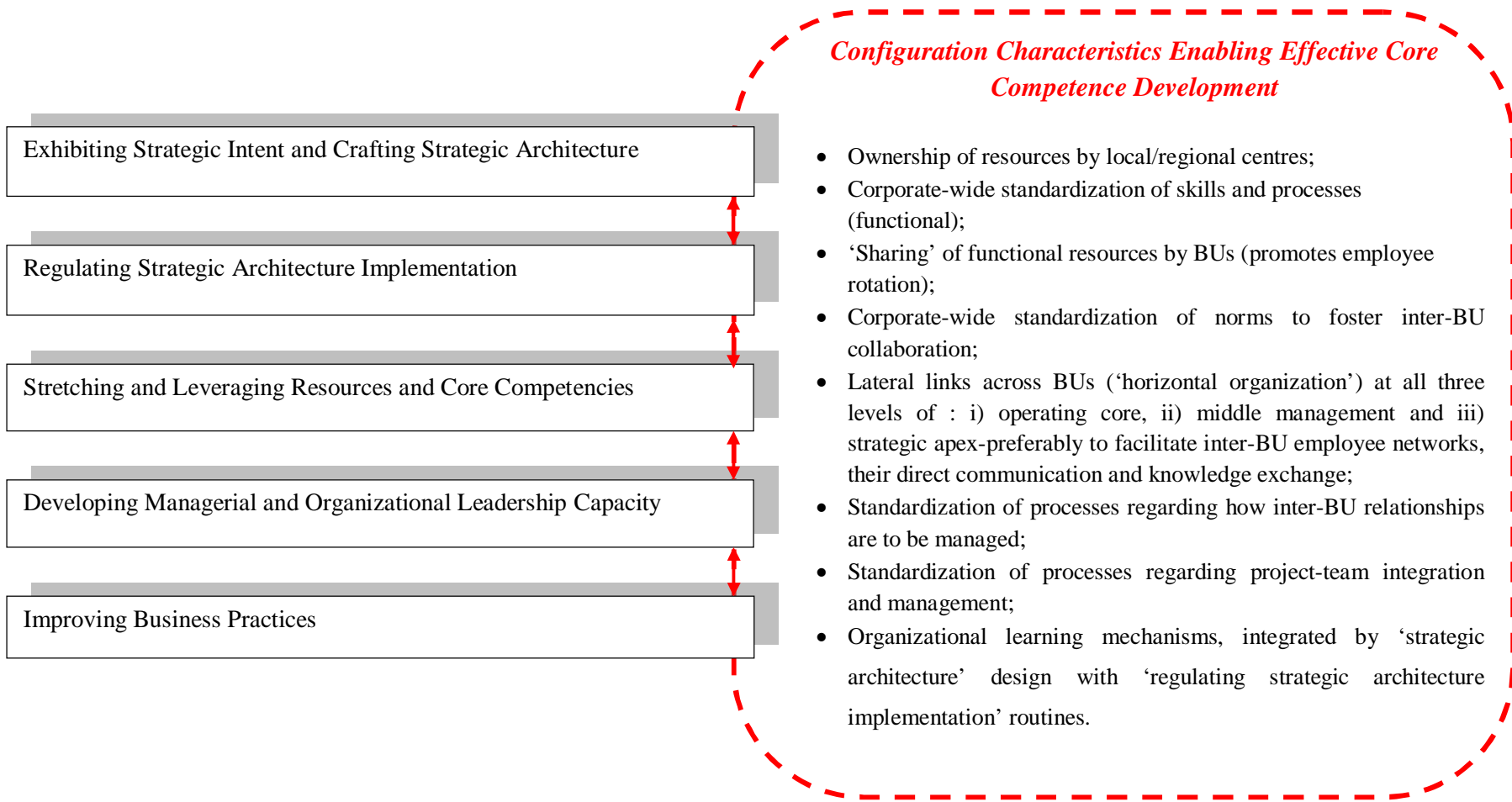
Within that context - and in line with this research's 'critical realist' epistemological approach - the following organizational characteristics (Figure 10.6)²⁷ have been identified as empowering the effective development of core competencies in ICMs:

- Ownership of resources by local/regional centres;
- Corporate-wide standardization of functional skills and processes;
- 'Sharing' of functional resources by BUs to promote employee rotation;
- Corporate-wide standardization of norms to foster inter-BU collaboration;
- Lateral links across BUs at all three levels of the: i) operating core, ii) middle management and iii) strategic apex, preferably in the form of inter-BU employee networks, facilitating direct communication and knowledge exchange;
- Standardization of processes regarding how inter-BU relationships are managed;
- Standardization of processes regarding project-team integration and management;
- Organizational learning mechanisms, integrated by 'strategic architecture' design with 'regulating strategic architecture implementation' routines;

It is argued here that ICMs with such configuration characteristics will be able to follow the rule of thinking globally but acting locally (Flanagan, 1994) and become 'project-centred organizations able to provide flexible logistic skills, organize a network

²⁷ Where findings have substituted theory-derived text from figure 10.5.

Figure 10.6: Organizational Characteristics and Effective Core Competence Development



Source: Author Generated

of specialists, have the ability to organize and control financial packages and manage a complex multilayered and multi-skilled organization which in combination can deliver a global offer' (Langford and Male, 2001; 136). ICMs lacking these characteristics could face integration problems both at the micro-level of managing specific projects (e.g. communication and collaboration difficulties between individuals that form project-specific inter-BU teams) as well as the macro-level of the organization (where no systems will be in place to facilitate knowledge capture and transfer across organizational units).

The discussion of this section brings forward this research's most exploratory insights, as it identifies - from the context of ICMs - organizational characteristics that enable core competencies to effectively emerge. Within construction strategic management research, it represents an extension to the works of Langford and Male (1991; 2001), Male and Stocks (1991) and Chinowsky and Meredith (2000), regarding the strategic management of diversified and internationalized construction organizations. Moreover, it offers new insights on core competence theory as it has so far been examined in construction (Chinowsky and Meredith, 2000; Lampel, 2001; Haan et al., 2002; Adams, 2004). Finally, because of the ICMs' similarities with MNCs and project-based organizations, the exploratory findings of this section may find application (following contextual modifications) to organizations of the scale and scope of ICMs operating outside the construction industry, be they project-based or not.

10.6 Practical Application of Core Competence Theory in the Case of ICMs

In Chapter 1 (viz. Section 1.9), it was noted that in the process of addressing the research question, this research would evaluate the potential for the practical application of core competence theory principles in the case of ICMs. The case studies and their cross-case comparison, have led to the following findings.

During the historical review and evolutionary profiling of the ICMs studied, it was observed that changes in their strategic direction occurred as a response to emerging opportunities from regulatory changes in the markets the ICMs operated (e.g. the introduction of the PFI/PPP procurement route in Greece for the case of Aegean, the privatization of utility services in the UK for the case of Albion, increased military spending from the United States (US) Federal Government for the case of Pacifico and greater client outsourcing for operation, maintenance and construction services for the

case of Cyclone). This identifies a construction industry environment where market forces outside the direct control of incumbent firms influence their strategic direction. As a result, it identifies an industry environment where the ‘proactive organizational development’ notion implicit in core competence theory (viz. Chapter 1, Section 1.2) are hard to apply in practice. This is accentuated in the diversified configuration of ICMs, as often:

- The ‘divisionalization’ inherent in their multi-BU structure is counter to the effective deployment of core competencies;
- Knowledge gained - which may form the foundations for core competencies to be developed - can be lost when projects finish and their teams are dismantled.

Consequently, construction companies in general and ICMs in particular, face significant, yet not insurmountable, obstacles when developing their core competencies. It is argued here that ICMs with the configuration characteristics brought forward in section 10.5 (viz. Figure 10.6) as ‘empowering’ effective core competence development, could apply core competence theory principles in practice and overcome the ‘reactionary’ stance to market changes (e.g. as Cyclone has - viz. Chapter 9, Section 9.3.1) that the construction industry’s environment (Section 10.2.1) forces most ICMs to adopt (i.e. as Aegean, Albion and Pacifico).

10.7 Evaluating the Research and Findings

This has been an explanatory and (potentially) theory-building exploratory research, on the relationship between the combinations of configurations ICMs adopt and the effectiveness with which they develop their core competencies. The focus has been on investigating the relationship and identifying potential causal links.

As noted in Chapter 5 (viz. Section 5.4), this research has elements of ‘theory building’ from case-based fieldwork, in addition to theory building from the literature and conceptual analysis. The fieldwork’s intent was to test these conceptualizations. Along those lines, four case studies and their comparison were undertaken, using a qualitative research method. The research undertaken was in line with the objectives outlined earlier in the thesis (viz. Chapter 1, viz. Section 1.9) and contributes to our knowledge regarding the theoretical gaps identified in Chapter 1 (viz. Sections 1.5-1.6.1). To address the research question, the issues highlighted in Chapter 1 and

revisited in Chapter 4 (viz. Section 4.4) were singled out and noted against existing literature in sections 10.3.1. to 10.6. It is from these sections that the contributions of this research to knowledge have emerged.

Corbin and Strauss' (1990) approach that the 'evaluative criteria' should be adapted to fit the procedures of the method, is adopted here. As this research is of an exploratory and potentially theory-building nature - particularly in its analysis (viz. Chapter 5, Section 5.8.2), the following four evaluation criteria will be used, which are generally accepted as appropriate in evaluating qualitative research with theory building potential: i) generalizability, ii) reliability, iii) validity and iv) theoretical fit. They will be discussed with respect to this research in turn.

- *Generalizability (external validity)*: Glazer and Strauss (1967) asserted that when application of theoretical concepts developed within a group ('substantive theory') fit into other groups, then the 'explanatory' power of those concepts is increased and their generalizability is thought to be greater (formal theory). This research was based on four case studies and their comparison, so, the database constitutes a very small sample and ICMs are a special type of organization for them to be representative of the industry as a whole. Therefore, generalizing from these case studies was made with the caveat that adoption of suggestions brought forward had to be undertaken with contextual sensitivity, as the cases showed variations in context that also forms part of the dynamic context of evolution. Overall, the concepts and propositions developed here, stemming from the empirical data gathered and analyzed, are thought to be 'substantive theory' applicable to companies whose characteristics are similar to the ICMs studied. The theoretical concepts developed and the suggestions emanating from the findings can extend their application if they are proved fitting in other kinds of companies too (e.g. advertising, accounting, film production, shipping, etc).
- *Reliability*: Miles and Huberman (1994: 276) argued that, regarding reliability, the underlying issue is whether the process of the study is consistent, reasonably stable over time and across researchers and methods. Glazer and Strauss (1967) explained that reliability relies on 'theoretical saturation', which implies that additional evidence does not add more 'explanatory power' to the concepts developed. The careful analytical, structured and empirical procedure followed in this research, impart confidence that the research's findings and the 'potential causal links' identified are reliable - within the boundaries of generalizability

already explained. Strict adherence was paid to this study's research protocol, to approach the analysis of the different ICMs on equal terms. In addition, the interview-texts were examined with great diligence, to ensure the passages chosen and coded were the richer and most appropriate for the themes studied. Finally, the case-studies were written in an identical structure, so that the reliability of comparison would be enhanced. The four case-studies conducted are adequate for exploratory and potentially theory-building research (Eisenhardt, 1989). In addition, the use of a case study protocol and software (N*6) further strengthened the study's reliability.

Some threats to this research's reliability exist, which highlight some of this study's limitations, but also one of its methodological contributions. In particular, although it has been argued that 'critical realism' is an appropriate epistemological approach to be adopted when studying project-based organizations (Smyth and Morris, 2006), it has not been widely applied, particularly for the case of construction organizations. This research successfully applied critical realism to investigate a specific and complex type of project-based organization, the ICM. Overall, this research is considered to be reliable, particularly within the context of its purpose, that is, to identify 'potential' causal links between the configurations that ICMs adopt, on the one hand, and the effectiveness with which they develop their core competencies on the other.

- *Validity (Construct-Internal)*: Great effort was put into maximizing this research's validity. First, data from four case studies was compared and contrasted using the principle of 'analytic generalization'. Convergent evidence was sought and triangulation between texts (Krieger, 1979), documents and empirical data gathered from employees was pursued²⁸. It should be however recognized that, unfortunately, this triangulation was not always achieved. In addition, data from the literature was enfolded to ensure sense-making of the findings (Eisenhardt, 1989) and in some cases, theory was used to explain and confirm results. The fact that i) a rich description of the case studies was attempted to enable a vicarious presence of the reader and that ii) the level of uncertainty of results is now discussed, both contribute to the higher internal validity of this research (Miles and Huberman, 1994).

²⁸ For example, when analyzing data in order to describe organization-specific processes, the descriptions of one interview had to be verified by the statements of another employee, and both had to fit with the 'structural' context that - through a similar process of validation - had been described in other interviews and/or documentary data.

The main threat to this research's internal validity is thought to be the lack of comprehensive feedback from the interviewees, so that the accuracy of the results could be assessed (Miles and Huberman, 1994; Stuart et al., 2002). Interviewees from two companies (Pacifico and Cyclone) received preliminary findings, committed to read them, but feedback was only received by one. At least, the fact that they did not reply claiming inaccuracies may be an indication that no inaccuracies were noticed.

- *Theory Goodness*: Glazer and Straus (1967: 4) advocated that the true test for validity rests on developing 'good theory' that is clearly applicable and relevant in new situations. It is believed that the main concepts that were developed from theory and conceptual analysis are 'integrative' and therefore with high analytic potential, as well as generic enough to 'fit' and 'work' when applied to numerous organizational contexts. In addition, results and contributions to theory are thought to be 'relevant', as they can be applicable in other, similar organizational settings like the ones of the ICMs studied here - namely multinational corporations (MNCs) and project-based organizations (PBOs). Furthermore, Eisenhardt (1989) argued that good theory from case study research should result in new insights rather than simply validate existing theory. New insights have emerged from this thesis and other findings have conformed previous results.

It should be recognized that the evaluation presented above could be either 'cognitively' or 'emotionally' biased. Consequently, the best evaluation remains to be undertaken by the users of the theoretical models, findings and suggestions brought forward in this research: academics interested to use them in further research and practitioners appealed by the managerial implications of the findings.

Based on this research, four papers were presented in research conferences. This evidence suggests that the issues and findings are interesting, relevant and real. In general, this research is considered to be reliable and valid (externally and internally). However, the findings regarding each research issue addressed are considered to be at different quality levels. Thus, every research issue was evaluated using the i) generalizability, ii) reliability, iii) validity and iv) theoretical fit criteria described in this section, with results shown on Table 10.6.

10.8 Cross-Case Comparison Concluding Summary

This chapter has compared and contrasted the case study findings, in light of the extant literature and the theoretical frameworks developed for the purpose of this research. The next - and final - chapter, draws conclusions regarding the research question, highlights contributions of this research to knowledge, offers recommendations to ICMs, evaluates whether the objectives of this research have been met and proposes topics for future research.

Table 10.6: Assessment of Findings

<u>Issues</u>	<u>Findings</u>	<u>Domain of Applicability</u>	<u>Theoretical Fit</u>	<u>Generalizability</u>	<u>Validity</u>	<u>Reliability</u>
<p><i>No universally adopted definition of core competencies exists, nor a description of their relationship with resources, capabilities and non-core competencies within an organization-specific context;</i></p>	<p>This research developed a definition, particularly emphasizing the relationship between resources, capabilities, competencies and core competencies within a multi-BU organizational context. This definition was accompanied by the development of a descriptive schema (viz. Chapter 3, Figures 3.8, 3.9) that helps articulate issues related to core competencies and their development.</p>	ICMs	High	<p>High</p> <p>Dependent upon context</p>	<p>High</p> <p>Robust but not universal</p>	<p>High</p> <p>Robust, but not universal</p>
		Construction	Low - scale and scope of ICMs required			
		PBOs	High - when scale and scope of ICMs applies			
		MNCs	High			
		Organizations in general	Scale and scope of ICMs must apply			
<p><i>No description/ conceptualization of the process of core competence development in an organization-specific context exists;</i></p>	<p>By developing a ‘triple control loop’ strategy process (viz. Chapter 4, Figure 4.9), consisting of five corporate-level activities, a description/conceptualization of core competence development within the context of a multi-BU organization was attained.</p>	ICMs	High	<p>High</p>	<p>High</p>	<p>High</p>
		Construction	High – concept generic enough			
		PBOs	High			
		MNCs	High			
		Organizations in general	High – concept generic enough			
<p><i>Little evidence as to the ‘practical’ application of core competence theory (even less in construction, none for ICMs);</i></p>	<p>The environment that ICMs operate in is extremely complex. This research identified specific structural and functioning characteristics of ICMs that could ‘enable’ the application of core competence theory principles in practice and empower their executives to effectively develop their organization’s core competencies (viz. Figure 10.5). These characteristics could help implement, in practice, core competence theory’s notion of ‘proactive organizational development’.</p>	ICMs	High	<p>Medium</p> <p>Potentially ICM and multi-BU-specific</p> <p>How this takes place varies according to the cases and context</p>	<p>Medium-High</p> <p>Concepts not theoretically saturated</p>	<p>Medium-High</p> <p>No feedback from informants</p>
		Construction	Low – scale and scope of ICMs must apply			
		PBOs	High – when scale and scope of ICMs applies			
		MNCs	High			
		Organizations in general	Scale and scope similar to ICMs must apply			

<p><i>What is the relationship between the configuration that ICMs adopt and the development of corporate strategies with optimal potential for effective implementation?</i></p>	<ul style="list-style-type: none"> This research found that by BUs sharing resources owned by local offices, inter-BU employee networks develop, which establish an environment of inter-BU coordination when strategies are being set. This could then lead to greater inter-BU collaboration and resource exchange during strategy execution. It was also found that: i) strong inter-BU links and ii) centrally coordinated employee development programs pursuing ‘skills standardization’, may lead to a better alignment of corporate objectives with the objectives of individual employees. 	<i>ICMs</i>	High	High Dependent upon context	Medium-High Concepts not theoretically saturated	Medium-High No feedback from informants
		<i>Construction</i>	Low – scale and scope of ICMs must apply			
		<i>PBOs</i>	High – when scale and scope of ICMs applies			
		<i>MNCs</i>	High			
		<i>Organizations in general</i>	Scale and scope of ICMs must apply			
<p><i>What is the relationship between the configuration that ICMs adopt and the effectiveness which they regulate their strategies?</i></p>	<p>This research has found that divisionalized ICMs adapt quicker to market changes than more integrated ones. However, it was also found that horizontal links between BUs (such as formal and informal employee networks and knowledge management systems), combined with standardized processes to integrate and manage inter-BU project teams, could allow ICMs to leverage their ‘entrepreneurial’ and ‘evaluative’ core competencies to select projects more effectively. This could lead to greater control of strategy execution, in line with objectives set.</p>	<i>ICMs</i>	New Insight	High Dependent upon context. Potentially ICM and multi-BU specific	High Dependent upon context Potentially ICM and multi-BU specific	Medium-High Concepts not theoretically saturated
		<i>Construction</i>	Low			
		<i>PBOs</i>	High – when scale and scope of ICMs applies			
		<i>MNCs</i>	High			
		<i>Organizations in general</i>	Scale and scope of ICMs must apply			
<p><i>What is the relationship between the configuration that ICMs adopt and the effectiveness with which they stretch and leverage their resources and core competencies?</i></p>	<p>This research found evidence to suggest that sharing of functional resources by BUs leads to the formation of inter-BU employee networks and contributes to the development of organizational social capital. By designing these networks into the organizational structure, the tacit knowledge of employees could be harnessed across BUs more effectively. Social capital, shared values and norms, could contribute to more effective inter-BU collaboration and allow ICMs to effectively stretch their resources and leverage their core competencies at projects.</p>	<i>ICMs</i>	New Insights	Medium-High May be ‘role dependent’	Medium Concepts not theoretically saturated	Medium-High No feedback from informants
		<i>Construction</i>	Low			
		<i>PBOs</i>	High – when scale and scope of ICMs applies			
		<i>MNCs</i>	High			
		<i>Organizations in general</i>	Scale and scope of ICMs must apply			

<p><i>What is the relationship between the configuration that ICMs adopt and the effectiveness with which their organizational learning, may lead to the reconfiguration of their social practices, structural properties and the re-negotiation of their organizational norms?</i></p>	<p>This research has found that, when processes for capturing, analyzing, codifying and disseminating knowledge are standardized corporate-wide and integrated with 'reporting' routines, the outputs can become items of executive management discourse during executive meetings/routines for evaluating strategies executed. Through this, the potential for organizational learning can be actualized, and may lead to reconfiguration of social practices and structural properties, as well as re-negotiation of organizational norms. It was also found that 'divisionalization' and differences in organizational norms across BUs could inhibit the effective dissemination of new/improved routines across them. This seems to happen because the motivational disposition to both 'transfer' and 'receive' knowledge created is diminished.</p>	ICMs	New Insights	Medium	High	Medium-High			
		Construction	Low				Generalisable in 'project-based' contexts	Concepts theoretically saturated	No 'feedback' from informants;
		PBOs	High – when scale and scope of ICMs applies						
		MNCs	New Insights						
		Organizations in general	Scale and scope of ICMs must apply						
<p><i>What is the relationship between the configuration that ICMs adopt and the effectiveness with which they develop their managerial and leadership capacity?</i></p>	<p>Social capital development was found to be important. It takes time to build up this asset. Whether leadership and succession planning can draw upon the social capital is path dependent. No empirical data was found to support/refute whether structured succession planning and leadership development programs actually contribute to the effective development of managerial and organizational leadership capacity. It was observed however that they could have a positive contribution, when they are implemented in an organizational context where strong inter-BU employee networks exist and a culture of inter-BU collaboration prevails.</p>	ICMs	High	Medium	Medium-High	Medium-High			
		Construction	Low				May not apply to non-diversified firms	Concepts not theoretically saturated	No feedback from interviewees
		PBOs	High – when scale and scope of ICMs applies						
		MNCs	High						
		Organizations in general	Scale and scope of ICMs must apply						

<p><i>Which are the structural and functioning characteristics of ICMs that 'empower' organizational agents to effectively develop their organization's core competences?</i></p>	<p>The findings, supported by the theory, show that what has been embedded in the ICMs' configuration will affect their functioning at times and for any one key decision/event or activity. Empowerment was therefore found to not necessarily be a result of agency, but 'historical' agency as collective organizational experience embedded in structural and functioning characteristics. Within that context, the organizational characteristics empowering effective core competence development could be summarized as follows:</p> <ul style="list-style-type: none"> • Ownership of human resources by local/regional centres, coupled with organization-wide standardization of 'functional' skills and 'practices'; • Sharing of human resources by BUs, leading to the development of informal and formal inter-BU employee networks; • Formalization of those networks and their incorporation into the organizational structure (e.g. through communities of practice); • ICT systems for inter-BU communication and the 'transfer' and 'management' of knowledge; • Standardization of processes regarding 'how' inter-BU relationships are managed, including processes for inter-BU project team integration/formation and management; • Organizational learning mechanisms, integrated by strategy design with 'regulating strategic architecture implementation' routines, to enable the organization to effectively exercise corporate-wide: <ul style="list-style-type: none"> ○ 'Reflexive' monitoring of conduct and context of interaction; ○ 'Self-reflective' organizational learning. • HR strategy developing and monitoring the implementation of 'individual development plans' being part of BU and corporate strategy and integrated with 'exhibiting SI and crafting SA' routines; 	<p>ICMs</p>	<p>New Insights</p>	<p>Medium-High</p> <p>Maybe role dependent</p>	<p>Medium-High</p> <p>Concepts not theoretically saturated</p>	<p>Medium</p> <p>No empirical data triangulation</p>
		<p>Construction</p>	<p>N/A</p>			
		<p>PBOs</p>	<p>New Insights – when scale and scope of ICMs applies</p>			
		<p>MNCs</p>	<p>New Insights</p>			
		<p>Organizations in general</p>	<p>New Insights – when scale and scope of ICMs applies</p>			

Evaluation criteria:

- Generalizability (low - medium - high): Data from different cases is underpinning the concepts; the findings are consistent with experience or confirm results appearing in the literature but applied in different contexts; the outcome is generic enough to be applied in different settings.
- Reliability (low - medium - high): The research questions are clear; concepts are theoretically saturated; adherence to the research method; the use of a case study protocol; replicable in other settings.
- Validity (low-medium-high): Type of data used (empirical, from the literature or from researcher's experience); data source (primary - secondary); empirical data triangulation; literature enfolded; analysis of rival explanations; "thick" case description; replication logic; feed-back from informants.
- Theory goodness (low - medium - high - new insights): Relevant; interesting; fit with data; operationalizable and applicable to new situations, it raises debates.

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Chapter 11: Conclusions, Contributions to Knowledge and Recommendations for Further Research

‘Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.’

Albert Einstein

11.1 Introduction

In this concluding chapter, the extent to which this research has met its objectives is first discussed. Then, conclusions are drawn regarding the research question (viz. Chapter 1, Section 1.7). Subsequently, the contributions of this research to knowledge with respect to academia and practice are summarized. It is explained how these contributions have multiple applications outside the context of construction, particularly for general core competence theory and the contexts of multinational corporations (MNCs) and project-based organizations (PBOs). Finally, the extent to which this research has met its objectives is addressed and topics for future research are proposed.

11.2 Revisiting the Research Aims and Objectives

In Chapter 1 (viz. Section 1.9), the objectives of this research were brought forward. In this section, they are reproduced and whether they have been met is reviewed.

- Objective 1: *Describe in theory the ‘structural’ and ‘functioning’ characteristics of international construction majors (ICMs), drawing from mainstream strategic management literature, organization theory and project-based management concepts;*

This objective was met in Chapter 2, where ICMs were described in theory and their similarities PBOs and MNCs were discussed (viz. Section 2.6-2.8). Their description contributed to developing a better understanding of the complexity that characterises them and assisted in being able to contextually apply core competence theory principles for their investigation at later stages of the study.

- Objective 2: *Develop a model to explain the relationship between resources, capabilities, competencies and core competencies, distinguishing between those referring to individuals and those referring to organizations while positioning them within an organizational context, such as the one of the ICMs studied in this research;*

This objective was met in Chapter 3. Literature and concepts from mainstream strategic management, the resource-based view of the firm, evolutionary economics, organization theory, core competence theory and project-based management were critically reviewed and integrated to develop a theoretical framework that deconstructs and describes core competencies within multi-BU organizations (viz. Chapter 3, Figures 3.8 and 3.9)

- Objective 3: *Integrate aspects of ‘cybernetics’ and ‘management control’ theories under the umbrella of core competence theory, to propose a number of generic, corporate-level activities that would enable to identify for the case of ICMs, which organizational routines effectively shape group strategy;*

This objective was met in Chapter 4. An integrative theoretical model was developed, the ‘Triple Control Loop’ (viz. Figure 4.5), which identified a number of generic, corporate-level activities that effectively shape group strategy. These activities provided the basis for investigating the effectiveness with which ICMs develop their core competencies.

- Objective 4: *Compare and contrast findings across individual case studies to identify similarities and differences between them, to better explain the causal links between company activities and their results in effectively developing their core competencies;*

This objective was met through Chapters 6 to 9, where the individual case studies were presented, and Chapter 10, where they were compared and contrasted, while simultaneously discussing emerging findings in the light of the extant literature. The individual case studies were descriptive and explanatory, in order to clearly demonstrate how the theoretical concepts developed in earlier parts of the thesis are applied in organizational contexts. The cross-case comparison had a more theory-building nature, through generalizations across contexts.

11.3 Addressing the Research Question

This research was undertaken to address the following research question:

‘How do the configurations that ICMs adopt influence the effectiveness with which they execute a core competence development strategy?’

The case studies and their comparison identified potential causal links between the configurations of the ICMs studied on the one hand and the effectiveness with which they can execute a core competence development strategy on the other. These findings and potential causal links were summarized and evaluated in the previous chapter (viz. Table 10.6). From these findings, the following conclusions can be drawn.

First, the degree of ‘divisionalization’ inherent in the ICMs’ configuration may influence the relationship between configuration and core competence development. The more divisionalized the ICM, the more responsive it could be in addressing market changes. However, divisionalization was also found to be related with: i) weaker inter-BU relations and employee networks, ii) different norms and procedures followed by different BUs and iii) unwillingness of BU managers to commit to sharing resources and knowledge across BUs. Consequently, divisionalization may influence negatively the effectiveness with which ICMs could:

- Develop corporate strategies (i.e. exhibit strategic intent (SI) and craft strategic architecture (SA)) with optimal potential for effective implementation;
- Stretch and leverage their resources and core competencies across BUs;
- Re-configure their structure, practices and re-negotiate their organizational norms (i.e. improve their business practices) as a function of their learning;
- Develop social capital between their management and leadership.

In short, divisionalization was found to influence negatively the ability of the ICMs studied to ‘execute a core competence development strategy’, by influencing the effectiveness with which they could conduct individual core competence development activities.

Second, when ‘links’ exist between BUs, standardization of processes regarding project-team integration may influence positively the effectiveness with which the knowledge of individual members is leveraged across BUs, increasing the effectiveness with which the ICMs:

- Deploy their entrepreneurial and evaluative core competencies when selecting projects (as part of ‘regulating SA implementation’ - viz. Section 10.3.2);
- Stretch and leverage their resources and core competencies during project execution.

Consequently, it could be argued that on such occasions, standardization of processes regarding inter-BU resource integration positively influences the ability of ICMs to conduct corporate-level activities through which they could develop their core competencies.

Third, the relationship between ‘configuration’ and ‘core competence development’ was found to be influenced by the existence of institutionalized ‘organizational learning mechanisms’, integrated with processes for monitoring strategy execution (i.e. ‘reporting’ routines). This empowered organizational agents to re-configure their organization’s structures and practices and to re-negotiate their organization’s norms during strategy execution. Consequently, this configuration characteristic is responsible for allowing the ‘integration’ and the management of ‘interrelationships’ existing between the following activities:

- Stretching and leveraging resources and core competencies;
- Regulating SA implementation’;
- Improving business practices.

In other words, it influences the effectiveness with which ICMs conduct core competence development activities and manage their interrelationships.

The ultimate potential of this mechanism however, could not be fully realized when ‘divisionalization’ was present, as knowledge created and improvements in routines/practices could not be easily disseminated across BUs. Finally, it was observed that corporate-wide standardization of norms can positively influence inter-BU collaboration and therefore influence the effectiveness with which ICMs could:

- Stretch and leverage their resources and core competencies;
- Disseminate (across BUs) improvements in routines and practices.

Through this, standardization of norms is also responsible for effective ‘core competence development strategy execution’.

The findings of this research also point to the conclusion that the application of core competence theory principles in practice is fraught with difficulties in the case of ICMs, due to the complexity and unpredictability of demand in the construction industry and the international construction market. In the spirit of ‘critical realism’, a number of configuration characteristics were identified (viz. Chapter 10, Figure 10.5), that positively influence effective core competence development. For example, shared ‘functional’ human resources between market-focused BUs could contribute to the development of inter-BU employee networks, which contributes to the development of organizational social capital and an inter-BU collaborative spirit in the organization - while at the same time retaining the benefits of market-based divisionalization.

11.4 Contributions to Knowledge

As noted in Chapter 1 (viz. Section 1.6.1), the dominant theme of this research was that of ‘exploring the relationship between the configurations ICMs adopt and the effectiveness with which they develop their core competencies’. Due to the similarities between ICMs, multinational corporations (MNCs) studied in mainstream strategic management and project-based organizations (PBOs)¹ it was argued that any findings from the context of ICMs could be comparable and applicable to the context of the latter two organizational types. Contributions to theory, practice and methods are presented in the following sections.

11.4.1 Theoretical Contributions from Conceptual Models

During this research undertaking, a number of obstacles stemming from underdeveloped theoretical models in core competence theory had to be overcome. This led to the following theoretical developments in relation to core competencies and their development:

- A clear definition and distinction between the concepts of ‘capability’ and ‘competence’ (viz. Chapter 3, Section 3.2.3.1);
- The development of a theoretical framework, the New Competencies Hierarchy (viz. Chapter 3, Section 3.3.1, Figure 3.8) that deconstructs and positions core competencies within the context of multi-BU organizations;

¹ Viz. Chapter 2, Sections 2.6 and 2.8.

- The development of a ‘Triple Control Loop’ strategy process (viz. Chapter 4, Figure 4.4) consisting of five, interrelated corporate-level activities, which provides a description/conceptualization of core competence development within the context of multi-BU organizations in general and ICMs in particular.

11.4.2 Contributions to Theory

As explained in Chapter 1 (viz. Sections 1.5-1.6.1 and 1.9) this research intended to explore current gaps in core competence theory, through the study of ICMs. Building on the similarities between ICMs, MNCs and PBOs, this research also intended to contribute to our knowledge in the fields of mainstream strategic management and the management of project-based firms. At its completion, the following contributions to theory have been achieved:

- First, the applicability of core competence theory in practice has been demonstrated for the case of large, multi-BU construction organizations. This contributes to the strength of the theory in itself, by demonstrating its applicability outside the production-oriented industries within which it has been traditionally examined. Hence, its breadth of application can now include construction and, by extension, the project-based management contexts;
- Second, this research has contributed to our knowledge regarding the ‘process’ of core competence development. Through a combination of theoretical constructs from literature and findings from the context of ICMs, structures, processes and organizational mechanisms through which the development of core competencies can be effectively controlled were identified (viz. Chapter 10, Section 10.6). Due to the multi-BU and project-based nature of ICMs, the findings also contribute to our knowledge regarding core competence development in the context of MNCs, as well as PBOs from industries outside construction (for the latter, provided scale and scope is similar to that of ICMs’).
- Third, specific ‘structural’ and ‘functioning’ characteristics have been identified from the context of ICMs, which enable the effective execution of corporate-level activities linked with effective core competence development. Due to the multi-BU and project-based nature of ICMs, the influence of these organizational characteristics may be present in the context of MNCs and PBOs with similar scale and scope as ICMs. In particular, the contributions to our

knowledge relate to the identification of ‘structural’ and ‘functioning’ characteristics:

- Enabling organizational learning that may lead to the reconfiguration of organizational social practices, structural properties and organizational norms (viz. Chapter 10, Section 10.3.4);
- Enabling better integration of emerging with intended strategies by facilitating organizational transformation throughout the strategy process;
- Fostering the effective intra-organizational stretching and leveraging of resources and core competencies in a multi-BU context (viz. Chapter 10, Section 10.3.3);
- Fostering the development of organizational leadership with multi-BU organizations (viz. Chapter 10, Section 10.3.3).

11.4.3 Methodological Contributions

The most significant methodological contributions of this research were:

- The development of an evolutionary profiling method (viz. Chapter 5, Section 5.7) accompanied by a workable theoretical framework that is supplementary to existing core competence identification methods (viz. Chapter 4, Section 4.1), by accounting for ‘path-dependency’ and ‘company-specificity’. The model (viz. Figure 5.3) and methodology developed in Chapter 5 to construct the ICMs’ 10-year evolutionary profiles, was developed in order to identify (not as a result of extensive analysis, but rather as a series of multiple ‘insights’ derived from intensive research and developed during the analysis of documentary data) the path-dependent core competencies of the ICMs studied, while simultaneously mapping the evolution of their organizational context. The evolutionary profiling method is therefore both ‘dynamic’ and ‘unconstrained by organization-specific processes’ as opposed to existing core competence identification methods. Moreover, it is located within the specific conceptual stream of evolutionary management and economics that the literature review has posited as aligned with core competence theory and critical realist epistemology. The benefits of this evolutionary profiling method is that it is not sector specific, but can be applied across market and industry contexts.

- A successful implementation of a research undertaking from a ‘critical realism’ epistemological point of view, which up to now has not been widely applied, even more so for the case of project-based and construction organizations. This epistemological approach allowed conducting a novel, exploratory and qualitative-based multiple case study in the context of ICMs, while simultaneously facilitated a research methodology through which ‘structures’ and ‘functions’ that enable core competencies to emerge in ICMs were identified. Hence, this research has contributed to our knowledge regarding the application of critical realism in practice.

11.4.4 Practical Contributions

As noted in Chapter 10 (viz. Section 10.3), this research is based upon four case studies so, generalizing from these case studies to highlight practical contributions is made with the caveat that adoption of suggestions brought forward and any recommendations made has to be undertaken with contextual sensitivity, as the cases show variations in context that also forms part of the dynamic content of evolution. Within that context, the following constitute contributions to the knowledge of practitioners in the field of strategic management as this applies to ICMs, MNCs and multi-BU PBOs.

First, core competence development can be more effectively achieved, by:

- Creating links between BUs that can:
 - Facilitate knowledge and skills transfer;
 - Facilitate and maintain corporate-wide, discipline-oriented formal and informal networks of employees;
 - Be used as a starting point to standardize processes and norms across individual organizational units;
- Developing and standardizing mechanisms, through which knowledge created at projects can be captured, stored, analyzed and disseminated corporate-wide. For example, mechanisms to capture lessons learned could be integrated with ‘reporting processes’ and their outputs could become agendas discussed by executive management during operational and strategic reviews;
- Standardizing work processes throughout the project’s life-cycle, in order to mobilize, integrate and better control on a project-basis, human resources -

within which the intangible, people-dependent elements of core competencies are embedded - across market-focused BUs.

What is being argued here, is that the multi-BU organizations that use these recommendations to develop their configuration will be able to overcome obstacles created not only by their internal limitations, but also by their industry's complexity and dynamic nature and successfully apply the 'proactive organizational development' principles of core competence theory (viz. Chapter 1, Section 1.2) in practice.

11.5 Directions for Further Research

The objectives set at the beginning of this research (viz. Chapter 1, Section 1.9) and reviewed in Section 11.2 of this Chapter have been met. Nevertheless, this research has been subject to certain limitations, as these were discussed when the research and its findings were evaluated (viz. Chapter 10, Table 10.7).

Both the exploratory nature of this research and the methodology applied as the means to conduct inquiry brought about results that need to be explored in further breadth and depth. It cannot be claimed that the research has been proven or refuted, yet a discussion has commenced and developed from the discussion and discourse of others (Bettis and Prahalad, 1986; Hamel and Prahalad, 1989; 1994; Prahalad and Hamel, 1990; Very, 1993; Male, 1991; Flanagan, 1994; Langford and Male, 2001; Artto and Dietrich, 2002; 2004). Therefore, the concepts, propositions and frameworks developed here should be tested empirically, e.g. via surveys or by implementing them in the field. At the same time, the limitations of this research point towards the direction that future research on the subject could take. Of immediate relevance would be:

- Improving the generalizability of this research's findings by conducting more case studies of ICMs;
- Examining deeper the causal relationship between the 'role' that ICMs adopt in the production of the built environment and the type of 'market-focus' strategies they pursue, with how effectively they develop their core competencies;
- Focusing on the identification of desirable core competencies in the international construction industry by developing a methodology that would account for continuous market change, by:
 - Gathering data through interviews with different types of ICM clients (private, government/public and 'institutional investors');

- Using the ‘new competencies hierarchy’ developed in this research to break these down to competencies, capabilities, skills, individual level core competencies and processes.
- Replicating this study’s methodology in other project-based industries (e.g. the legal profession, accounting, film production, advertising and investment banking), to examine whether conclusions drawn here can be generalized for organizations operating in project-based industries in general;
- Conducting this study’s methodology in the production-oriented industries where core competence theory is traditionally applied, to investigate similarities and differences regarding core competence development across industry contexts;
- Considering the non-project-based nature of production-oriented industries, and use the ‘triple control loop’ strategy as a starting point to investigate mechanisms of organizational learning that may lead to transformations of organizational practices and culture in such industry contexts;
- Finally, considering the similarities between ICMs and MNCs on the one hand and ICMs and PBOs on the other, a comparative study between MNCs and PBOs could be developed to investigate the problems each faces in effectively executing their strategies - potentially core competence development - and the issues that, in each case, determine relative success over failure in pursuing corporate objectives.

11.6 Concluding Section

This research has been an exploratory study on the relationship between the configurations ICMs adopt and the effectiveness with which they develop their core competencies. Four ICMs were studied and causal links between the combination of organizational configuration they have adopted and the effectiveness with which they pursue the development of their core competencies have been identified. The findings articulate the paths and choices ICMs make in order to most effectively develop their core competencies and consequently attain competitive advantage. It is hoped that the work undertaken here, combined with the work of others, will assist practitioners in better dealing with the practical issues that core competence development might give rise to, apply management control principles in the development of core competencies in organizations and study their ‘structuration’ and development. It is therefore hoped the work will also contribute to improving the value offered and delivered by ICMs to clients.

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APPENDIX

Appendix 5.1: Case Study Protocol

Section A. Overview

A.1 Purpose

This protocol issued to guide the investigator in carrying out the case study and cross-case comparison.

A.2 Background

Research Goal: To conduct an exploratory study aimed at understanding the relationship between the configurations that ICMs adopt and the effectiveness with which they develop their core competencies.

Research Process:

- Development of theoretical constructs;
- Development of the case studies;
- Cross-case study comparison.

Case study goal: Primary ‘explanatory’ and ‘descriptive’ of the organization-specific routines and context through which ICMs conduct core competence development activities.

The Setting and the Unit of Analysis:

- The setting will be the ICMs studied;
- The unit of analysis is the ‘activities’ ICMs conduct, which constitute ‘core competence development strategy execution’.

Case Study Process:

- Desk study evolutionary profiling;

- Initial communication with the ‘contact’ person of the ICM to set-up meetings with appropriate interviewees;
- Interviews with executives who have an overview of how their organization operates as a whole;
- Further document review and interviews if needed;
- Case-study write-up.

A.3 Organization of this Protocol

- An overview of the case-study project;
- Field procedures;
- Case-study questions (the generic issues that have to be addressed, not the actual questions addressed to interviewees, which were company-specific and derived from these generic issues);
- A guide for the case-study report and cross-case comparison.

Section B. Field Procedures

B1. Preparing the visit

Preparing preliminary information:

- Date and time;
- Addresses and people to visit, how to arrive;
- Agenda;
- Reviewing the company and the findings of the desk study’s evolutionary profiling;

Other aids:

- Checking laptop, AC adapter, files, internet card and cable;
- Notepad, paper clips, post-its;
- Tape recorder, cassettes and batteries.

B2. Interview Visit

Agenda:

- Personal presentation;
- Presenting interview overview;
- Discussion of questions/topics;
- Asking for additional documentary information that can be provided and is not available publicly.

Section C. Questions¹

- What is the ICM's 'role' in the production of the built environment?
- Which are the ICM's structural characteristics (those representing the 'structural' element of its configuration), i.e. those that can describe:
 - Its structure?
 - Type of market-focused strategy adopted?
 - Horizontal organization between different BUs and the degree of decentralization?
- Which are the mechanisms used for inter-BU coordination? How and why do they differ from those used for intra-BU coordination?
- Which are the activities related with 'setting and communicating strategic intent and strategic architecture' at the ICM?
 - Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?
- Which are the activities related with 'regulating strategic architecture implementation' takes place at the ICM?
 - Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?
- Which are the activities related with 'stretching and leveraging resources and core competencies' at the ICM?

Regarding 'organizational level competence' integration and leverage:

- Which are the organizational routines through which this being conducted?
- Who are the key people and organizational bodies involved in those?

Regarding individual level core competence leverage (both employee mobilization and knowledge transfer):

¹ The question may arise as to how the researchers understood the terminology used. The reader is reminded that these questions are in the form of a generic, theory-based format. In the beginning of each interview, an introduction was made to the interviewee as to the topic that was been examined and as to the nature of core competencies as social constructs. The questions and issues were discussed after interviewees explicitly acknowledged they understood what they were being asked.

- Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?
- Regarding process replication:
- Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?
- Which are the activities related with ‘succession planning and leadership development’ at the ICM?
 - Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?
 - Which are the activities related with ‘improving business practices’ at the ICM?
 - In terms of capturing knowledge at projects?
 - In terms of this knowledge being used to update/improve practices?
 - In terms of this leading to evaluations of strategies?
 - In terms of this leading to re-negotiation of norms?
 - Which are the organizational routines through which they are being conducted?
 - Who are the key people and organizational bodies involved in those?

Section D. Guide for the case study report and cross-case comparison

- Conduct the Desk Study and the Evolutionary Profiling:
 - Gather as many as possible company-related documentary data (annual reports, company archives, press releases - academia as well as industry-based) for a period of ten years prior to the commencement of the research.
 - Read and ‘code’ the texts annually, using the following terms as codes:
 - Strategic Intents Set;
 - Strategic Architectures Set;
 - Investments Made and Resources Allocated.
 - Summarize the coded texts to their key-points;
 - Create 10-year threads of each code;
 - Display those in the form of an ‘Event Listing Network’ as the ICM’s Evolutionary Profiling.
- Conduct the Semi-Structured Interviews:
 - Use the insights of the Evolutionary Profiling to transform the list of generic, theory-based company activities into company-specific semi-structured interviews:
- Analyze the Semi-Structured Interviews:
 - Transcribe the Interviews.

- Read and ‘cluster’ the extended texts of the transcribed interviews under the following codes (and their sub-categories wherever this applies):
 - Role in the Production of the Built Environment
 - Configuration - Structural Characteristics
 - Structure
 - Type of Market-Focused Strategy Pursued
 - Horizontal Organization/Degree of Decentralization
 - Configuration - Functional Characteristics
 - Configuration - Agency Characteristics
 - Setting and Communicating Strategic Intent and Strategic Architecture
 - Regulating Strategic Architecture Implementation
 - Stretching and Leveraging Resources and Core Competencies
 - Organizational Level Competence (OLC) Integration and Leverage
 - Individual Level Core Competence (ILCC) Leverage
 - Employee Mobilization
 - Knowledge Transfer
 - Process Replication
 - Leadership Development
 - Business Process Improvement
- Group ‘coded’ text passages under the thematic categories, read them and identify key-points referring to the ‘organizational routines’ through which they are conducted, as well as the key-people/organizational bodies that are involved in the implementation of those routines.
- Create displays per thematic category, the ones referring the role and the configuration displaying the role the ICM plays in the production of the built environment and the structural characteristics of its configuration; And the ones referring to activities displaying the company-specific organizational routines through which they are conducted and the key-people/organizational bodies involved.
- Use the displays derived from the analysis to map on the same table all generic, theory-based company activities with respect to the organizational routines they are conducted and the key-people/organizational bodies involved. Use this mapping to identify their interrelationships with respect to the organizational routines they share

and the most nodal people/organizational bodies when implementing those activities. Identifying those interrelationships will provide in addition the information necessary regarding the 'procedural' and 'agency' characteristics of the ICM's configuration.

- Construct a display that described the complete configuration of the ICMs.
- Write the Case Study positioning sequentially the displays created and accompanying them with explanatory texts.
- Compare individual case study findings and discuss in light of extant literature.

Appendix 5.2: Indicative Letter of Introduction

Dear Mr. Holbrook,

The School of Construction and Project Management at University College London is currently undertaking a research program supervised by Professor Peter Morris, whose purpose is to examine *core competencies* and their development in the construction industry. Core competence theory was introduced by Hamel and Prahalad (1994), proposing that diversified companies could achieve cost effective growth paths with a higher probability of success than their competitors through the effective deployment of their core competencies on a corporate wide basis.

Bechtel is a leading international construction group whose evolutionary path positions it amongst the most desirable companies to be examined here. For that reason, we are writing this letter to discuss with you the possibility of collecting data through interviews with some key Bechtel employees.

The objective of the program is to assess the *effectiveness with which core competencies are being deployed internationally and on a corporate wide basis*.

For Bechtel to benefit from its involvement, we intend to share our findings with the company. These would include among others:

- An assessment of the company's core competencies against those desirable in the construction industry, with insights from a comparative study of construction majors.
- An assessment of the effectiveness with which core competencies are deployed in geographically dispersed, identifying any areas that might require improvement.

We hope that you will find out research proposal interesting and will be willing to assist us in this effort. I would welcome the opportunity to discuss with you in person the practicalities of undertaking this research. Thank you in advance for your time.

Sincerely Yours,

Ioannis I. Zoiopoulos

email: j.zoiopoulos@ucl.ac.uk, tel: +44 (0) 207 6791675, fax: +44 (0) 207 9161887

Appendix 5.3: Semi-Structured Interviews - Refined

Albion's Case Study led to refining the semi-structured interview design for the rest of the ICMs studied, without however altering the generic topics discussed (viz. Appendix 5.1). Most refinements were in the form of additions. Three more interviews were added per case study. One focused on the case of core competence development through acquisitions and the integration of acquired companies on the existing organizational body of the ICM studied (Interview 3), one focused on corporate HR practices and any 'structured' programs in place for succession planning and leadership development (Interview 11) and one focused on any structured programs in place for capturing knowledge created and improving business practices (Interview 12). The interview design was transformed to 12 semi-structured interviews, as enough was known to introduce greater structure - in line with critical realism - as the research moved from an 'extensive' to an increasingly 'intensive' nature. Despite the addition of sections, the interview questions were not changed. They were essentially re-organized. This slightly more 'focused' arrangement allowed, during the actual implementation of the interviews, more time to focus on the issues that this research wished to address. The interviews can be grouped in three sections, as shown below.

Section 1: Setting the Context

Interview 1: The Company, its structure, core functions and mechanisms for intra-organizational coordination.

Interview 2: Organic growth and development.

Interview 3: Obtaining competencies through acquisitions.

Section 2: Organizational Competencies across the Project-Life Cycle

Interview 4: Project/Business Development

Interview 5: Winning Work

Interview 6: Engineering

Interview 7: Procurement

Interview 8: Construction

Interview 9: Operations and Maintenance

Interview 10: Project/Program Management & the Management of Interfaces.

Section 3: People and Processes

Interview 11: Human Resource Planning, Succession Planning, Leadership and Professional Development.

Interview 12: Improving Business Practices/Process Re-Engineering

In section 1, the objective was to understand the basic structure and processes through which the company operates and the mechanisms through which it develops and grows. In interview 1, the objective is to map the company's core functions, key interrelationships within the group, as well as the way those are managed. Focus was given on the communication channels existing between hierarchical levels, as well as communication channels and function between different units of the group. Interview 2 addressed growth through JVs and partnering/alliances. Interview 3 addressed processes of acquisitions and post-acquisition integration.

In section 2, there are 7 interviews, each of the topics of which corresponds to one stage of the project life-cycle that the company might be active in. In total, they represent the project life-cycle management process. The reason for this is that project life cycle activities are often reflected in core functions that organizations create (e.g. sales and bidding in 'business development', procurement in 'procurement', etc). The objective was to conduct each of these interviews with a senior executive who would have corporate-wide overview of how the function 'integrates' with the rest of the organization and is interrelated with other functions, within and across BUs. There was a pattern repeating across all these interviews and this was the common sub-topics that were addressed in each:

- The activity(ies) that each ICM undertakes within each project stage and how each ICM is structured to conduct them;
- The core functions related to this stage and how are activities related to these structured within the organization;
- The communication channels at the vertical hierarchy and inter-BU dimension;
- Inter-BU implementation of the activity;
- Leverage of organizational and individual level competencies across businesses and geographical locations;

In section 3, the focus was on two fundamental issues related to the management of 'people' and 'processes'. Interview 11 thus analyzes the responsibilities and positioning of the HRM

function within the group as well as any succession planning, leadership and professional development frameworks in an effort to provide an answer to the question of how ICMs develop their managerial and leadership capacity. Finally, interview 12 addresses company practices related to how knowledge captured in incorporated to the group's existing practices.

The new format of the interviews aimed to ensure that data gathered would be compatible with the nature of the construction business. In other words, across the various stages of the project life-cycle this examination did not take place in a vacuum but within the context of the company specific structural characteristics (interview 1), as well as the processes through which new organizational competencies related to those competence areas are obtained/acquired/developed (Interview 2 and 3). The intent was for one person to be interviewed per topic. However, this was not actualized, as in all firms, single employees could address multiple issues.

Appendix 5.4: Evolutionary Profiling - Case Study Example: Albion

Initially, data from publicly available documents was read and clustered, annually, in the categories shown on the table below. The text in the table is not refined, as it is used here for demonstrating purposes and does not form part of the final thesis document. The name of the company has been changed where necessary, due to issues of confidentiality. Then, the clustered data was used (Part B) to create strategic intent-strategic architecture-stretch and leverage ‘threads’. Two ‘cycles’ were identified.

Year	Strategic Intent	Strategic Architecture	Stretch & Leverage
1996	<ol style="list-style-type: none"> 1) To build in their successful involvement in PFI by creating a clearer ‘market’ and ‘product’ focus in this market they perceive as strategic. 2) To be more active in the international construction market 3) To achieve improvements in productivity and procurement. 4) To grow profits in ‘Building, Building Management and Services’ 	<ul style="list-style-type: none"> - Selectively invest in PFI as opportunities appear. - Apply overseas the strategy of pursuing smaller and major projects, to successfully expand their regional operations. - Refine operations (cost control focus was promoted, as well as focus on improvement in productivity and procurement) 	<ol style="list-style-type: none"> 1) Restructure Power Engineering to give a greater customer focus. 2) To achieve cost and efficiency improvements and improve performance and productivity for Albion Rail.
1997		<ol style="list-style-type: none"> 1) Reorganizing & restructuring the business to create a market led organization with consolidation around the business sectors it is involved with. 	<ol style="list-style-type: none"> 1) ‘Albion Capital Projects’ is created to manage its increasing PFI involvement around the world. 2) ‘First Philippines Albion’ created to further pursue ‘Internationalization’ objective. 4) Program to reorganize the ‘Rail Infrastructure business acquired in 1996 from Network Rail, integrating them from other Rail activities in the group, to create a full service’, new build and renewal and maintenance serving portfolio (Market Focus).
1998	<ol style="list-style-type: none"> 5) To become a ‘market-led’ organization. To achieve more stable and secure earning streams 6) To integrate the company’s services across the value chain. 		Bidding and Executing Major Projects is combined in a new and single management unit.
1999	<p>Further improve productivity to make profit progress through business process improvement. Successfully restructure the group</p> <p>Financial Objectives:</p>	<ol style="list-style-type: none"> 1) Pursue a strategy focused on improving the quality of earnings and sustaining earnings growth, rather than seeking volumes growth. 2) Improve Business Processes specifically in SCM, site efficiency & quality & selectivity of bidding 	<ol style="list-style-type: none"> 1) Investing in ‘Innovation and Technology Improvement at Rail Efficiency and Safety’. They introduced new and comprehensive asset management system. 2) I&D created as a business stream to manage and refine the company’s existing skill in asset management,

	<p>-improve long term shareholders value. -Increase EPS growth.</p>	<p>-Embed Risk Management further in operations -Contain the company's overheads</p> <p>3) Pursue opportunities of 'alliancing', partnering and repeat business'</p> <p>4) Investing in PFI infrastructure projects to enable other parts of the group to generate profits in construction, operations, maintenance, as well as equity returns.</p> <p>5) Acquisitions and investments to strengthen its position in growth markets, where it has proven expertise, particularly rail and PFI.</p> <p>6) Divesting under-performing businesses.</p> <p>7) Form links with universities to improve process improvement programs.</p>	<p>increasing the service orientation of the group and facilitating beneficial and profitable integration.</p>
2000	<p>The group intends to increase long terms shareholder return by improving the quality of its earnings, sustaining earnings growth and creating sustainable forward momentum in its earnings.</p> <p><i>"We will continue to look only at opportunities which extend our existing core skills into new geographical and technological areas and in which we have already competent, largely self contained management teams"</i> (CEO statement)</p>	<p>- Undertake Initiatives that would implement the 'Business Process Improvement' objective.</p> <ul style="list-style-type: none"> • Continue pursuing acquisitions and a number of small to medium sized opportunities in key areas, where continuing growth can be predicted and where the group has a sustainable competitive advantage. • Continue bidding for PFI concessions in a number of sectors (Healthcare, Education, Transportation) and pursuing its interest in the PPP for the London Underground. 	<p>Initiatives underway to implement the 'Business Process Improvement' objectives, included:</p> <ul style="list-style-type: none"> • Reduction of supplier numbers and the further development of a preferred supplier network (SCM). • Increasing use of the operations and site process blueprint "The Way we Work" introduced by the UK construction business in 1998. • The development of an e-commerce platform to reduce transaction costs. <p>The development of a Knowledge Management System. The introduction of an enhanced business based risk identification, evaluation and management system. Strategic Acquisitions took place in the US and UK, for reasons explained in greater detail in the Appendix.</p>
2001		<p>The strategy is to 'Focus on what we know'</p> <p>An effort is made to build strong supply chain partnerships in Building, Building Management and Service</p> <p>Strategy of growth through acquisitions, which offer geographical and sectoral expansion but rely on its established core competencies and are within its markets of focus.</p>	<p>The programs that had been initiated last year in order to improve Internal Business Processes are on the following course:</p> <ul style="list-style-type: none"> • A partner has been selected for the development of the e-commerce platform and growing number of our projects now use this market leading system (procurement). • The first year of operation of the company's enhanced Risk Management System, covering commercial, safety, environmental and reputation risk issues). • The company has designed and is in the process of introducing a knowledge management system to better utilize the vast reservoir of expertise which exists amongst its staff and within its business worldwide. <p>Strategic Acquisitions took place the details of which or the reasons behind them are explained in greater detail in the Appendix.</p>

2002	<p>To develop US business similar to the successful UK model.</p> <p>- Sustain Earnings Growth</p>	<p>To sustain earnings growth, the company will embrace the following <i>Financial</i> policies:</p> <ul style="list-style-type: none"> • Manage working capital closely • Account prudently and conservatively. <p>Continuing to work towards the objective of being “market focused”, the group will also:</p> <ul style="list-style-type: none"> • Continue to develop the breadth and depths of its expertise in areas where it has existing knowledge and competitive strength. <p>Continuing to work towards the objective of increasing shareholder value:</p> <ul style="list-style-type: none"> • Contracts and investments are to be pursued only when the long term interests of the company’s shareholders are pursued. 	<p>In 2002, Albion first announced the desire to develop a US business, similar to its successful UK model. For that purpose, a US Senior manager was appointed to take responsibility for US business.</p> <p>Strategic Acquisitions took place the details of which or the reasons behind them are explained in greater detail in the Appendix.</p>
2003			<p>The company continues selective investment in PFI and PPP concessions in the UK and elsewhere.</p> <p>Program initiated to introduce the International Financial Reporting Standards, from the Annual report of the 31st of December 2005. A project team was formed with Delloite and Touche LLP, identifying key issues and system changes needed to carry out the transition. The work of the project team is ongoing with particular focus on new standards issued in 2004 and in training staff across the group on the implementation issues.</p> <p>With respect to the US business goal that was set the previous year, a new US senior management team recruited over the last 12 months is charged with identifying, developing and executing opportunities to move Albion’s US business to the direction of the group’s successful UK business model.</p> <p>Strategic Acquisitions took place the details of which or the reasons behind them are explained in greater detail in the Appendix.</p>
2004	<p>12) To be a ‘world class company’</p> <p>13) Goals for the US business where set to deliver significant performance improvements in 2005 and 2006 on which terms a larger presence can be built in the long term.</p>	<p>Further embed “Internal Business Processes” improvements so that the group continues to adhere to its core principles of²:</p> <ul style="list-style-type: none"> - careful bid selection - first class project management - sound engineering judgments - close attention to cash management <p>A strategy of looking to add new elements to its business mix.</p>	<p>A major program-project took place in the US division of Albion Rail. The downsized business is now being refocused on the growing “Rail Services Market” with key target areas:</p> <ul style="list-style-type: none"> - rail replacement - vegetation control - Upgrading and operating rail spurs for industrial locations.

		<p>13) specific project selection criteria, set for I&D projects: i) a real post tax IRR between 13% – 18%. ii) to trade on proven strengths of the group & provide design, construction and service contracts for the other parts of the group.</p> <p>In growing in overseas markets, the following four key criteria will be applied: i) The markets must be large enough to make sustained difference) offer an acceptable environment and one which does not punish foreign ownership, and have substantial numbers of sophisticated customers who will pay for superior levels of quality, safety and innovation. The goal is to grow in markets which offer us the opportunity to achieve the market leadership without undue risk.</p> <p>Our key markets will be the United States, Western Europe and South East Asia, the latter based on our strong presence in Hong Kong.</p>	<p>To enforce the Internationalization objective the Group acquired 50% of Albion Hong Kong, to create a strong base for Asian Growth.</p> <p>Projects will be targeted whose size and complexity offer advantages arising from the group's range of skills and experience.</p> <p>Strategic Acquisitions took place the details of which or the reasons behind them are explained in greater detail in the Appendix.</p>
2005	<p>After a major strategic review , the board undertook and we restated and re-communicated our core principles and the commitments we made to all our stakeholders. We are committed to deliver the reliable, responsible growth which our shareholders have enjoyed in recent years.</p>	<p>Working in partnership with sophisticated customers who value the highest levels of quality, safety and technical expertise. Our skills are applied in appropriate combinations to meet individual customer needs.</p> <p>We remain careful in our selection of what to bid and how to bid it.</p> <p>In the short term, appropriate growth will be delivered from the momentum inherent from our current mix (focus & consolidation strategy).</p> <p>The strategy to secure medium and long term growth at our target levels we will develop further in areas adjacent to our existing areas of core capability (strategy of related diversification). The way we will do so, is:</p> <ol style="list-style-type: none"> 1) We will expand further our presence in UK infrastructure markets, which already constitute the majority of our business and in which we make our best and more reliable margins. 2) Growth in professional and technical services. The creation of Albion Management has been an excellent start in developing this process (objective: professionalize-service oriented). 3) Extending our reach in Private Finance: The potentially rapid development of PPP markets outside the UK, particularly in the US and Germany, and the emergence of new UK investment opportunities outside PPP, offers further scope for growth. We will take our PPP skills 	<p>Cost Reductions and Reorganizations in Germany. Strategic Acquisition took place</p>

		<p>beyond their current boundaries.</p> <p>4) Growing in overseas markets: The development of our engineering and construction business outside the UK is an important part of our strategy. But not an urgent priority.</p> <p>Albion will continue to pursue opportunities in those existing markets where it has clear competitive advantages and market leading positions. Projects will continue to be targeted whose size and complexity offer advantages arising from the group's unique range of skills and experience.</p>	
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Part B: Table 1: Cycle 1, 1996-2004

Strategic Intent (S.I.)	Strategic Architecture (S.A.)	Stretch & Leverage Resources
<p>1) To become a ‘market led’ organization (1999). 2) To achieve more stable and secure earning streams (pre-1999, 2000, 2001, 2002, 2003, 2004),</p> <p>(i) To improve the quality of earnings and sustaining earnings growth, rather than seeking volume growth (1999). (ii) To improve long term shareholder value (1999) (iii) To increase Earnings per Share (EPS) growth (1999)</p>	<p><u>Strategic Intent 1- Strategic Architecture:</u></p> <p>i) Reorganizing and restructuring the business with consolidation around the business sectors already involved with (1997). a. Build strong supply chain partnerships in Building, Building Management and Services (2001). ii) Build in the group’s successful involvement in PFI, by creating a clear ‘market’ and ‘product’ focus in this market perceived as strategic. iii) Be more active in International Construction. a. To develop a US business similar to the UK model (2000).</p> <p><u>Strategic Intent 2 – Strategic Architecture:</u></p> <p>i) Integrate the company’s services across the Value Chain, ii) Establishing long term contracts with clients (1999) by adopting a ‘Customer oriented strategy’ to increasingly pursue opportunities of alliancing, partnering and repeat business. iii) Refine existing operations, focusing on: a) Continuous improvement in SCM (2000). 1) Build strong supply chain partnerships in Building, Building Management and Services (2001). b) On site efficiencies (2000). iv) Apply professional business management to our resources (2000), by a. Managing working capital very closely. b. Accounting prudently and conservatively. c. Continue pursuing increased margins on all businesses, primarily by selectivity of bidding. d. Contain and reduce overhead costs (1999)</p>	<p><u>S.I. 1-S.A. (i)</u></p> <p>a) Program integrating with other Rail activities of the group those acquired in 1996 from Network Rail, to create a full service, new build and renewal and maintenance serving portfolio (1997-1998-market focus) b) Acquisitions to strengthen its position in growth markets with proven expertise, particularly in Rail (1999). c) Major reorganization program in the US division of Albion Rail (2000) d) Cost reductions and reorganizations in Germany (2004)</p> <p><u>S.I. 1- S.A. (ii)</u></p> <p>e) ‘Albion Projects created (1997-1998). f) ‘Investments and Developments’ created to manage the groups PFI businesses (1999). g) Selectively investments in PFI projects as opportunities appear (1996). h) Continued investing in a number of sectors (Healthcare, education, and transportation) in PFI and PPP concessions in the UK and elsewhere, targeting projects whose size and complexity offer advantages arising from the group’s range of skills and experience (2004).</p> <p><u>S.I. 1 – S.A. (iii)</u></p> <p>i) Selectively pursuing overseas smaller and major projects, in order to carefully expand their regional operations (1996). j) ‘First Philippines Albion’ a joint venture company with a local contractor (1999) k) A US Senior manager was appointed to take responsibility for US business (2002). l) A new US senior management team recruited over the last 12 months, charged with identifying, developing and executing opportunities to move Albion’s US business to the direction of the group’s successful UK business model (Stretch & Leverage, 2003). m) The Group acquired 50% of Albion Hong Kong, to create a strong base for Asian Growth (Stretch & Leverage, 2004).</p> <p><u>Strategic Intent 2</u> <u>S.I. 2- S.A. (i)</u></p> <p>a) Investments and Developments’ created as a ‘Sector’ BU grouping’, to facilitate beneficial and profitable integration of the group’s skills and services (1999). b) Invest in PFI infrastructure projects that would enable other parts of the group too generate profits in design, construction, maintenance, operation as well as equity returns (1999, 2004).</p> <p><u>S.I. 2- S.A. (ii)</u></p> <p>Albion Management created to offer a range of professional and technical services.</p>

		<p><u>S.I. 2- S.A. (iii)</u></p> <ol style="list-style-type: none">1) Reduction of supplier numbers and the further development of preferred supplier network (SCM) 2000 and development of an e-commerce platform to reduce transaction costs.2) Increasing use of the operations and site process blueprint 'The Way we Work' introduced by the UK construction business in 1998 (2000). <p><u>S.I. 2- S.A. (iv)</u></p> <ol style="list-style-type: none">i) Quality of bidding selectivity and cost control (1996, 1997, 1998, 1999).j) Introduction of an enhanced business based risk identification, evaluation and management system.
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Table 2: Cycle 2, 2005-onwards

Strategic Intent (S.I.)	Strategic Architecture (S.A.)	Stretch & Leverage
<p>Strategic Intent 3</p> <p>Further expansion in UK regional Infrastructure</p> <p>Strategic Intent 4</p> <p>Growth in Professional and Technical Services</p> <p>Strategic Intent 5</p> <p>Extending our reach in Private Finance, by the extension of our investment business in new markets</p> <p>Strategic Intent 6</p> <p>Establishing strong and domestic businesses in selected overseas markets</p>	<p>Strategic Intent 3</p> <p>Strategic Intent 4</p> <p>Develop upstream capabilities in program management and technical consulting to be able to adopt a broader and more proactive role towards the services we offer our customers.</p> <p>Strategic Intent 5</p> <p>i) Continue to build on the group’s existing PPP portfolio and establish an appropriate concession base as PPP markets emerge, in territories where Albion already has a substantial local presence and existing market knowledge (2006).</p> <p>ii) Deploy the expertise in ‘Albion Capital’ team of over 200 professionals built over 10 years as a leading participant in the UK PFI/PPP markets,</p> <p>iii) on the fast emerging market for non PPP infrastructure investment in the UK. The target asset classes will be those where Albion has established contracting expertise, such as airports and utilities (2006).</p> <p>iv) take advantage of refinancing opportunities and carefully targeted acquisitions and divestments in the secondary PPP market where appropriate (2006).</p> <p>Strategic Intent 6</p> <p>(The strategy is to focus on markets that (2006):</p> <p>i) are large enough to make a substantial difference.</p> <p>ii) offer an acceptable business environment which does not discriminate against foreign ownership.</p> <p>iii) are sufficiently endowed with sophisticated customers who will pay for superior levels of quality, safety and innovation</p> <p>iv) Offer us the opportunity to achieve a leading market position without undue risk.</p>	<p>Strategic Intent 3</p> <p>In Rail Engineering and Services:</p> <p>i. Acquisition of Albion xyz completed in 2006 (manufacturer of Rail-Track products)</p> <p>ii. Albion Rail Track System –‘Plant Investment’ program</p> <p>iii. Investment in new high output plant to improve reliability & availability of the on-track fleet in Albion Rail Plant.</p> <p>iv. Albion Rail Germany: acquisition of ZWX- a specialist signalling contractor) and a signalling cooperation with TWA in project bidding.</p> <p>In Civil Engineering</p> <p>v) The acquisition of ABCD plc</p> <p>Strategic Intent 4</p> <p>i) Progress of Albion Management accelerated in 2006.</p> <p>ii) ‘Albion Building US’ acquired a Texas based construction management business on March 2006.</p> <p>Strategic Intent 5³</p> <p>Strategic Intent 6</p> <p>Poor performance in Albion Construction Inc central division is offsetting good performance in West Coast and Texas. Closer supervision from UK management and more rigorously applied control mechanisms to address the issue (2006).</p> <p>Significant progress has occurred for ‘Albion Building Management’. The company now has a very significant portfolio in support of the group’s PPP projects, with 4 more major schemes at preferred bidder stage (2006).</p>

Appendix 5.5: Semi-Structured Interview Analysis - Routine Identification - Case Example: Cyclone

The following table has isolated a passage from one interviewee's responses, which has been 'clustered' during coding, under 'Stretching and Leveraging Resources and Core Competencies'. While the 'extended' text was analyzed on that stage, notes were taken to identify the individuals/organizational bodies, processes and structures of the routines through which activities were implemented (stretch and leverage in the case of this example). Then, these contributed to being able, with data from multiple interviews, to focus on the routines themselves, and describe them within the context of the organization they were taking place in (Cyclone in this case).

'Stretching and Leveraging Resources and Core Competencies' Routine Identification - Cyclone		
Source	Extended Text	Individuals/Organizational Bodies, Processes and structures (Researcher's Notes)
I6: PM	<p>YZ: So, how centralized/decentralized is engineering?</p> <p>PM: Well, we have this global communities network, which is people from within business units and within the engineering functions that get together to establish common practices and procedures around engineering. More at the high level, generic, basic fundamental work processes of how we do engineering. For example, something like electrical: running an electrical cable for Energy & Chemicals should be no different than running an electrical cable in our government group, right? I mean, you know. So, the purpose of this group is to identify technical similarities and develop consistent practices and procedures, tools and software, document those and transfer them. We leverage knowledge on-line to distribute those practices and procedures and I am sure Mr._____ went through that with you. So, although the engineering functions reside in the business units, there is what we call 'the global communities network', represented by 'global excellence leaders' for all the functions related with engineering. They meet on a regular basis under this umbrella that we call 'project execution services'. So, long story short, I am responsible for what we call our 'roject execution services'. What this is, is not just the engineering functional groups, but all the functional groups that we have in the company. So, lets say the 'materials management' global excellence leader, does not only work directly for construction and procurement, she also has a global responsibility for all material management in the corporation and under that responsibility, she reports to me on a portfolio assignment which is part of the network that we have at Cyclone. So, we are a very Matrix organization. You have your business line responsibilities and then you have your broader responsibilities related to global communities network.</p>	<p>Functions: Global community networks to establish common practices and procedures</p> <p>Knowledge 'leverage' through knowledge on-line</p> <p>Project execution services is a 'sub-group' of global communities network'</p> <p>Global excellence leaders also have executive responsibilities in the organization, either BU or functional.</p>

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