

# 7

## *Learning in the project business*

THIS chapter examines the learning processes that must occur for a project business to develop the capabilities to move into a new technology and market position.<sup>1</sup> The long-term profitability, survival and growth of the project business depend on its ability to learn from new base-moving projects and to convert the knowledge gained into new organisational capabilities and improvements in project performance. However, research has emphasised the challenges that firms face when they attempt to capture the learning gained through projects and transfer it to their wider organisations (Middleton, 1967; Gann and Salter 1998 and 2000; DeFillippi, 2001; Grabher, 2003). There is a risk that the knowledge and experience gained are lost when the project finishes, the team dissolves and its members move on to other projects or are reabsorbed into the organisation. Unless lessons learnt are communicated to subsequent projects, there is also a risk that the same mistakes are repeated.

Despite the difficulties of project-based learning, several studies show that firms can and do achieve organisational learning through projects (Keegan and Turner, 2001; Ayas and Zeniuk, 2001; Prencipe and Tell, 2001). However, research on project-based learning has tended to focus on snapshots of learning practices within a single project or learning between projects, with few examples of ‘enduring engagement in learning and profound large-scale transformation’ as firms succeed over time in generating and diffusing the knowledge gained throughout their organisations (Ayas and Zeniuk, 2001: 61).

This chapter provides evidence to show how successful firms learn profoundly and continuously from projects. We present a model which shows that the project-based learning that occurs when a firm diversifies into new technology and market positions should be analysed and understood as a dynamic process of project capability building.

<sup>1</sup> This chapter is based on a paper by Brady and Davies (2004).

Drawing upon the broader literature on organisational learning (Nelson and Winter, 1982; March, 1991), the model shows that initial moves into a new technology or market base are characterised by ‘exploratory learning’ when the firm experiments and innovates with new bid and project practices. A firm’s traditional project management routines may have to be abandoned or radically revised in order to move successfully into the new type of project. Efforts are made to capture the learning generated by the initial exploratory base-moving projects and to transfer the knowledge and experience gained to subsequent projects and to the wider organisation. In a growing market, the emphasis switches over time to ‘exploitative learning’ as the firm capitalises on the knowledge and learning gained to develop the company-wide capabilities, resources and routines needed to execute an increasing number of projects.

To explore and explain these dynamic processes of project-based capability building, the chapter uses case studies of project-based learning in two leading international suppliers of CoPS – Ericsson and Cable & Wireless (C&W). During the period 1994 to 2003, these firms engaged in a process of capability development to carry out radically different types of base-moving projects: C&W moved into global outsourcing solutions for large corporate customers and Ericsson moved into turnkey and other service-intensive projects for mobile phone operators.<sup>2</sup> The chapter reveals how these firms developed and exploited project-based learning to build organisational capabilities. It also shows how the firms developed their business-wide organisational capabilities in order to improve their wider project processes and performance.

Based on our empirical findings, a model of project capability building is introduced consisting of two interacting and co-evolving levels of learning.<sup>3</sup> First, from the bottom-up, are the project-led phases of learning that occur when a firm moves into new technology or market base: an exploratory vanguard project phase; a project-to-project phase to capture lessons learnt; and a project-to-organisation phase when the organisation increases its capabilities to deliver many projects. Second,

<sup>2</sup> Under contracts for turnkey solutions, the supplier is responsible for the entire set of activities involved in the design, integration, construction, testing and delivery of a fully functioning system. In theory, all the customer has to do is turn a key.

<sup>3</sup> The inductive method and longitudinal case study used to construct the model are described in Appendix C.

from the top-down, is the business-led learning that occurs when top-down strategic decisions are taken to create and exploit the company-wide resources and capabilities required to perform increasingly predictable and routine project activities.

The model can be used as a tool to help managers and researchers analyse and improve project-based learning in their organisations and benchmark their performance with other firms, sectors and industries. The phases of learning have become increasingly important to the strategy of a growing number of firms which, like C&W and Ericsson, have been developing a new base of project capability to perform activities outsourced to them by their customers, by entering into long-term strategic partnerships to provide high-value integrated solutions to their customer needs (which we discuss in Chapter 8).

### **Learning and project capability building**

Penrose's (1959) resource-based theory of firm growth discussed in Chapter 3 has been described as a 'learning theory of the firm' (Best, 1990: 127). She argued that the possible paths of direction a firm can follow are shaped by its previously acquired managerial knowledge and experience as well as its ability to absorb valuable new learning and build new capabilities. In addition to the different sets of strategic and functional capabilities, we argued in Chapter 3 that project capabilities are an increasingly vital source of competitive advantage. Studies of organisational capabilities in the resource-based literature have emphasised the importance of knowledge gained from learning, but have largely neglected to examine adaptive organisational learning processes that occur as a firm moves its capability base or adapts to a rapidly changing external environment.

The knowledge that organisations possess through learning can be divided into four distinct types, shown in Table 7.1, associated with explicit/tacit and individual/group distinctions (Cook and Brown, 1999). These four types of knowledge refer to knowledge that both people and organisations possess. According to Cook and Brown, this 'epistemology of possession' cannot account for the knowing associated with concrete individual and group action, which calls for an 'epistemology of practice'. The experience gained through 'knowing in action' produces ongoing changes in the knowledge of particular individuals and enables a collection of individuals to work together in a

**Table 7.1: Typology of learning and knowledge**

---

<i>Explicit knowledge</i>	Explicit knowledge can be codified, formally expressed and learned from other people (Nonaka and Takeuchi, 1995). It refers to ‘objective’ knowledge contained in manuals, guides and procedures (Penrose, 1959: 53). Explicit knowledge is independent of individuals and can be transmitted to others by formal teaching or the written word.
<i>Tacit knowledge</i>	Tacit knowledge refers to the learning gained from personal experience. This form of knowledge is embedded in firm-specific methods, the ‘best ways of doing things’, skills and teamwork (Best, 1990: 127; Nonaka and Takeuchi, 1995). It ‘cannot be articulated’ (Nelson and Winter, 1982: 76) and cannot be separated from particular individuals or groups of individuals working in teams. Although ‘experience itself can never be transmitted to others’ (Penrose, 1959: 53), the results of experience can be converted into objective knowledge and learned from other people or from the written word.
<i>Individual learning</i>	Individual learning occurs when a person gains experience and knowledge.
<i>Organisational learning</i>	Organisational learning happens when groups of individuals use their collective knowledge and experience to perform activities. As Penrose emphasised, a firm is more than a collection of individuals: ‘It is a collection of individuals who have had experience in working together, for only in this way can “teamwork” be developed’ (Penrose, 1959: 46). The experience possessed by teams of individuals helps to draw attention to the unique organisational capability base of the firm.

---

group or organisation (Orlikowski, 2002). Cook and Brown (1999) argue that the interaction – or ‘generative dance’ – between knowledge and knowing is a powerful source of organisational innovation. The interaction does not ‘convert’ tacit into explicit knowledge as Nonaka and Takeuchi (1995) suggest. Rather, it generates new knowledge which may be tacit or explicit in nature.

### *Organisational learning*

Studies of organisational learning distinguish between resources allocated to routine and innovative learning processes (Nelson and Winter, 1982; March, 1991). Organisations make explicit choices about how to use scarce resources for alternative investments and competitive strategies. They can continue to invest in their current technology and market base by exploiting existing capabilities that are predictable and routinised. Alternatively, they can respond innovatively by exploring unknown technological and market alternatives and by developing new capabilities.

As we discussed in Chapter 3, a firm's organisational capabilities are based on routines. Built around previous patterns of learning, routines refer to repetitive and predictable patterns of productive activity involved in producing products and services that are 'visibly "the same" over extended periods' (Nelson and Winter, 1982: 97; March and Simon, 1958: 13). A firm's tacit knowledge is embodied in well-defined routines and stored in its organisational memory. Formal memories such as written records and other explicit knowledge play a role, but are not sufficient to maintain a firm's organisational memory. Organisations can remember only by exercising routines (Nelson and Winter, 1982). Conversely, innovation refers to the incremental and radical changes in a firm's routines required to develop new technologies or explore new markets (Nelson and Winter, 1982: 128).<sup>4</sup> Innovation is required for a firm to break away from existing routines and branch out in new strategic directions. But routines are required to improve operational performance as a firm develops and consolidates its new technology and market base.

March (1991) develops this theme in relation to organisational learning by making a similar distinction between exploitation and exploration. Exploitation refers to the routine behaviour involved in refining or extending a firm's current capabilities and improving the performance of existing routines. Exploration refers to the innovative behaviour involved in risk taking and experimenting with unfamiliar alternatives. Short-term returns obtained by exploiting a firm's current capability base may appear unprofitable when compared with the longer-term

<sup>4</sup> Routinisation and innovation are closely connected. Innovations in routine consist of new combinations of existing routines and reliable routines provide the best components for new combinations.

rewards obtained by exploring new fields of technology or attacking new market spaces. However, firms that engage in the exploration of new possibilities at the expense of exploitation may suffer from ‘too many undeveloped ideas and too little competence’ (March, 1991: 71).

Each type of activity has distinct implications for learning. The learning gained from exploitation is tied more closely to its consequences through efforts to feed back the learning gained as improvements to current processes. The learning gained from exploration through ‘the search for new ideas, markets, or relations has less certain outcomes, longer time horizons, and more diffuse effects than does the further development of existing ones’ (March, 1991: 73).

Efforts to strike a balance between exploratory and exploitative learning are closely connected to the rate of change in the environment. In stable environments, where established routines and patterns of behaviour rarely become obsolete, there may be little interest in learning or improving processes through exploration (Hedberg and Wolff, 2001: 537). There is a risk that the learning that does occur – ‘single-loop’ learning – employs defensive routines to resist change and supports self-sealing and self-repeating patterns (Argyris, 1977). Cyert and March (1963) suggest that when actions improve performance, organisations tend to repeat them until they become standardised or routine operating procedures. However, adhering to standard operating procedures can encourage organisations to behave unreflectively and automatically (Starbuck, 1983 and 1985) which prevents them from adapting to a changing environment.

In changing or unstable environments, firms face the challenge of exploring new alternatives, re-deploying their existing resources and developing new capabilities and routines. The survival of an organisation in a changing environment depends on its ability to exploit successful routines and practices and to generate alternative ones. Individuals and organisations have to engage in self-reflective ‘double-loop’ learning by confronting previously held assumptions and creating new, more appropriate routines (Argyris, 1977). Time for reflection on the outcomes of learning is essential in order to transform tacit experience into explicit knowledge (Schön, 1983).

Generally, firms increase their capabilities by developing skills, learning new routines and standardising tasks at two different levels (Adler and Clark, 1991). First-order learning involves the incremental development of capabilities which enable existing activities to be

repeated more effectively.<sup>5</sup> Second-order learning requires explicit decisions to transform the goals of the enterprise and to change technologies, products, processes and skills in ways that deliberately augment capabilities. The advantages of both levels of learning are cumulative, resulting in increasing returns to experience. Indeed, each increase in an organisation's capability to perform an activity increases the potential returns for engaging in that activity (March, 1991: 73).<sup>6</sup>

### *Project-based learning*

Some important recent studies recognise that learning through projects – a subset of organisational learning – is one of the main ways in which firms develop the capabilities required to improve their performance. The central problem of maintaining project capability is that unless the knowledge and experience gained on one project are transmitted to current or succeeding projects, learning may be dissipated and the same mistakes repeated (Middleton, 1967: 81). When a project finishes, members of the disbanded team often have little time or motivation to reflect on their experience and document transferable knowledge for recycling in future projects (Coombs and Hull, 1997).

The perception that projects perform only unique and non-routine tasks often conceals many potentially transferable lessons. Knowledge creation and learning can occur at several different levels (such as the individual, project, business unit, firm or industry) and often as an unintended by-product of the project activity (DeFillippi and Arthur, 2002). Many firms create organisational learning mechanisms as deliberate attempts to capture the experience gained through projects (Prencipe and Tell, 2001). Such organisational learning mechanisms are the

<sup>5</sup> Arrow proposed the counter argument that 'learning associated with repetition of essentially the same problem is subject to diminishing returns' (Arrow, 1962: 155). He argued that learning can produce increasing performance only if the 'stimulus situations' that induce attempts to solve a problem are 'steadily evolving rather than merely repeating'. By contrast we show below that the repetition of a project activity gives rise to a series of evolving problems involving second-order learning. These are problems of growth and change which organisations *have* to develop the capabilities to solve.

<sup>6</sup> Similarly, Teece et al. (1994) distinguish between static routines which, like first-order learning, enable firms to replicate previously performed activities in a stable environment and dynamic routines which, like second-order learning, are directed towards applying and developing new knowledge and experience.

institutionalised, structural and procedural arrangements that allow organisations to systematically collect, analyse, store, disseminate and use information (Popper and Lipschitz, 1995; Lipschitz et al., 1996). Our colleagues in the CoPS Centre carried out a survey of inter-project knowledge capture and transfer in 43 firms in the UK, Europe, North America and Japan. They found that many learning mechanisms have been developed and adopted, ranging from formal post-project appraisals to informal face-to-face exchanges of project-related news (Brady et al., 2002).

Several studies have emphasised that compared with the high-volume production processes based on standardised and routinised tasks, the one-off and unique nature of project activities provides few opportunities for performance improvements based on routinised learning and systematic repetition (Winch, 1997; Gann and Salter, 1998 and 2000; Turner, 1999). The problem with this widely held view of project-based learning is that it equates all project-based activities with non-routine behaviour. As we discussed in Chapter 3, firms carry out different types of projects ranging from the unique to the repetitive. Unique projects provide fewer opportunities for cumulative learning because project tasks are rarely repeated in the future. In repetitive projects, by contrast, firms can learn from experiences because the tasks performed are repeated in many similar types of projects. Although each project is tailored to a customer's specific needs, they are repeatable because they use the same bid and project management routines and share common components.

The efficient reuse of tacit and codified knowledge is essential to project efficiency in both unique and repetitive projects. On the one hand, firms that deliver one-off or unique projects that do not have clear solutions at the outset rely heavily on tacit knowledge built around the needs of a specific project. The process of sharing and recycling tacit knowledge is difficult, time consuming and costly. Although it is difficult to systematise tacit knowledge, there are opportunities to exploit it by reassigning key members of the project team to other similar projects that require a highly customised solution to a unique problem.

On the other hand, the efficient reuse of codified knowledge is essential in repetitive projects where firms have to solve similar problems over and over. Firms that follow a codification strategy depend on the economics of reuse: 'Once a knowledge asset – software code or manual, for example – is developed and paid for, it can be used many times over at very low cost, provided it does not have to be substantially



modified each time it is used' (Hansen et al., 1994: 69–70). By reusing and recombining its knowledge and experience, a firm can utilise its resources more efficiently and take on more projects.

As Chapter 3 showed, firms that move base into a new line of projects that can be repeated in future may realise economies of repetition and recombination. They achieve this by recycling tacit and codified knowledge across an increasing number of projects. The knowledge created by performing tasks that recur frequently over many projects can be reused and recombined in a number of ways to serve different types of customer problems. However, the opportunity to exploit such recurrences may be missed if the knowledge gained is not codified, resulting in a need to create the knowledge from scratch each time a new project is undertaken.

A firm's ability to improve its project efficiency depends on a process of project-based learning and capability building over time. In this way, a firm can grow from the first-of-its-kind project in the new technology and/or market base to a position where it can execute a large portfolio of standardised projects more efficiently and effectively. Programme management techniques can help firms run multiple projects more efficiently, enabling them to share resources and capabilities.

### *Project learning and capability building*

It is clear that a model of project capability building (PCB) is needed to describe the organisational learning that typically occurs when a firm moves into new technology and/or market bases. The PCB model, shown in Figure 7.1, builds on Middleton's (1967) original insight that the establishment of a new project can initiate an organisational cycle leading to far-reaching changes to the capabilities and organisation of the firm.<sup>7</sup>

<sup>7</sup> Like suppliers of CoPS, high-volume producers experience a similar process of growth and capability development. The key difference is that in high-volume production growth is driven by product sales rather than project repetition and the emphasis is on developing functional rather than project capabilities. Galbraith's (1982) model of venture start-ups and growth shows how firms evolve through distinct stages from the initial business idea towards high-volume production. Burgelman's study of internal corporate venture projects emphasises that fast growth towards a sizeable business organisation depends on functional efficiency gains obtained by 'the development of routines, standard operating procedures and the establishment of an administrative framework for the new venture' (Burgelman, 1984: 38).

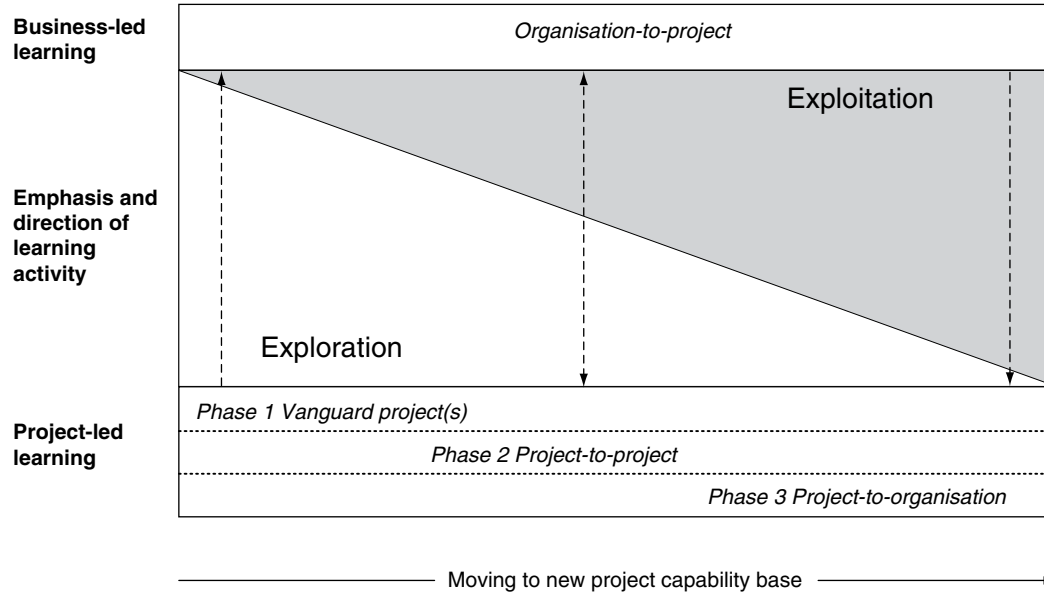


Figure 7.1. Project capability building (PCB) model

Source: Brady and Davies (2004).

The model applies only to projects that have the potential for becoming major new lines of repeatable business, such as turnkey, outsourcing, Design-Build-Operate or Public-Private Partnership projects. It consists of two co-evolving processes of organisational learning, each emphasising the different direction and levels of project capability building within the firm. First, project-led learning occurs when a firm initially moves into a new technology or market base and develops new project capabilities typically through three different phases of project-based learning. Such project-based learning endeavours, undertaken by individual project organisations, units or divisions, are embedded in the wider business and strategic context of the firm.

Second, business-led learning refers to the knowledge that a firm uses when it takes strategic decisions to focus on new project business activities. Whereas project-led learning is largely gained from the bottom up through the activities of the customer-facing project businesses, business-led learning requires deliberate top-down strategic decisions to bring about the changes that occur when a firm creates organisational structures and systematically develops the corporate-wide resources required to exploit a new base of project capability.

### **Project-led learning**

Typically, in phase one, a new project is established at the forefront of a firm to explore strategic opportunities to move into new technology or market bases or to adapt to a changing market environment. These vanguard projects lead the way by anticipating progress as well as gaining experience about the new activity. Because existing routines can be an obstacle to innovation, vanguard projects are responsible for developing new routines outside of the traditional recipe. They are often set up as a separate pilot group to explore the new opportunity on a trial basis and to provide room for new ways of thinking and acting at a distance from the mainstream organisation (Brown and Duguid, 2000: 154).

Project members use their existing knowledge to help guide their action, but gain understanding of the new type of project by carrying out their specific work in a group context (Cook and Brown, 1999). In this phase of within-project learning (Keegan and Turner, 2001: 79), the experience gained is held in common by the group involved in the project. In a process of double-loop learning, project participants must often be prepared to break the rules to invent new routines and ways of

working more effectively (Ayas and Zeniuk, 2001: 63). Such deviations from established project procedures and past routines represent a powerful source of learning and organisational innovation.

In phase two, project-to-project learning is predominant as attempts are made to capture and transfer the experience and insights of participants in the vanguard project to subsequent project teams who can benefit from them. Key members of the vanguard project team may be reassembled to work on a subsequent project. Reflective practices, such as project accounts or 'war stories', team learning, lessons-learnt exercises and organisational learning tools, help to communicate the lessons learnt. In this process of between-project learning, formal learning mechanisms (e.g. post-project reviews, intranets and databases) are developed to capture the learning gained on projects, codify it and make it available to other project teams.

Once a sufficient number of the new types of project have been undertaken there is an opportunity in phase three for project-to-organisation learning. In successful organisations, attempts are made to consolidate the initial learning and to systematically spread this accumulated knowledge throughout the department, business unit or division responsible for delivering projects. These project business organisations have to grow or create specialised units with the capabilities required to support the increasing volume of projects. Attempts are made to capture the cumulative learning from previous projects and to institutionalise new routines, information and processes based on those learning experiences. New standardised processes and IT tools have to be put in place to run multiple new bids and projects. This helps to ensure that the knowledge gained from bidding and executing such projects becomes embedded in the organisation's memory.

### **Business-led learning**

These project-led learning processes are embedded within the wider business organisation and strategic context of the firm. Senior management can intervene at any time to actively promote far-reaching organisational changes or withdraw from the new line of projects. Strategic decisions to move forward, such as the creation of divisions, are designed to re-focus the core activities of the firm on the delivery of the new type of project. Customer demands for new technologies, products or services, which require adaptation for existing or new markets, can encourage the emergence of numerous bottom-up project initiatives. The creation

of a business unit or venture division provides a place to concentrate resources, capabilities and projects that are scattered throughout the firm. Strategically, top management can gain greater control of the new project activities while continuing to exploit its current mainstream base business. Indeed, previous research on corporate ventures has shown that the creation of a separate division preserves some of the autonomy required to meet the new business opportunity, provides greater focus on the external market environment, and the distance from the mainstream business facilitates a global and cross-divisional strategic perspective (Tidd et al., 1997: 292–3).

Attempts can be made to ensure that important project-based learning is fed back to senior management involved in formulating the overall strategy for the new business opportunity. Ideally, resources and capabilities need to be created which can easily be exploited by the firm as a whole. Processes should be put in place so that the new project activities can be ‘routinised for day-to-day performance’ (March and Simon, 1958: 26). The objective of business-led learning is to refine and extend a firm’s entire organisational capabilities, including its strategic, functional and project routines, in order to fully exploit its new technology or market base.

The interacting levels of the PCB model illustrate the changing direction of organisational learning and triggers for capability building associated with exploratory and exploitative activities. Whereas March (1991) emphasises the ‘trade-offs’ between the two types of organisational learning, the PCB model attempts to identify the ‘transition’ from exploration to exploitation as firms advance through the phases. Firms that are quick to enter and capitalise on their experience with a new type of project can gain first-mover advantages. Pioneers in new technology or market positions have a head start in generating new organisational capabilities (Chandler, 1990: 34–5). They can move quickly down the learning curve for each of the different areas of project capability before the challengers go into operation.

## **Case studies of project capability building**

To explain the dynamics of project and business learning it is helpful to illustrate the PCB model by examining episodes of learning and project capability building in two large firms. Because the case studies are from the same sector they provide a fruitful source of comparison. C&W is a

service-based firm moving into a new market and technology base for global outsourcing solutions. Ericsson is a product-based firm also moving into higher value-added solutions markets, but without significantly altering its technological base. Both cases show how the initial engagement with a new type of solutions-based project led to transformation of the capability base and organisation of the firm.

### **Traditional project capability base**

C&W is an international telecoms operator and service provider. At the start of our collaboration in 1994 C&W had just moved from a holding company for diverse telecoms services to a federation by developing stronger ties and synergies between its regional business units located in more than fifty countries. Our case study concentrates on the Business Networks (BN) unit within the C&W group. In the mid-1990s, BN was responsible for providing multinational corporate customers with customised voice and data services. The business unit was involved in one main type of project called managed network services (MNS). Drawing upon the resources and networks of C&W's regional business units, BN had developed the capabilities to plan, design and manage MNS contracts using traditional circuit-switching technologies in partnerships with key equipment manufacturers. Where the group was unable to provide coverage using in-house facilities, circuits were leased from third-party operators.

For several decades Ericsson had focused mainly on manufacturing telecoms equipment used in fixed networks operated by traditional public telecommunications operators. Between the late 1970s and mid-1990s, Ericsson gradually moved base to provide mobile communications technology for a new type of customer, namely mobile phone operators. By 1997 Ericsson had become the world's leading manufacturer of mobile systems with 42 per cent of the world market. The following case study is centred on Ericsson Telecommunication Limited (ETL) in the UK (now part of Ericsson Mobile Systems division). In the mid-1990s, ETL and Ericsson's market-facing local companies elsewhere in the world had established the capabilities to perform two types of projects: development projects to improve or refine technologies in each generation of mobile products, and mature product line or implementation projects to design and install equipment (based on existing technology) to meet individual customer specifications for standard equipment supply contracts.

The bid and project management processes performed by both firms were based on the execution of standardised routines which formed part of each organisation's existing project capability base. Project teams in both firms worked to procedures laid out in in-house documents or manuals. For example, C&W used a *Bid Document Preparation Process* which described in detail the procedures involved in preparing MNS proposals (C&W, 1993). Ericsson has used PROPS (the name given to the company's in-house project manual) since 1988 to set up and manage projects in a multi-project environment (e.g. Ericsson, 1990).

It is insightful to illuminate the specific dynamics of capability building that occurred in the two case study firms as they explored departures from their traditional capability base.

### **Moving the business base: C&W's global outsourcing solutions**

Our research with C&W focused on the bidding component of project capabilities. The case shows how C&W moved its entire business base (a technology and market shift) in response to customer demands for a new type of outsourcing project incorporating new internet protocol technologies. The lessons learnt in bidding for two outsourcing contracts were fed back into subsequent projects, led to changes in the organisation of the business unit and contributed to major changes in the strategic direction of the entire C&W group.

### **Project-led learning**

#### **Phase 1: Vanguard project – initial global outsourcing bids**

In 1997, some of C&W's largest multinational corporate customers (Standard Charter Bank, Citicorp, Andersen Consulting, Chase Manhattan and Compaq) began to demand more complex and higher-value global outsourcing solutions. They wanted to outsource responsibility for many activities previously performed in-house (e.g. network planning, management and business processes) and wanted their entire IT and telecommunications requirements met using new IP packet-switching technologies. To avoid having to negotiate with numerous operators in different national markets, they also wanted to deal with a single point of contact for their global communications requirements.

C&W's opportunity to move base into the global outsourcing markets and IP technologies arose at a time when the competitive survival of the group was under threat. The uncertainty surrounding several attempts to take over the C&W group affected BN's performance. The unit had failed to win major bids for some time, had undergone several reorganisations and been unable to resolve the difficulties it had experienced in leveraging the resources of C&W's regional business units.

In 1997, BN was galvanised into action by the arrival of two global outsourcing bids: from Citicorp and Andersen Consulting. BN already had some experience with outsourcing bids, but the two new ones involved a long-term partnership with the customer and provided a clear indication of how BN would be working with its customers in future. The Citicorp bid team realised that a new flexible approach of partnering with the customer had to be forged to develop a successful bid. BN's chief executive recognised that established routines and processes developed for less complex MNS projects were inappropriate for outsourcing bids. With the support of senior management, the bid team ignored traditional bid document preparation procedures. Several members of the team had worked together on unsuccessful bids and, unwilling to go through the same process again, felt they had nothing to lose by following their instincts rather than the established methods.

In contrast to the hierarchical management and matrix structure used in standard MNS bids, the team adopted an approach characterised by flexibility, informal team dynamics and a willingness to break the rules if this was required to win the business. Whereas bid teams were usually located in BN's London head office, the outsourcing bid team co-located with the customer in the United States. The creation of what the team called a 'war room' helped to develop a close relationship with the customer as well as among team members. The personal involvement of BN's chief executive in the bid helped enthuse the team and create a desire to win the bid and future business.

Despite Citicorp's advisor recommending the BN bid, Citicorp opted for its incumbent telecoms supplier. However, the knowledge generated and experience gained during the preparation of the unsuccessful bid proved instrumental in winning the next one. In August 1997, BN was invited by Andersen Consulting to tender for another outsource opportunity. The advisor to Citicorp who had been impressed by the



BN approach was also an advisor to Andersen Consulting and recommended that C&W should be invited to put forward a tender. A decision was taken by C&W's board to bid for this high-value contract, which was worth several hundred million dollars, because the global outsourcing market was seen as vital to the survival of the C&W group.

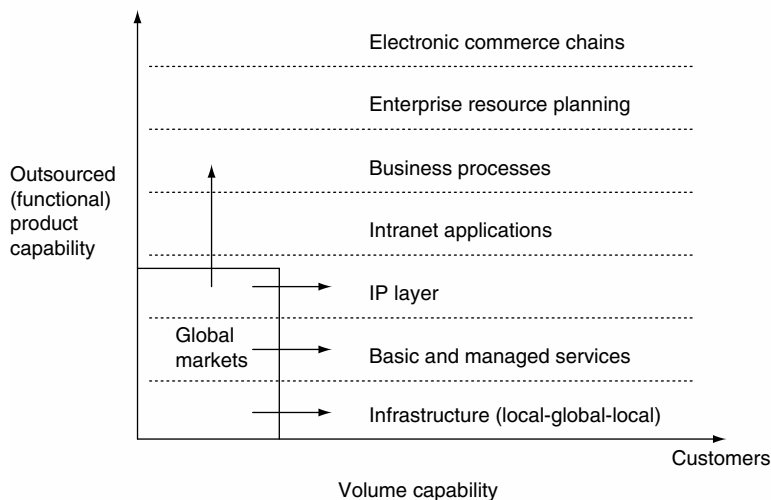
Under the recommendation of BN's chief executive, key members of the Citicorp bid team were reassembled to run the Andersen bid. With the same account director and bid manager, it was possible to build on the experience of the first bid and carry forward the same partnership approach. The BN team again worked closely with the customer to produce a bid document covering all the novel features required by the outsource solution: design, installation, network management and service-level agreements.

After months of negotiation, the final proposal was submitted in March 1998. C&W and GTE, its main American subcontractor, were notified verbally that they were the customer's preferred supplier. In October 1998 the contract was signed and the project moved into implementation.

## Phase 2: Project-to-project

BN attempted to build on the knowledge and experience generated during the unsuccessful Citicorp bid by immediately reassigning key members of the team to work on the Andersen Consulting bid. In turn, the knowledge gained from the Andersen Consulting bid proved valuable in bidding for a large outsourcing solution for General Motors, as well as subsequent bids. To capitalise on the experience gained from previous bids, BN adopted a new policy of keeping members of core teams together for two years to work on a series of major outsourcing proposals. In this way, knowledge was enhanced and consolidated.

BN used other learning mechanisms to facilitate project-to-project learning during this phase. For example, there was an independent review of the lessons learnt in the two vanguard outsourcing bids. As part of our research process we interviewed and videotaped key members of the bid teams and senior managers in BN (CEO and vice-presidents) in order to produce a CD-Rom learning tool called *Winning Outsource Bids*. The learning tool outlined the new flexible approach required to develop outsourcing bids and was used by subsequent bid teams.



**Figure 7.2.** Global Markets needs to develop its portfolio

Source: C&W internal bid management presentation (2000).

### Phase 3: Project-to-organisation

To accommodate growing demand for outsourcing, BN was reorganised to provide global rather than regionally based solutions. Previously BN had set up small bid teams organised in a matrix structure to deliver standard MNS contracts from the London head office. Global outsourcing required a new and larger organisation. BN increased in size from around 200 staff in 1994 to 700 by 1999. Large, dedicated teams had to be co-located with each new outsourcing customer and organised as a pure project-based organisation for a prolonged selling cycle. As shown in Figure 7.2, BN had to develop a broader set of capabilities to address the activities being outsourced by its customers (e.g. intranet applications, business processes and enterprise resource planning) and create partnerships with a new breed of IP suppliers (Nortel and Cisco Systems) to provide equipment that C&W installed, maintained and supported.

### Business-led learning: the creation of C&W Global Businesses

The experience of winning the Andersen Consulting outsourcing bid was instrumental in the C&W group's strategic decision to move out of low-value-added consumer markets and re-focus the entire organisation

on the delivery of global IP solutions to business customers. By 1998, revenue from outsourcing contracts was growing at over 25 per cent each year, reflected in a 155 per cent increase in the division's turnover (Cable & Wireless, 1999). C&W Global Businesses, which operated under a single global brand with a single point of contact for the customer, was formed in 1998. BN was reorganised into a division called Global Markets (GM), responsible for bids and managing global solutions for multinational customers. In 1999, 30 nominated accounts for global customers were transferred to GM from the group's regional operations.

In May 1999, C&W withdrew from consumer activities (e.g. One-2-One and Mercury in the UK) in order to concentrate on business-to-business markets. In June 2000 a new global business, C&W Global, was launched to help GM leverage the resources and capabilities of C&W's regional business units spread around the world. C&W Global developed a global portfolio of products and services divided into simplified groupings to provide business customers with end-to-end solutions for internet protocol and data services.

However, C&W's global strategy was difficult to implement, partly because of the collapse in global telecoms markets, but also because C&W Global failed to gain the full support of the group's regional business units, which were reluctant to cede control over revenue streams from their multinational accounts. Although the group made a decision in 2003 to revert to its traditional regionally based structure, it continues to provide outsourcing solutions through its national and regional business units.

### **Moving the market base: Ericsson's turnkey solutions**

The Ericsson case study also illustrates the ways in which the knowledge generated by conducting a new type of project in a new market base led to far-reaching changes in the strategic focus and structure of the firm's organisation.

### **Project-led learning**

#### **Phase 1: Vanguard project: One-2-One turnkey project**

In 1995 Ericsson won a contract to supply a turnkey solution (defined as a fully operational system conceived, built and supplied by Ericsson) to One-2-One (O2O), the UK mobile phone operator then owned by

Mercury (a Cable & Wireless subsidiary). This was the firm's first turnkey project in an industrialised country. By early 1995, O2O was under increasing competitive pressure to respond to its main UK competitor's (Orange) highly successful marketing strategy to achieve nationwide coverage. The idea that a turnkey contract would help O2O achieve its strategic objective of comparable coverage was originally proposed by Nortel (one of O2O's equipment suppliers).

O2O's invitation to tender for the turnkey project was issued in March 1995. Under the contract, O2O announced its intention to outsource all of the network implementation activities it had previously performed in-house, such as cell planning, site acquisition, civil builds, network design, installation, test, acceptance and project management. Due to the high value of the O2O project, the decision to proceed with the turnkey bid had to receive high-level approval from Ericsson's senior management team in Sweden. They recognised that the O2O contract represented a strategic opportunity to move early into what they believed would be a growing market for turnkey solutions in industrialised countries.

The contract was awarded to Ericsson's UK market division (ETL) on 31 July 1995, with an initial goal to achieve 90 per cent coverage of the population of England and Scotland by December 1997. A Turnkey Projects Group was set up to manage the project and to develop the additional and new capabilities required to manage subsequent turnkey projects. It operated relatively autonomously from the rest of the ETL organisation to provide the room needed to experiment with new forms of project organisation, management and capabilities. Given the strategic importance of this project, its progress was monitored closely by top management in Ericsson's Swedish headquarters.

The original plan was to set up the turnkey project organisation and processes using PROPS and existing IT tools. But these approaches proved unable to cope with the size and complexity of the turnkey project. Over twenty different changes were made to the project organisation during the first six months to cope with unfamiliar activities and unforeseen events before finally settling on a modified version of the matrix structure defined in Ericsson's PROPS manual. To carry out the O2O turnkey project, ETL had to acquire or develop many new capabilities, such as cell planning, site acquisition and civil engineering and other functions. The turnkey group had to develop new project capabilities as it learnt to manage longer-term partnerships with the customer

and its subcontractors and to provide solutions based on Ericsson's and its competitors' products.

### Phase 2: Project-to-project

Members of the vanguard project team continued to work on subsequent turnkey projects for O2O and other mobile phone operators in the UK. They also provided expert advice to Ericsson local-operating companies in Germany, Belgium and Poland beginning to win orders for turnkey projects. However, in general Ericsson's project managers had little time to reflect on their initial turnkey experience beyond standard post-project reviews and documentation.

Our research team, with managers from Ericsson, codified the lessons learnt from the O2O project in a project book called *The Turnkey Project Start-Up Guide* which captured the learning from the vanguard project and drew generic lessons to assist in the future establishment of turnkey projects across all of Ericsson's corporate divisions (Morgan et al., 1997: ix). The guide was intended for Ericsson's senior decision makers (in the company's headquarters and the other business units) and project, commercial and marketing managers in the local-operating companies. It discussed the nature of the opportunities presented by turnkey projects, the implications for Ericsson's organisation and project phases and the types of problems likely to be encountered in turnkey projects.

### Phase 3: Project-to-organisation: Turnkey Solutions Services

During 1996 and 1997, Ericsson experienced a rapid increase in the number of turnkey projects undertaken in the UK and elsewhere in Europe. As the managing director of ETL explained: 'We were the first within the Ericsson group to move into turnkey solutions in such a big way. Now the knowhow we have built up can be exploited in other markets' (Brian Barry, quoted in Linx, 1997). But as another senior manager in ETL recognised: 'The trend towards turnkey contracts will require additional competence in the company, not only in certain areas of cellular networks but also in project management' (Richard Whittaker, quoted in Linx, 1997).

To address this capability gap, ETL created an organisation called Turnkey Solutions Services, with key project managers involved in the first turnkey project at its core. Established in 1997, this consultancy unit developed project capabilities in critical areas lacking in the initial turnkey

project and acted as a silo for knowledge that the Ericsson's functional departments were unable to provide. It was responsible for supporting the preparation of turnkey bids and projects undertaken by Ericsson's local companies throughout Europe and provided a mechanism for capturing and transferring the knowledge gained from previous projects.

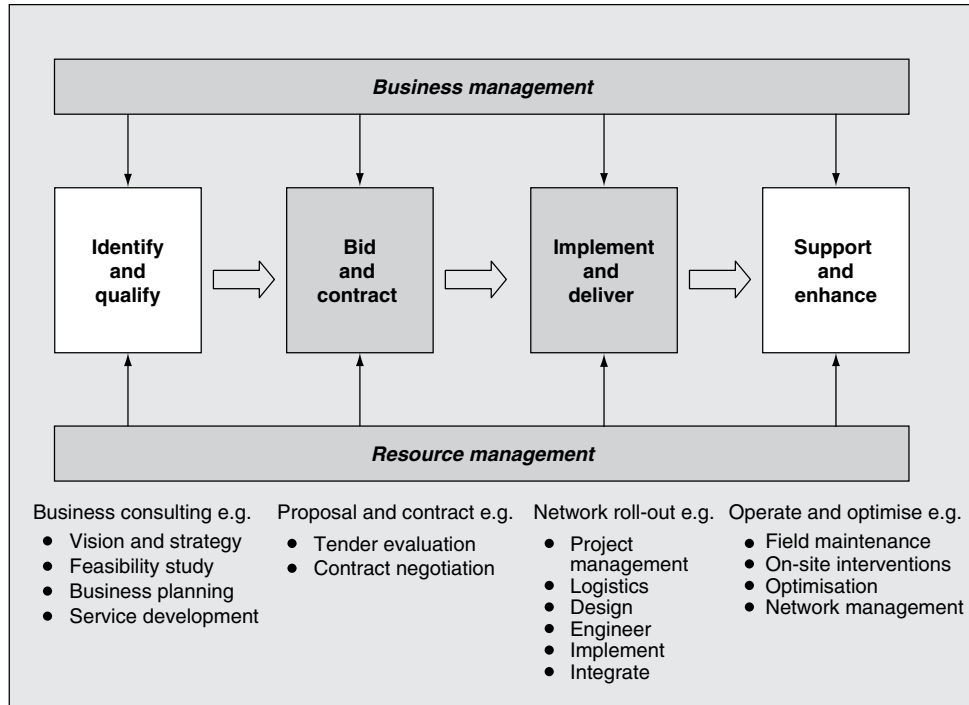
Turnkey Solutions Services personnel were assigned to different turnkey projects to ensure that the knowledge and experience gained from previous and concurrent projects could be used more systematically in the setting up and execution of subsequent turnkey projects. By carefully analysing and codifying the distinct project processes and routines required to deliver turnkey solutions, the unit was able to identify the four main phases of the turnkey project life cycle shown in Figure 7.3:

1. the front-end 'identify and qualify phase' to consult and understand a customer's needs;
2. the 'bid and contract phase' to respond to invitations to tender, prepare proposals and win and negotiate contracts;
3. the 'deliver and implement phase' to manage project execution from network design to integration; and
4. the 'support and enhance phase' to provide services to operate, support and maintain the network.

By 2000, Thomas Vesterlund, Director of Turnkey Solutions Services, recognised that Ericsson had already established strong bid and project-execution capabilities (phases 2 and 3) but needed to develop its capabilities in front-end business consulting (phase 1) and post-project operational services (phase 4) to successfully cover the entire life cycle of activities involved in turnkey solutions projects. The unit also created its own portfolio of increasingly simplified and standardised services to assist in the set-up and execution of the growing number of turnkey and service-intensive projects run by Ericsson's local companies throughout Europe (see Figure 7.4).

### **Business-led learning: the creation of Ericsson Global Services**

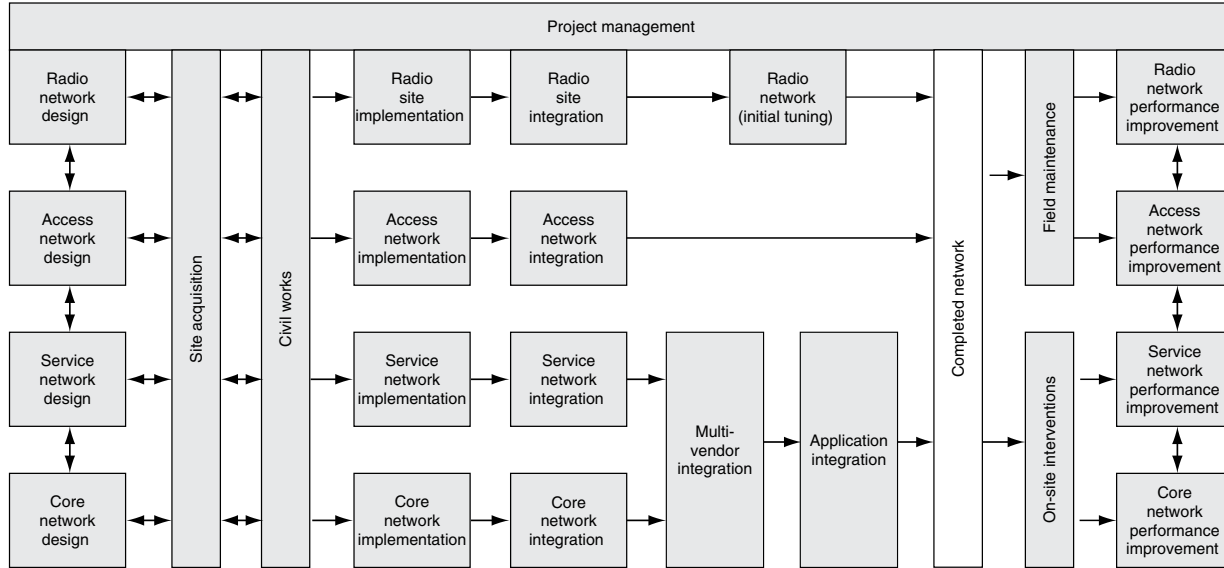
While Ericsson's product divisions and local operating companies were launching bottom-up initiatives to meet customer demand for turnkey projects, the company's corporate management team was formulating a far-reaching top-down strategy to reorganise the company around the delivery of turnkey solutions and services. In 1996, Ericsson's Corporate Executive Committee completed the largest planning study



**Figure 7.3.** ETL Turnkey Solutions Services: life cycle of a project (2001)

*Source:* internal document Turnkey Solutions, ETL/FC-2000:082a.

**Portfolio of services – total solutions  
from conception to completion**



**Figure 7.4.** ETL Turnkey Solutions Services: portfolio of services (2001)

Source: internal document Turnkey Solutions, ETL/FC-2000:017b.

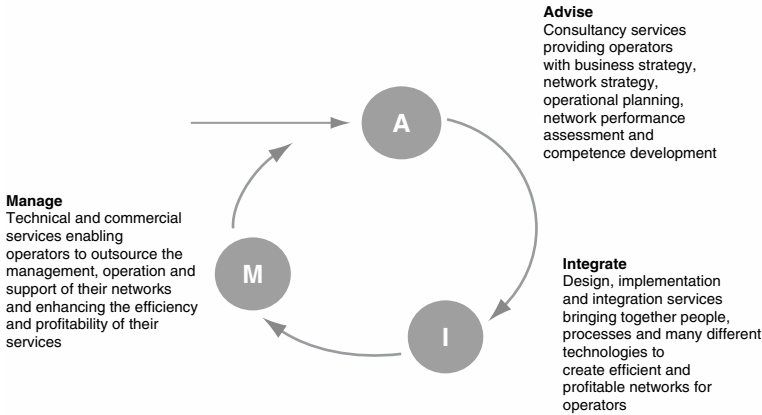


in the company's history. It outlined Ericsson's strategy to create an organisation which could provide mobile operators with solutions and services in response to increasing customer demand from operators like O2O in the UK for mobile networks to be designed, built and managed on a turnkey basis.

It was not until the late 1990s, however, that Ericsson began to implement the strategy by creating organisations with the capabilities to support turnkey solutions and services. In 1999, Ericsson brought together the dispersed turnkey and service activities performed by the various product divisions to form a large central consultancy organisation called Ericsson Services, 'thus strengthening Ericsson's position as complete supplier, system integrator and partner' (Annual Report, 1999: 7). A new division – Ericsson Global Services – was created in 2000 to support the delivery of turnkey solutions and services throughout Ericsson's global operations. In September 2001, Global Services became one of Ericsson's five business units. The Turnkey Solutions unit in the UK and similar initiatives conducted throughout Ericsson were closed down in 2001 as a result of the decision to place all service activities such as portfolio development under the centralised control of Ericsson Global Services.

Ericsson continues to revise its organisation and strategy in response to evolving demand for turnkey solutions and services. In 2003, 120 local Ericsson companies in 140 countries were reorganised to form 28 market units (MUs) and several customer-facing units (CFUs) – such as Ericsson Vodafone – to deal with the largest global customer accounts. Under this new streamlined organisation, all business activities with the customer are undertaken by the MUs and CFUs, providing a single channel to the customer.

Ericsson Global Services is responsible for developing the global service portfolio and supplying resources, capabilities and personnel to help the MUs and CFUs sell and deliver projects for solutions. By 2000, Global Services had reduced the proliferation of 250 service offerings previously developed by Ericsson's product divisions and local companies, such as ETL (see Figure 7.4), to seven Service Solutions families, which addressed each mobile operator's life-cycle requirements from the initial business idea and planning through project execution to service start-up and technical operations. By 2003 Ericsson had further reduced and simplified its service portfolio to three families called AIM (advise, integrate and manage), as shown in



**Figure 7.5.** Ericsson Global Services – AIM portfolio  
 Source: Ericsson Annual Report 2002: 22.

Figure 7.5. The target was to have 75 per cent of the services offered as part of Ericsson’s solutions to be ordered off the shelf from the AIM portfolio. At the same time, systematic efforts have been made at the corporate level to develop standardised project management routines and business processes for service and solutions-based projects. For example, PROPS, Ericsson’s in-house project management guide book, has been substantially revised in recent years to help project organisations inside and outside of Ericsson develop the capability to manage large portfolios of solutions-based projects.

**Cross-case analysis**

This section shows how the emphasis of learning processes behind the project capability building in the two case studies switched from exploration to exploitation over time. This was achieved by linking the interacting levels of learning to key contextual factors and strategic decisions that triggered either the search for an expanded repertoire of capabilities or the exploitation of existing ones.

*Project-led learning*

**Phase 1**

In this phase, the emphasis was on exploratory learning. C&W’s bid team and Ericsson’s turnkey project organisation needed to gain a

detailed understanding of their customers' changing demands. They found that existing in-house project processes and procedures were unable to cope with the scale and complexity of the new types of projects demanded by their customers. Where possible they relied on existing routines and capabilities, but had to develop new areas of knowledge and expertise to meet the changing requirements of their customers.

Senior management in both firms created an open and flexible context which encouraged vanguard project members to question existing routines and styles of management. The vanguard projects operated at a distance from the larger organisation to encourage experimentation and innovation. They developed new management approaches and organisational structures which deviated from established routines and frames of reference. This created some tensions between the vanguard projects and some parts of the parent organisations, which often occurs when pilot groups are isolated from the mainstream organisation (Senge, 1999: 321). In other words, the new ways of thinking pioneered by the vanguard groups represented a threat to the core values and mainstream culture of the larger organisation.

Strategic management in both firms recognised that the rewards from exploration could be realised only in the longer term. They were willing to accept the short-term risks of cost overruns, delays and other problems associated with conducting unfamiliar vanguard projects on the expectation that any losses would be recovered by the future revenue streams.

## **Phase 2**

As other projects were undertaken, the learning shifted from within-project to between-project exploratory learning. Project capabilities were developed without altering existing organisational structures. Rather than simply encouraging a proliferation of alternative practices, deliberate attempts were made to select successful routines and practices and carry them forward into subsequent projects.

Key participants on C&W's bid and Ericsson's turnkey project were largely kept together as a team when assigned to the next project. This ensured that new routines and team-based knowledge that worked well on the first bids and projects were adopted in subsequent ones. However, learning tended to be on an ad hoc basis, with few systematic

attempts to spread the initial learning throughout organisations. Although attempts were made to exploit the learning gained, key members of the first bids and projects had little time to reflect on their experience before moving to another project.

### **Phase 3**

In this phase of repeatable project activities, learning from projects was fed back into the project businesses. These organisations changed their structures to accommodate an increasing number of the new type of projects. C&W's business unit employed many new staff and developed new bid, project and functional activities to support global outsourcing bids and projects. ETL created an internal consultancy unit to support the growing volume of turnkey projects executed in the UK and elsewhere in Europe.

As in the first two phases, project capabilities continued to be built from the bottom up by the project business organisation. Emphasis switched from exploration to exploiting what had been learned from previous projects. Attempts were made to refine and institutionalise routines so that knowledge gained from bidding and executing projects became part of their organisational memory. New company-specific routines, processes and IT tools were developed to execute a growing volume of bids and projects more efficiently and effectively.

### *Business-led learning*

The main emphasis of organisational learning implemented by top management in both firms was to move quickly to a position of exploitation. The direction of learning was largely top-down from the corporate organisation to the projects. Attempts were made to simplify, standardise and select among the variety of routines and practices to perform increasingly repetitive and efficient project processes. Company-wide capabilities and resources had to be created to provide a standardised platform of products and simplified portfolio of services as low-cost components that could be used in a growing volume of projects.

Senior management at corporate level in both firms developed strategies to refocus their entire organisations around the new projects. C&W decided to move quickly into the new solutions-based markets

by creating C&W Global to focus on the delivery of global outsourcing solutions. Ericsson created the Global Services division and re-focused its entire organisation around the delivery of solutions-based projects.

Both firms continue to engage in some degree of exploratory learning by developing emergent strategies formulated in response to changes in the business environment. Although the organisational learning was mainly top-down, key lessons learnt about the projects were fed back to assist in strategy development and implementation. C&W, for example, has still not settled on a stable structure. In 2003, the firm abandoned its organisation based on global businesses and created a new network of nationally based companies to deliver solutions to business customers.

The case studies show that the organisations followed their own distinctive paths of project and business learning and that the speed of response at which they moved was heavily influenced by their response to the market environment. C&W's senior management believed that the company's survival depended on achieving immediate success in global outsourcing markets. After winning the Andersen Consulting bid in 1998, its aggressive strategy to move quickly to the new base was hampered by the collapse of world telecoms markets and the continuing resistance of C&W's regional business units to the global approach. In 2003, however, the strategic decision to revert to the traditional structure of providing solutions through its decentralised network of nationally based organisations underlines the importance of emergent strategy formulation.

By contrast, Ericsson moved into turnkey solutions from a position of strength as the world's leading mobile equipment supplier. Considerable time and effort has gone into developing, revising and refining strategies to achieve sustainable and long-term growth in this new market base. Since the O2O turnkey project in 1995, Ericsson has continued in its efforts to build an organisation that can effectively harness the corporate-wide capabilities required to deliver large numbers of solutions-based projects.

Our case studies show that moving base into provision of integrated solutions is not necessarily an easy or smooth transition. The episodic nature of learning emphasises the continuing challenge of creating, shaping and adapting project and other capabilities to a rapidly evolving business environment. Both firms had to overcome significant tensions and differences of opinion between strategic and operational

levels of their organisations in order to achieve progress in this new activity. In C&W's case, the top-down strategy to create a centralised GM division was hampered by the group's regional business units which wanted to retain profit-and-loss responsibilities for their multinational corporate accounts. In Ericsson's case, the creation of Global Services meant that the bottom-up units were required to relinquish control of their portfolio of service and turnkey solution activities. Indeed, the director of ETL's Turnkey Service Solutions unit resigned over this because he felt that the decision to centralise service development activities would undermine Ericsson's ability to create tailored solutions to a customer's specific needs at the local level.

## Conclusions

The project capability building model developed in this chapter illustrates the dynamics of organisational learning and capability building that occur when firms move into a new line of projects which are likely to be repeated in future, such as turnkey, outsourcing and PPP projects. The model describes two co-evolving and interacting levels of learning associated with project capability building. At the project or operational level, an initial engagement with a new type of project can have far-reaching consequences for the strategy and organisation of entire firms. As firms progress through the phases of project-led learning, the emphasis of their activities switches from exploration in the vanguard phase through the transition phases when the exploratory learning is transferred to other projects and exploited by the project business organisation. At the business or strategic level, organisational learning and strategy implementation have to move rapidly to a position of exploitation. Our case firms did this by creating global service organisations with the capabilities and corporate-wide resources needed to perform repeatable project activities. Other firms may deploy other structures to exploit their project-based resources in this way.

For managers, the model presented is a valuable tool for analysing and plotting the position of a firm. In terms of the three phases of project-led learning, a firm whose path is confined to phases 1–2 gains important learning, develops new routines and adds capability, but without altering the existing organisation. Firms that follow a path through phases

1–3 have to extend their capabilities and change their project business organisations to accommodate a growing volume of projects.

It may be that firms rarely conduct business-led learning to refocus their strategy and entire organisation around the new project capability base. However, recent moves into solutions-based projects, such as outsourcing and turnkey arrangements, suggest that a growing number of firms are embarking on long-term paths of project capability building and organisational transformations. The PCB model is designed to provide a framework for analysing and improving these long-term project capability building processes.

As one of the pioneers of this new type of project, IBM's vanguard outsourcing project with Eastman Kodak in 1989 marked the beginning of a long capability building process leading to the creation of IBM Global Services in 1995 and ongoing strategic attempts to focus on repeatable solutions delivery (IBM, 2002). The ability of firms like C&W and Ericsson to emulate IBM's success depends crucially on their efforts to develop and hone their capabilities over many years through phases of exploratory and exploitative learning. The model presented is also useful for researchers as it provides an analytical framework for comparative studies of similar project-based dynamics in other major firms and sectors, through a comparison of first movers, leaders and followers in project capability building. The model applies to other sectors (e.g. software, accountancy, professional services, advertising and corporate finance sectors) that organise their productive activities in projects, especially those types of projects subject to standardisation and economies of repetition and recombination. Furthermore the model can be used to analyse other categories of projects such as new product development and the management of internal capital projects (e.g. factory automation, scientific instrumentation and IT systems) in high-volume consumer goods industries.