

Dynamic Capabilities: Towards Integration?

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Submitted to OLKC 2006 Conference at the University of Warwick, Coventry on
20th - 22nd March 2006

Introduction

The idea of dynamic capabilities has attracted international academic attention because it offers an answer to the question of how to generate sustained competitive advantage. So far, the most influential published material has been either theoretical or has been based on compilations of secondary empirical research based mainly on studies of new product development teams within North American biotechnology and IT companies (Dosi, Nelson, & Winter, 2001; Teece, Pisano, & Shuen, 1997). Although this stream of research is both important and innovative, it does raise questions about the generalisability, depth and scope of current research.

The aim of the present paper is therefore to extend current theorising and applications of the dynamic capabilities concept. This is tackled at an *exploratory* level in three main sections. First we provide a broad overview of the literature that can potentially be linked to dynamic abilities; second, we discuss some of the epistemological and methodological issues associated with researching dynamic abilities; and third, we provide illustrative results from our recent studies in three different organisations. Our purpose, therefore, is not to provide substantive research results *per se*, but to broaden debate about the nature and identification of the dynamic capabilities more generally.

Literature

In this section we summarise four traditions in the literature that are relevant to understand the nature and processes of dynamic capabilities. The first of these, strategic management, is the dominant tradition which lays claim to establishing the idea. This tradition draws substantially on the resource-based view of the firm, and has a particular focus on competitive advantage. However, there are at least three other distinct traditions where scholars have contributed to our understanding of dynamic capabilities. These are: the innovation literature which has concentrated on new product development, and on the management systems and business processes that underpin innovation; the change/learning literature which concentrates on the way routines, core competencies and practices can adapt and evolve over time; and

the functional literature which concentrates on the way dynamic capabilities can be embedded in human resource practices, marketing strategies, R&D, production, knowledge management, team work, and transformational leadership. In this section of the paper, therefore, we try to summarise the key assumptions and contributions of each tradition, noting also that there are a number of overlaps, both in language and conceptualisation.

Strategic Management

The literature on strategic management has been a dominant force in developing the idea of dynamic capabilities, and many of the most highly cited papers on dynamic capabilities have appeared in the *Strategic Management Journal*.

Much of the research in this tradition has been concerned with understanding the drivers for competitive advantage in firms. This comes from the resource-based view of the firm, a derivative of neo-evolutionary economics (Nelson & Winter, 1982), and the key idea is that some firms possess distinctive resources which give them a sustained advantage over other firms. These resources include people, technology, location, networks, finance and markets, although in order for them to convey competitive advantage, they need to be rare, and difficult for other firms to emulate (Barney, 1986; Barney, 1991). The problem with this perspective on competitive advantage is that it is relatively static, and there are many examples of firms that enjoy substantial competitive advantage over long periods of time, only to fall foul when environmental, market, or technological factors start to change dramatically. The resource-based view is closely linked to the idea of core competencies (Prahalad & Hamel, 1990) which need to have similar attributes if they are to provide competitive advantage: they need to provide access to a wide variety of markets; contribute significantly to the customer benefits and in products; and be difficult for competitors to imitate.

David Teece was a key figure in bringing together the two traditions and offering a synthesis (Teece & Pisano, 1994; Teece, 2003; Teece et al., 1997). Teece and his colleagues argued that dynamic capabilities added two new features: first, the idea of

'dynamics' tackled the problem of renewal of competencies; and second the idea of 'capabilities' emphasised that strategic management has a key role in shaping and determining the competencies of the organisation. Within this tradition, the classic definition is as follows: 'We define capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments' (1997: 516). They also stress the importance of history (path dependency) and learning: 'a process by which repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified' (1997: 520).

One important development in recent years has been to draw a further inspiration from the 'knowledge-based' view of the firm, which assumes variously that the most critical resource in modern competitive events is knowledge, and that learning is the process whereby knowledge of, and hence capabilities, emerge (Zollo & Winter, 2002). As such, dynamic capabilities are defined as routinized activities around experience accumulation, knowledge articulation and knowledge codification - as well as operational routines. These are shaped by the co-evolution of learning mechanisms, which are dependent upon attributes of the task to be learned, such as frequency, homogeneity, and causal ambiguity. Other authors who follow the knowledge-based tradition concentrate on the way some firms are able to absorb knowledge from the environment more efficiently (Cohen & Henderson, 1998; Cohen & Levinthal, 1990), and the factors which might impede the movement of knowledge within organisations, introducing such a concept as 'stickiness' (von Hippel, 1994), and intra-organizational knowledge flow (Crossan, Lane, & White, 1999).

Various authors have been critical of the resource-based view and its application to dynamic capabilities. Priem and Butler (2001), for example, argue that the idea of dynamic capabilities is both tautological, and inadequately underpinned by empirical research. There are also confusions between concepts such as capabilities and competences, and there is an intermittent debate about the relative significance of resources and routines. Authors such as Eisenhardt and Martin (2000), Zollo and Winter (2002) and Winter (2003) argue that routines are more significant than other sources *per se*, because it is the routines that have the potential either to sustain, or to change, resources at an organizational level. Some of the research into organizational

routines and dynamic capabilities has been done at a macro level looking at industry-wide patterns (Zollo & Singh, 2004), but another interesting stream of research has also started to look the micro-processes of organisations and the behavioural patterns which lead to changes in sources (Dougherty, Barnard, & Dunn, 2004; Feldman, 2004).

Innovation

The second major to work has taken place in the literature on innovation. Some authors have also managed to bridge across to strategic management, but many have been primarily rooted in understanding the processes and consequences of innovation. Their studies focus on the rate and success of organizational innovations, and the factors that seem to lead to the ability to generate new ideas. There is also a recognition that innovation may come in a number of forms; product innovation is the most obvious case and the most extensively researched, but innovation can also be incorporated into systems, processes, organizational structures, market relationships, and strategies.

Some of the key themes in this field include the need for organisations to innovate at a rate faster than external environmental change, the need to generate and harness creativity within the organisation, and the problem of achieving a balance between incremental and more radical innovation. The academic roots come from production management (Henderson & Clark, 1990), product innovation (Bierly & Chakrabarti, 1996; Dougherty, 1992; Leonard-Barton, 1992aa), and studies into research and development (Kale, 2005; Nerkar & Paruchuri, 2005).

A strong theme in the literature is that innovation is an outcome of particular cultural patterns within the organisation. Sometimes this is inculcated through managerial processes, such as training and reward systems, roles such as brokers, and structures such as networks and virtual centres of expertise (Leonard-Barton, 1992bb). A number of organisations focus upon developing 'communities of practice' which are intended to make it easier for people to share and exchange information (Brown & Duguid, 1991; Brown & Duguid, 1998). However, there are many problems in getting

different communities to work with each other, especially if they have different disciplinary backgrounds and therefore different mindsets (Dougherty, 1992). Dougherty also demonstrates how organizational routines exacerbate problems with learning, and how successful innovators overcome both interpretive barriers. The main implication of the study is that in order to improve innovation in large firms it is necessary to deal explicitly with interpretive barriers.

The studies of Nonaka and colleagues into the creation of new knowledge around product innovation in Japan have also had a major impact. Nonaka's theory tackles two related issues: how to enable individuals to become more creative within organizational contexts, and how to convert the tacit knowledge that is often found in creative processes into explicit knowledge which can be understood by others (Nonaka, 1994; Nonaka & Takeuchi, 1995). Nonaka also claimed that the kind of creativity required for innovation is more likely to take place within Oriental cultures (compared to Western cultures) because they are better at supporting relationships, and also they are much more able to deal with the subjectivity and ambiguity which is implicit in tacit knowledge.

There is a general assumption here that organisations need to concentrate their innovative efforts around coping with the continuous change (Bessant, 2005). However, there are also interesting examples which show the importance of maintaining incremental change over a sustained period of time, as in the case of the successful evolution of the RB211 engine in Rolls-Royce (Lazonick & Prencipe, 2005). This study also showed how the strategic direction of the company depended on relationships between different professional groups, but furthermore that the groups that are able to impose their values and professional standards on the others tend to be the ones who are able to control the overall direction of the company.

The study by Lazonick and Prencipe adds two important dimensions to our understanding of innovation processes: the importance of organizational power and politics as determinants of which innovations become supported by the organization; and the relevance of conducting longitudinal studies, potentially over several decades. These are two aspects that are in need of further research (Easterby-Smith, Graca, Antonacopoulou, & Ferdinand, 2005).

Change and Learning

Since dynamic capabilities are essentially about change, a number of authors from the strategy camp have drawn on theories of change (Winter, 2003), and others have started to appreciate that a critical element underlying (and perhaps driving) dynamic capabilities is the process of learning (Zollo et al., 2002). But there is extensive literature in the field of change and learning which significantly predates the emergence of dynamic capabilities, and some of which is directly relevant dynamic capabilities.

One classic framework is the distinction between single and double-loop learning (Argyris, 1977; Argyris & Schön, 1978), which is similar to the distinction between incremental and discontinuous innovation. The idea of double-loop learning is close to that dynamic capabilities because it implies a learning process which changes the values and operating assumptions of the organisation, in the same way that high level routines are able to change the configuration of resources (Zahra & George, 2002). Amongst other classic work is the paper by Hedberg et al (1976) about how to design organisations for coping with very unstable, unpredictable, and fast changing environments (hence the metaphor of ‘camping on seesaws’). Hedberg (1981) also wrote an important paper a few years later where he developed the concept of ‘unlearning’ as the necessary counterpoint to learning -- and this introduced the idea that organisations wishing to change need to *unlearn* existing values, assumptions, and routines if they are to be able to adopt radically novel practices.

Peter Senge and his associates (Kofman & Senge, 1993; Senge, 1990) made a major contribution by popularising the idea of the ‘learning organisation’. This was essentially an ideal-type; something to which managers and their organisations might aspire. It also advocated many of the features associated with organisational flexibility which are found in the literature on dynamic capabilities. In particular, they argue for the importance of effective leadership, teamwork, communities of practice, and empowerment of employees in order to harness the commitment and creativity of individual organizational members.

Among recent and important studies is the work of (Kim, 1998) which was a longitudinal study of how managers at Hyundai created the pressure for learning and change through manufacturing crises, which then legitimised major rethinks in practices and processes. The importance of understanding learning processes at the micro level within organisations is emphasised by (Feldman, 1999; Feldman, 2004) where she finds the relationship between routines and resources to be one of mutual interaction, which makes the outcomes of any organizational change processes very hard to predict. Finally, there is a useful paper by (Dyck, Starke, Mischke, & Mauws, 2005) which applies Nonaka's SECI model to understand how a small vehicle manufacturing company was able over a period of time to learn from its experiences and incorporate this knowledge into new processes and designs.

A number of authors have, however, criticised the established organizational learning literature for being weak in relation to how it deals with issues of organizational power and politics (Coopey, 1995; Easterby-Smith, Crossan, & Nicolini, 2000; Lawrence, Mauws, Dyck, & Kleysen, 2005). Recent research has attempted to incorporate a political perspective into both theory and empirical studies. For example, Ferdinand (2004) demonstrates how learning within organisations is dependent on the wider context of state and government policies towards education and training, Graca (2005) shows how the politics of relationships between organisations affects the transfer of knowledge, and Antonacopoulou et al (2004) have shown how the relationship between training and individual learning is mediated by organizational political processes. Moreover, Lawrence et al (2005: 188) argue that 'power and politics provides the social energy which transforms the insights of individuals and groups into the institutions of an organization', and hence organizational politics is not a dysfunctional feature, but an intrinsic part of the process of learning and change.

Functional Literature

There is also much specialist literature which suggests that specific organizational functions such as human resources, IT, and marketing can be dynamic capabilities in

their own right, or at least provide the infrastructure for wider organizational dynamic capabilities. In their influential paper Eisenhardt and Martin (2000) argue that dynamic capabilities are not just high-level abstract concepts, but are also anchored in the specific activities of the organisation such as product development, or the management of alliances.

Authors from the human resource field often argue about the importance of effective leadership, empowerment, and the creation of cultures in which employees are expected to challenge the status quo (Gratton & Ghoshal, 2005), although they recognise that these features are difficult to introduce at will, and that their viability may depend more on the longer term history and traditions of the organisation, which Gratton and Ghoshal refer to as 'signatures'. A related idea is that there are specific features of high-performance work systems which can lead to superior organizational performance, and again these include features of empowerment, reduced hierarchy, a strong emphasis on training and development and a good degree of personal employment security (Sparrow, Brewster, & Harris, 2004).

There is also much literature from the information technology and knowledge management fields which has demonstrated the links between appropriate information systems and corporate performance (Bhatt & Grover, 2005; Chuang, 2004; Lin & Silva, 2005). In many sectors, such as banking, logistics, retail, and consulting the use of information technology has been absolutely central for enabling companies to reduce costs, gain efficiencies, and thus increase their competitiveness. However, it is possible that many of the investments in information technology can reduce flexibility in the long term, and thus create core rigidities (Leonard-Barton, 1992a). Moreover, although many authors assume that there are links between knowledge management and dynamic capabilities, these have rarely been established and conceptually or empirically (Lin et al., 2005), and it is also suggested that more work needs to be done in order to examine relationships which appear to be taken for granted in much of the knowledge management literature (Prieto & Easterby-Smith, 2006).

Similarly, in the field of marketing it is widely appreciated how firms have to develop mechanisms which will enable them to stay closely in touch with the changing demands of the market in ways which also enable them to respond very quickly. Thus

it is quite commonplace for companies to develop panels of consumers who not only provide feedback to companies on their products, but also start to become major contributors in the process of new product generation (Verona & Ravasi, 2003). Similarly, marketing can have an important role in the development of flexibility and pro-activity when considering global products (Griffith & Harvey, 2001).

Summary

Although there are a number of overlaps between the literatures described above, there are also distinct traditions, as summarised in Table 1. Naturally the primary driver of the most scholars in each area is to advance the area, and they have therefore been less interested in the potential relevance and relationship with dynamic capabilities. However, by juxtaposing the traditions we hope to achieve three main purposes. First, to show that there are ideas in each of the other fields which may contribute to the richness of our understanding of dynamic capabilities; second to identify common themes, issues and gaps which run across all areas of literature; and third to enable us to test out the applicability of different perspectives on dynamic capabilities in the light of specific case studies. We tackle the latter issue in the next part of the paper, starting with a brief description of our methodology, and we then return towards the end of the paper to reconsider the first two aspects.

	Strategy	Innovation	Change and learning	Functions
Main focus/aim	Corporate competition	Rate and success of innovations	Processes that aid or hinder transformation	How functions can enhance performance
Key concepts	Core competencies; path dependency; resources; routines	Continuous and discontinuous change; environmental change; creativity	Single and double-loop learning; unlearning; transformational leadership;	Human skills as assets; technology as facilitator of learning; linking market

			communities of practice	awareness to strategy
Theoretical tradition	Evolutionary economics; resource-based view; knowledge-based view	Production management; product innovation; R&D	Organizational learning; Organization development; Organizational knowledge	Human resource management; knowledge management; marketing.
Sites of typical research studies	Comparisons between US and Japanese multinationals	Bio-technology; Silicon Valley; small firms; engineering.	Petrochemical industry;	Consultancy; Public sector
Critiques and gaps	Vague, abstract, tautological and not grounded in practice	Often ignores the politics of innovation and institutional context	Focus on group levels neglects organization-wide structural issues	Partial perspectives which can easily ignore cultural differences

Table 1: Theoretical Perspectives on Dynamic Capabilities

Methodology

Many of the more influential studies on dynamic capabilities have been conducted using a positivist epistemology, with data being gathered from cross-sectional surveys of organisations, and key characteristics of dynamic capabilities being inferred from patterns of data and other factors, such as size, longevity, ownership structure, and performance. The studies, for example (Zollo et al., 2004), therefore tended to look for dynamic capabilities from the outside. In the present paper we follow the examples of Dougherty et al (2004) and Dosi et al (2001) by adopting depth cases within organizations, thus trying to explain the workings of the ‘black box’. We have also adopted this interpretive approach on the grounds that the concept of dynamic

capability is still poorly defined, both theoretically and empirically, and we therefore need to give some attention to grounding our theory in actual practices and experiences.

Our study is based on fieldwork in three organisations located respectively in the health, chemicals and IT sectors, and we have given them the prosaic labels of HealthCo, ChemCo and WebCo. HealthCo is a state-funded (part of the NHS) acute hospital trust located in the North of England covering a population of about 400,000 people with over 2000 employees. ChemCo is a plant employing nearly 1000 people in Scotland which combines production and R&D facilities, and is owned by a European multinational. WebCo is a small IT business located in the North of England which started with 2 employees in 1998, and now employs over 200 people in a network of subunits around the UK.

Information was gathered from these three organisations during 2004 and 2005 primarily through interviews (with 32, 23, and 18 interviews conducted so far, respectively), and this was supplemented by observation of meetings and documentary evidence, from both internal and external sources. In each company we interviewed most members of the senior management team, and then focused on two operational areas, one of which was judged by the management group as being relatively 'dynamic', and the other was judged to be somewhat less so. In each of the operational areas we interviewed a cross-section of staff about their experiences of change and the features which appeared to facilitate or hinder organizational flexibility.

Although we followed our basic research design was largely attained, we found that nothing was quite as neat as we had anticipated. For example, we discovered that there were strong differences of opinion both at strategic and operational levels with regard to which units were more or less dynamic; we also found that data on performance varied considerably over time and this was often caused by external market factors over which the operational unit had very little control. In all cases we found it difficult to define boundaries around particular units, both because all three organisations operated with matrix structures, and because they frequently introduced

significant structural reorganisations, and in WebCo, in particular, the organizational chart and physical locations seemed to change on a monthly basis.

We therefore attempted to focus on the stories around specific projects and change initiatives, ideally while they were 'live', and therefore in the process of implementation. This meant that we ended up gathering a number of significant stories from each organisation, which in some cases we have been able to follow directly over a two-year period. The original research design which involved creating deliberate diversity in the sample has also helped in the range of perspectives we have been able to gather on each of these episodes, thus aiding triangulation. From each organisation we have selected one out of the three or four major issues identified in order to demonstrate different aspects and definitions of dynamic capabilities.

Case Studies

HealthCo

Our story from HealthCo involves the rapid turnaround of an organisation which was judged to in 2003 by government performance measures to be failing (zero stars), to one which by 2005 was assessed to be one of the better performers in the health service (two stars). The poor rating in 2003 triggered external intervention into the Trust, and most members of the senior management team were replaced in the first half of that year. This included the appointment of a new chief executive who had previously been deputy chief executive of a highly successful acute Trust elsewhere in the UK. The initial actions of the chief executive were both strategic and politically astute. For example, because there had been an extremely poor relationship between the previous management and the hospital clinicians, she decided to speak to each of the 120 clinicians individually with regard to what things they thought could be improved, and what they would like her to do for them. These interviews took two months, and by the end she had found out a great deal about the Trust, established reasonable relationships with the medical community, and thereby secured her internal powerbase for the foreseeable future.

At the same time she set about recruiting a new senior management team, and managed to attract a group of individuals who brought with them extremely good external contacts. This included a number of senior staff who had previously been seconded to work with the Regional Health Authority, and the national Department of Health, and who had experience in a number of other hospital trusts around the country. In particular, she recruited the man from the Regional Health Authority who had previously been responsible for coordinating performance data on all the hospital trusts in the region, and who therefore had particularly valuable inside knowledge on the criteria by which they would be judged. Thus she created a very effective external network within the health service, which complemented her new internal relationship with the consultants as the most powerful group within her own hospital trust.

The next phase involved building up consultative processes both within the hospitals through establishing standing working parties of consultants (Clinical Policy Group), representatives of nursing and ancillary staff (Investing in Working Lives), and through consulting the external community with regard to strategic options on the long-term development of the hospital trust, using, where possible, local journalists and politicians to aid the dialogue. This created a degree of visibility for the chief executive and other senior staff, where the agenda were still primarily driven by the management group but the alternative groupings inside and outside the hospital were defined around their collaboration with, rather than opposition to, the current management of the Trust. It is significant that during this initial phase they managed to combine both strong direction from centre with extensive engagement across the organisation at all levels.

In parallel with the consultative processes, and partly aided by them, a major drive was initiated throughout the hospital to improve efficiencies and strengthen systems, many of which were directly relevant to the achievement of externally defined performance objectives. This included, for example, a drive to improve the efficiency of 'bed management', to ensure that maximum occupancy of hospital beds was achieved each day despite only variable and unpredictable demand for services in most departments. Through drawing on external ideas such as the Theory of Constraints (Goldratt & Cox, 2004), and through developing internal procedures

including two or three brief meetings between all Ward managers on the site each day, they were able to increase bed occupancy from 75% to 92% during the first year of operation.

As the story moved into second year, we found other issues had to be tackled by the management group. Some of these could be seen as products of the earlier initiatives, for example the newly defined consultative groupings started to want to exert their own control over the agenda which led to some tensions, but overall the hospital Trust is now regarded as a success. It is an exemplary story of turning a failing, and very inward looking, organisation into one that now has a proactive agenda, and which is delivering the results that external stakeholders have been demanding.

In summary, there are a number of features operating here in parallel. These include: discontinuous change at the top, the development of powerful external political networks, very strong direction from the chief executive coupled with a high level of engagement with the primary powerbrokers (hospital clinicians in this case). There are several features here which could be regarded as dynamic capabilities: managing the tension between strong central direction and devolved engagement; creating a powerful external network which enables the management group to influence the external environment; and driving systematic processes and efficiencies throughout the organisation, where they are also strengthened and improved by the engagement of staff at the operational levels.

ChemCo

The ChemCo story is about ensuring the survival of a plant which provides the main source of employment for a whole community on the outskirts of an industrial city. The plant has been under pressure for over 20 years as competition has increased and product costs have fallen. Since 1980 the total workforce on the site has halved, but the output of chemicals has quadrupled as a result of several major process investments coupled with the constant local efforts to innovate and improve production efficiency. This drive for innovation fits with the dominant ethos of the wider parent company which has maintained its position as one of the top three

specialist chemical companies in the world despite strong competition both from established players and from new companies. Over the past five years they have become aware of the strength of competition from China, both in terms of price and product quality, and this has led to the conclusion that their market lead can no longer be sustained through incremental innovation, and that they need some radical breakthroughs in order to keep ahead of the game.

Accordingly, they have invested in the R&D facility on site, increasing the workforce to nearly 40 scientists, and refocusing 70% of the work around projects which are aimed at radical innovations. These are much more risky than the normal run-of-the-mill, 'range maintenance' projects, and it has always been difficult to convince the parent that they should be allowed to continue working in areas where the outcome is so uncertain. One particular project, code-named Phoenix, was particularly problematic because it involved working on a new form of technology which could significantly change production processes right across the industry, if successful. Six researchers had been working on the idea from 2002 to 2004, and at that point they needed to commence pre-production trials which required capital investment and the recruitment of another four scientists. Both required permission from head office.

At this point, they ran into resistance from the corporate R&D unit which had attempted a similar breakthrough 15 years previously, and failed. Senior managers on the plant therefore realised that they would have to be highly proactive if they were to obtain support for the additional investment. This led to a sustained programme of meetings with corporate managers and technologists, both at head office, and on the plant, including several exchanges of personnel so that each side could start to appreciate the perspective of the other. Despite these efforts, and a wider charm offensive with top management in the company, the matter remained unresolved for several months. The breakthrough came, however, after senior management on the plant managed to obtain a grant from the Scottish Government to cover the salaries of the additional staff on the condition that the company provided the capital investment. This provided the final political impetus to gain acceptance of the project, despite the fact that most of the technical battles had already been won.

In this particular case, it appears that the primary dynamic capabilities lie in the innovation culture which permeates both the operational and strategic levels of the organisation, and subsequently in the degree of pro-activity exercised by the senior management group in order to influence decision-makers at the corporate headquarters. Although they had previously had limited external contacts (in our initial research notes we observed that many of them appeared to be somewhat parochial), the new situation required them to extend their networks amongst corporate scientists, local politicians and national government officials in order to apply additional pressure on corporate headquarters.

WebCo

WebCo is a very new organisation, and therefore one might expect it to have none of the physical and historical limitations and constraints of the two earlier case studies. The main business is in the provision of Internet services, primary to business customers, and this is an extremely competitive area given the very low entry costs of market entry. In order to succeed, the company has both to identify and exploit market niches very quickly, and to develop internal systems, processes and technologies which enable it to deliver a very good service. The pace of change is, indeed, very fast: new products are launched every two or three months, and these usually require substantial reorganisation of the relevant systems and service departments. Sometimes this is too fast for employees whose skills are based around delivery of earlier products, and this has triggered a major need for retraining, and occasionally to let employees go. Indeed, over the last two years this has made senior managers more aware of the imperatives for obtaining new knowledge from the outside, and ensuring that all employees have the attitude and capability to adapt and learn new skills rapidly.

Strategic developments for the company have focused in three areas over this period. First, they have started a series of acquisitions of other companies. The first three acquisitions happened more or less by chance, and involved acquiring technological assets at low prices (the firms were casualties of the dot-com slump). But recently following a placement of the company on the stock exchange, and hence the raising of

substantial capital, they have started to make acquisitions which involve integrating human resources into the main company; thus they are deliberately adding to the existing skill base of the company. Second, they have started to recruit middle managers and other specialists who already have substantial experience in other companies, and this has been adding further to the skill base. Third, they have pressed ahead with the product innovation, and attempt at the same time to strengthen their technological base. In WebCo we came across several stories of new products and other innovations which were developed largely by accident. One feature common to all of these stories was the ability of the senior management team to stay in closely in touch with customers and market changes through their daily contact with salespeople and account managers. On a number of occasions they were able to use this information to launch new innovations and to make major changes to corporate strategies.

There are two main dynamic capabilities here. The first is the ability to move, almost immediately, from operational intelligence to the development of new strategies. This ability to iterate between operational and strategic levels of the organisation is facilitated both by effective data gathering systems on market intelligence, and by the informality of the management culture which enables senior executives to stay very close to the operations of the company. Second, the company regards itself as very poor at strategic planning, but on the other hand is willing to undertake new ventures without any clear idea of the immediate payoff, and then seems very astute in spotting potential synergies when they emerge. This lack of strategic planning means that it can be very flexible and opportunistic.

Implications for Dynamic Capabilities

In this section we examine the various ‘dynamic capabilities’ which have been tentatively identified from the three case studies above, and we assess to what extent there is a fit between these cases and the various theoretical traditions on dynamic capabilities. Our argument is that each of these cases aligns quite closely with one or other of the theoretical traditions.

We summarise the main links between our data and the prior theoretical frameworks below in Table 2. The HealthCo story links most clearly with the change and learning literature because of the critical emphasis upon rapid transformation of routines and practices; the ChemCo story aligns best with the innovation literature because of the focus on continuous updating of technology and products in the company; and the WebCo story aligns most easily with the strategic literature especially because it shows how critical is the development of an appropriate and flexible skill base. But all three of the stories contain elements which are contained within the general functional literature. This includes the role of transformational leadership within HealthCo, the strong focus on R&D and production within ChemCo, and the rapid evolution of marketing strategies within WebCo.

	Strategy	Innovation	Change and learning	Functions
HealthCo	Consult stakeholders on strategic options		<i>Transformational change combining direction with empowerment</i>	Development of performance management systems
ChemCo		<i>Continuous updating of technology; plant-wide culture of innovation;</i>	Increasing pro-active both internally and externally	Emphasis on R&D
WebCo	<i>Building technical and human assets; integration of operations and strategy</i>		Serial learning from takeovers	Development of IT infrastructure

Table 2: Types of Dynamic Capabilities in Each Case

Conclusion

In conclusion, we now believe that the different, and previously largely separate, perspectives on dynamic capabilities may all have a role to play within actual corporate practice. Moreover, there are features in each of the above stories which cut across the classification we have made, and there are other elements present in these cases, such as pro-activity, the need for external networks, and political sophistication, which feature rarely in any of the existing literature. Our argument, therefore, is that future research needs to look at ways in which different perspectives on dynamic capabilities can be combined both in practice and theory, while at the same time there are a number of evident gaps in current theorising which require more attention in future empirical work.

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