Chapter XX
Researching IT Capabilities and Resources: An Integrative Theory of Dynamic Capabilities and Institutional Commitments

Tom Butler
University College Cork, Ireland

Ciaran Murphy
University College Cork, Ireland

ABSTRACT
Recent studies have highlighted the utility of the resource-based view (RBV) in understanding the development and application of IT capabilities and resources in organisations. Nevertheless, IS research has inadvertently carried over several fundamental problems and weaknesses with the RBV from reference disciplines. This chapter proposes an integrative theory, model and research propositions that draws on dynamic capabilities theory from the resource-based view of the firm in institutional economics, and commitment theory in institutional sociology, to explain and understand the process by which IT capabilities and resources are developed and applied in organizations. In so doing, this study addresses the paucity of theory on the role of IT capabilities in building and leveraging firm-specific IT resources. The chapter also addresses the aforementioned problems and weaknesses to build a logically consistent and falsifiable theory, with relatively superior explanatory power, for application in both variance and process-based research, whether positivist or interpretivist in orientation.
INTRODUCTION

Researchers in the IS field have noted that the process by which IT capabilities are created, developed and applied is not well understood. Take, for example, this comment by Bharadwaj (2000): “The underlying mechanisms through which... superior IT-capability leads to improved firm performance...is by no means clear. Additional research is needed to identify the full chain of variables connecting IT-capability to firm performance” (p. 188). Wade and Hulland (2004) contributed to the cumulative body of research in this area by identifying and categorizing capabilities and resources under the headings of (a) managing external relationships, (b) managing internal relationships, and (c) responsiveness to market, (d) IS planning and change management, (e) the processes by which IS are developed, and (f) managing IS operations effectively. However as with Bharadwaj, Wade and Hulland (2004) report that “[considerations] such as how resources are developed, how they are integrated within the firm, and how they are released have been under-explored in the literature” (p.131). While several recent papers have contributed to such an understanding, Bharadwaj’s call for a refined theoretical model remains unanswered.

Thus, there is a clear requirement for a rigorous theoretical model and framework to help guide research in the task of understanding the application of business and IT Capabilities in organisations. This chapter proposes a theoretical model that integrates and builds upon prior cumulative research in the IS and reference disciplines to propose specific concepts and identify the relationships between them. Several propositions are derived from the resultant theoretical model by drawing on extant research. Following calls made by Williamson (1998) and Knudsen (1994), the integrative theoretical model proposed herein incorporates a set of descriptive microanalytic attributes that describe a firm’s capabilities and resources—core, enabling, and supplemental—while also including an intentionality view or behavioural theory that helps explain how organisational knowledge translates into capabilities. The recent work of Teece and Pisano (1998) on the dynamic capabilities of firms is integrated with Philip Selznick’s (1949, 1957) concept of commitment to provide the model with its principal theoretical and analytic components. The inclusion of Selznick’s theoretical perspective provides this study with normative and cognitive foci to augment the predominantly regulative focus of dynamic capabilities theory in institutional economics and the strategic management literatures. The rationale behind this integrative approach to theory building originates in Scott’s (1995) contention that the various schools of institutional thought do not give equal weight to regulative (rules and laws institutionalised as protocols and routines in support of governance and power systems), normative (values and expectations that govern conformity and performance of duty within institutional regimes and authority systems), and cultural-cognitive (symbols, categories and typifications which shape performance programs, scripts and institutional identity) forces that shape institutions and organizations. Rather, researchers have generally stressed one or other as central, while implicitly incorporating others (DiMaggio and Powell, 1983). This study therefore adopts a holistic perspective and adopts a view of organizations and institutions that operates at several levels of analysis and which incorporates a theory of human behaviour that recognizes the primacy of social rationality. This chapter’s theoretical model will therefore help researchers examine the development and application of business and IT capabilities and resources as key components of core or distinctive competence in knowledge-intensive firms.

The remainder of this chapter is structured as follows: Section 2 explores the origins of the resource-based view (RBV), which is regulative in its focus; Section 3 builds on this by presenting what is regarded as the most promising view in resource-based theory—the dynamic capabili-
ties perspective; Section 4 presents a normative/cultural-cognitive theory of commitments and distinctive competence, which many argue had a seminal influence on capabilities theory; Section 5 then draws the conceptual strands together and presents theoretical model and several related propositions that should inform future research on IT capabilities and resources; the final section then offers some brief conclusions.

INSTITUTIONALISM AND THE RBV

Institutional theories originate in both sociology and economics (Rowlinson, 1997). Institutional theory in sociology has been employed fruitfully by a number of IS researchers to help explain and understand the development, application and use of IT in organizations (see Noir and Walsham (2007) for examples of previous IS research). Institutional theory in economics (or the New Institutional Economics as Williamson (1998) puts it) has also been applied for IS research, particularly transaction cost economics (see, for examples, Clemons & Hitt, 2004).

In writing on the ‘The Personal and Intellectual Roots of Resource-Based Theory’, Jay Barney (2004) illustrates the fertile ground in sociology and economics that gave birth to the resource-based view (RBV). Thus, the origins of this theory of the firm are to be found in institutional economics and institutional sociology. Following Scott (1995), however, this chapter views resource-based theory as being chiefly regulative in orientation, as it conceptualizes the firm as a bundle of idiosyncratic resources and related capabilities the interplay of which deliver competitive advantage (Rumelt, 1984). The seminal theories on which the RBV rests supports this perspective. In economics, for example, Penrose (1959) conceives the firm as a collection of competencies that embody its knowledge. Following Hayek (1945), Penrose argues that a firm’s competitive position is dependent on the manner in which the experiential knowledge of its personnel is developed and leveraged. Penrose (1959) notes that the services (and products) provided by a firm’s resources are of strategic import—not resources per se. However, the delivery of firm-specific services is dependent on how resources are employed, which is in turn dependent on the capabilities of organizational actors. Capabilities are thus conceptualized as the efficient and effective application of the experiential knowledge of a firm’s personnel.

The view of organisations as “repositories of productive knowledge” is expanded upon by Nelson and Winter (1982, p. 175), who maintain that an organization’s productive knowledge is to be found in its operational routines. Nelson and Winter argue that routines allow organisations to cope with complexity and uncertainty under the conditions of bounded rationality; in addition, they provide an efficient way of storing an organisation’s accumulated experiential knowledge. Nelson and Winter also posit that organizational routines are the basis of a firm’s distinctiveness and are, therefore, the source of its competitiveness. Thus, the resource-based view considers the firm as a repository of knowledge, rather than a response to information-related problems, which is the focus of theories such as transaction cost economics, agency theory, and so on (Fransman 1998). It is significant, therefore, that Newbert (2007) asserts that the “resource-based view of the firm (RBV) is one of the most widely accepted theoretical perspectives in the strategic management field” (p. 121).

The resource-based view is attractive to IS researchers because of its theoretical utility in explicating the link between IT resources, the capabilities required to develop and apply them, and the competitive success of enterprises (see, for examples, Mata et al.,1995; Wade & Hulland, 2004; and Wheeler, 2003). The primary argument of this strand of research is articulated by Henderson and Venkatraman (1993), who point out that sophisticated technological functionality does not
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secure competitive advantage for firms. Rather, sustainable competitive advantage emanates from the application of business and IT capabilities to develop and leverage a firm's IT resource for the purpose of organizational reconfiguration, transformation, integration and learning, all of which underpin the delivery of products and services. However, echoing arguments made by Penrose (1959) and Nelson and Winter (1984), Henderson and Venkatraman argue that business and IT capabilities are embodied in the firm-specific knowledge of organizational actors—which is itself an intangible asset or resource. Thus, the notion that knowledge is the only firm-specific (valuable, unique, and imperfectly mobile) asset or resource was readily accepted in the IS field (see, for example, Andreu & Ciborra, 1996).

Several issues require attention, however, concerning the RBV and its use for research in the IS field. The first of these concerns the inability of IS researchers to fully integrate regulative, normative and cognitive strands of institutional theory in their research so as to understand comprehensively how IT capabilities and resources are created, developed, and applied in organizations. The second issue is articulated by Nanda (1996), who argues that the resource-based view “is in a state of considerable flux .work linking the resource paradigm with intraorganizational processes.” For example, Nanda illustrates that researchers employ terms like resources, assets, competencies and capabilities interchangeably in presenting their theoretical arguments or when describing their empirical findings. In addition, several researchers have presented their own idiosyncratic conceptual definitions, while ignoring those articulated in established literature. All of this has occurred at the expense of building an accepted conceptual lexicon. A later critique of the RBV by Priem and Butler (2001) echoed these arguments. Unfortunately, this definitional ‘confusion’ has also been evident in several IS-based studies cited above. For example, a much-cited conceptual overview of the RBV by Mata et al. (1995), and, more recently, research by Wheeler (2002) and Wade and Hulland (2004), treat the concepts of capabilities and resources as conceptual synonyms, when clearly they are not. Such incidences of definitional confusion tend to support arguments made by critics of the RBV and those within the IS field who question IS researchers’ understanding and use of theory from reference disciplines (see Checkland & Holwell, 1998).

The third problem is articulated by Knudsen (1994) who, echoing Nanda (1996), argues that institutional economists, particularly those responsible for articulating the resource-based view of the firm, fail to adopt a process-based perspective when conducting their research and, instead, focus on outcomes variables, which do little to explain the dynamic nature of capabilities, their creation, and application. In order to address these problems, an integrative theoretical model is proposed, the conceptual components of which have been the subject of debate in economics, sociology, organization theory and strategic management for some time. This task is now undertaken.

DYNAMIC CAPABILITIES FRAMEWORK

In assessing the contribution of the RBV, Williamson (1998) poses the following question: “[W]hat—in addition to an inventory of its physical assets, an accounting for its financial assets, and a census of its workforce—is needed to describe the capabilities of a firm?” (p. 28). He (ibid.) argues that this will require the articulation of an “intentionality view…that [incorporates] microanalytic attributes that define culture, communication codes, and routines,” he also emphasizes that this “is an ambitious exercise.” This section begins the task of describing just such a set of ‘microanalytic attributes,’ thereby answering to Williamson’s call. It is clear from comments
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made by Richard Nelson (1994) that the dynamic capabilities framework of Teece and Pisano (1998), which builds on that proposed by Teece, Pisano and Shuen (1990), is the most appropriate candidate, as it incorporates extant theory and correctly focuses on the dynamic capabilities of firms (cf. Wheeler, 2002). More recently, the findings of Newbert’s (2007) comprehensive meta-analysis of empirical research on the RBV leads him to argue for the empirical fidelity of RBV-based theories that focus on organisational capabilities. He argues that such approaches address Priem and Butler’s (2001) reservations on the RBV’s inability to account for the processes by which resources lead to improved firm performance.

While the dynamic capabilities perspective has been widely accepted in the literature, recent research by Teece and Pisano (1998) develop it into a conceptual framework that helps capture and describe the nature of a firm’s distinctive or core competence. In presenting their framework, Teece and Pisano focus on the development and renewal of internal and external firm-specific capabilities as being of strategic importance to business enterprises. The concept of dynamic capabilities incorporates two valuable observations: first, the shifting character of the economic environment renders it dynamic—for example, decreasing time to market for products, shifting barriers to entry through technological change, globalization of national economies, and environmental uncertainty caused by political strife; second, organizational capabilities lie at the source of competitive success. In elaborating their perspective, Teece and Pisano (1998) state that core capabilities must be “honed to a user need”, must be “unique”, and “difficult to replicate” (p. 195). Enabling capabilities, on the other hand are those deemed necessary for firms to enter the game, while supplemental capabilities are non-proprietary and imitable (Leonard-Barton 1995). In order to understand firm-specific dynamic capabilities, Teece and Pisano present an analytic framework that incorporates a set of descriptive dimensions or attributes that help researchers and practitioners evaluate and understand the source of such capabilities—these are now delineated.

**Organizational and Managerial Processes:**
These describe the patterns of current practice and learning in a firm, tangible evidence of which is to be found in its routines. For example, *Integration* processes are concerned with the efficient and effective internal coordination of organizational activities and production. In knowledge intensive firms, integration is also concerned with routines and mechanisms for knowledge sharing. *Learning* processes involve repetition and experimentation to enable tasks to be performed better and more rapidly—this occurs at the level of the individual, group, organizational and interorganisational levels. *Reconfiguration and Transformation* processes relate the capabilities required to evolve a firm’s asset structure.

**Asset Positions:** These include a firm’s endowment of technology and intellectual property (as indicated by its difficult-to-trade knowledge assets) as well as its relational assets with partners, customers and suppliers. *Technological Assets*, such as IT, may generally be considered commodities, and confer no strategic advantage; however, if they are highly firm- and task-specific, or if as generic technologies they can be configured to make them unique, then they are of strategic value. Also, if the knowledge which created such assets is also proprietary and firm-specific then this adds a further ring of protection. *Complementary Assets* involve the use of related assets to develop new products and services or the mechanisms by which they are to be delivered. Such assets are considered complementary and typically have uses beyond their immediate function. *Financial Assets* include the state of the balance sheet, a firm’s cash position, and degree of financial leverage. Experiential knowledge and skills in financial management may be of strategic value here. Finally, a firm’s *Locational Assets* may influence its ability to produce and distribute products and services at low cost. Some locational assets are
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non-tradable and therefore the source of difficult-to-replicate advantages.

**Paths:** The strategic alternatives available to a firm are a function of its past activities and positions. A consideration of *Path Dependences* help us understand exactly how the firm’s present market position is a function of its past performance and future possibilities. However, a firm’s past investments and present repertoire of productive routines may act to constrain its future behaviour and choice of action. The *Technological Opportunities* presented to a firm are often down to internal and external organizational and institutional structures, collaborations and knowledge links. Quite often it is the idiosyncratic experiential knowledge of firms that guides managers in choosing the most appropriate and feasible of opportunities, and leads to the development of business and IT capabilities that enable them to realize such opportunities.

We argue that Teece and Pisano’s (1998) framework helps answer Williamson’s call for an ‘intentionality view’ of the firm; in that it incorporates an organization’s culture, communication codes, and routines, in addition to accounting for its assets. However, the framework does not provide a behavioural dimension that would help explain how (and why) organizational actors develop capabilities and apply them in organizational contexts. Implicit as it is in many perspectives in institutional economics, Fransman (1998) maintains that the concept of bounded rationality is inappropriate as a behavioural theory to help explain how (and why) capabilities are developed. In proposing his concept, Simon (1957) argues that humans are limited in their cognitive abilities to acquire, store, recall and process information. Hence, their rationality is ‘bounded’ by such factors; hence, when involved in decision-making, social agents ‘satisfice’ on the paths taken to achieve desired objectives. Satisficing in the face of limited cognitive abilities and access to information is said to characterize the behaviour of all organizational actors; hence, individuals run the risk of making what may be sub-optimal and inefficient choices. These factors, according to Simon, are the key issues that give rise to the existence of human organizations. Therefore organizations provide mechanisms for social actors to cooperate in pooling their cognitive capacities, communicate, and share information in order to transcend their individual bounded rationalities. Perrow (1984) propose an alternative model of rationality—social rationality—to account for factors not encompassed by the theory of bounded rationality. Briefly, social rationality recognizes the cognitive limits on rational choice, but argues that these limits are not entirely responsible for poor choices; in fact, they are viewed as beneficial in many respects as they encourage social bonding, interaction, and collaboration among diverse actors leading to shared learning. Perrow (1984) argues that social rationality better explains the behaviour of organizational actors—hence, the relevance and inclusion of theory from institutional sociology, as outlined in the following section.

**THE ROLE OF INSTITUTIONAL COMMITMENTS IN SHAPING DISTINCTIVE COMPETENCE**

The concept of distinctive competence was developed by Phillip Selznick’s in his seminal work *Leadership in Administration*. Selznick’s perspective subsequently informed Hamel and Prahalad’s (1994) work on core competence and Leonard-Barton’s (1995) treatise on core capabilities. Selznick (1957) argued that it is the various commitments entered into by organisational stakeholders that defines an organisation’s character and bestows upon it a *distinctive competence* in the conduct of its affairs. For Selznick, commitment is an enforced component of social action—as such it refers to the binding of an individual to particular behavioural acts in the pursuit of organisational objectives. One of the chief strengths
of Selznick’s perspective is its emphasis on group and organizational levels of analysis.

The process of institutionalisation gives rise to and shapes the commitments of organizational actors and groupings (Selznick, 1949, 1957). Such commitments in turn define an organization’s character for good or ill, thereby bestowing upon it a distinctive competence—when commitments are aligned with organizational imperatives—or a distinctive incompetence—when commitments are misaligned with organizational imperatives or are dysfunctional in nature. Following Selznick, Leonard-Barton (1992) argues that this gives rise to ‘core rigidities’ in organizations, which, she argues, are the flip-side of ‘core capabilities’. Thus, the process of institutionalization is a double-edged sword, depending on the manner in which commitments are formed. This is an important point, organizational, group, and individual commitments determine whether organizational resources are employed with maximum efficiency and whether organizational capabilities are developed to leverage such resources to attain a competitive advantage (Selznick, 1957).

Several forms of commitment are described by Selznick (1949): their locus of origin range from the social character of individual actors to groups operating on the basis of sectional interests, to those enforced by institutional norms and organisational imperatives, and, finally, to commitments enforced by the external social and cultural environment (see Table 1 for a more detailed account of Selznick’s theoretical concepts). Thus, as Selznick (1957) argues, it is through commitment, enforced as it is by a complex web of factors and circumstances, and operating at all levels within an organisation, that social actors influence organisational strategies and outcomes. However, these commitments do not evolve spontaneously, they are shaped by ‘critical decisions’ that reflect or constitute management policy: as Selznick illustrates, the visible hand of leadership influences the social and technological character of organisations and helps shape distinctive competence in them.

Support for Selznick’s position comes from several quarters. Knudsen (1994) offers direct support and recommends Selznick’s (1957) institutional theory as a suitable process-based perspective to augment the outcome-centric view of organizational competence prevalent in the literature on the RBV. Of import here is Knudsen’s

Table 1. A framework and taxonomy for understanding organisational commitments

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<tr>
<th>Type of Commitment</th>
<th>Description</th>
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<tr>
<td>Commitments enforced by uniquely organisational imperatives.</td>
<td>Organisational imperatives, which reflect business objectives, are concerned with reality preservation. They are usually implemented by policy decisions associated with system maintenance; consequently, they ensure that the organisational requirements of order, discipline, unity, defence, and consent are fulfilled.</td>
</tr>
<tr>
<td>Commitments enforced by the social character of the personnel.</td>
<td>The personnel, or so-called human capital, in an organisation come to the firm with particular needs, levels of aspiration, training and education, social ideals and class interest; thus, influences from the external environment are directly imported into an organisation through its personnel.</td>
</tr>
<tr>
<td>Commitments enforced by institutionalization.</td>
<td>Because organisations are social systems, goals, policies or procedures tend to achieve an established, value impregnated status. Commitment to established or institutionalized patterns is thereby accomplished, restricting choice and enforcing specific behavioural standards.</td>
</tr>
<tr>
<td>Commitments enforced by the social and cultural environment.</td>
<td>Organisational policies and outcomes are often influenced and shaped by actors in the external social and cultural environment.</td>
</tr>
<tr>
<td>Commitments enforced by the centres of interest generated in the course of action.</td>
<td>Decentralization and delegation of decision making to particular individuals and groups within an organisation runs the risk that policies and programs are influenced by the tangential informal goals of these individuals and sectional interests; as such, they may be unanticipated and incongruent with those of the organisation.</td>
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contention that the deficiencies in resource-based perspectives (in adaptionist sociological theory and in equilibrium-based economic theory) are countered by the fact that Selznick’s institutional theory captures the dynamics of the continuous exchange and interrelationships between an organization’s latent competencies and its structure and processes. Knudsen argues that these are an expression of a firm’s accumulated knowledge and are a consequence of human design and ‘intentionality’ as expressed by the commitments entered into by the organization’s stakeholders. Selznick’s work therefore provides appropriate behavioural foundations for the resource-based view of the firm, which has hitherto operated from the perspective of bounded rationality. In terms of the design and development of computer-based information systems, Winograd and Flores (1986) highlight the role of commitment in shaping the design of such systems. However, in the field of management, Ulrich (1998) calls for researchers to focus on the relationship between commitment and competence or capability building in organisations.

AN INTEGRATIVE THEORY OF IT CAPABILITIES, RESOURCES, AND COMMITMENTS

Following Wheeler (2003), this chapter argues for the importance of theory in the research process because it acts “to impose order on unordered experiences to increase human understanding and prediction in the real world”, (p. 129). In the positivist scheme of things, theory posits relationships between independent and dependent variables or antecedents and outcomes, while also determining what data is to be collected (Wheeler, 2003). From an interpretivist perspective, theory acts to help formulate a pre-understanding or to enrich extant understandings of IS phenomena (Butler, 1998)—the integrative dynamic capability theory presented in this chapter accords well with both positivist and interpretive perspectives.

The kernel of the extended dynamic capabilities theory as articulated in the integrative theoretical model is as follows:

A firm’s business and IT capabilities and resources are the product of its past activities and are observable in its organisational and managerial processes (capabilities) and asset positions (resources). The various commitments entered into by organisational stakeholders, in the pursuit of business, social, cultural, sectional and personal objectives, determine how efficiently and effectively valuable services are leveraged from resources through the application of business and IT capabilities. This, in turn, determines whether a firm develops a core capability or distinctive competence in conducting its activities and which help it met its business objectives. Building core capabilities and firm-specific resources is a product of the application of business and IT firm-specific tangible (explicit) and intangible (tacit) knowledge.

Elaborating on this kernel definition, IT capabilities are conceptualised as knowledge in action—that is, the application of experiential and technical knowledge of committed IT professionals to acquire, build and deploy the hardware and software components of a firm’s IT architecture. At a fundamental level, core, enabling and supplemental capabilities are applied in IS-related activities such as project management, IS analysis and design, programming, the use of IT-based Integrated Development Environments (IDE), systems administration (Windows 2008, Linux and related workstation/server/networking platforms etc.), telecommunications infrastructure management, and technical support, to name but a few. From an IT capabilities perspective, IT capabilities operate on IT-based resources such as project management tools, IT-based analysis and design technologies, programming paradigms (.NET, J2EE etc.) and development technologies and platforms (Visual Studio, IntelliJ etc.), management of information
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and communication technology (ICT) infrastructures etc. to produce IT infrastructure resources for business. Of course, IT capabilities arise from, and operate on, the explicit and tacit business and IT meta-, standard technical, industry, technical trade, intraorganisational, and unique knowledge (Nordhaug 1994: cf. Wade and Hulland (2004) on the role of knowledge of the business and IS technical knowledge and skills).

Having introduced the conceptual components of this study’s integrative model of business and IT capabilities and resources in some detail in previous sections, this chapter’s theoretical model is now presented in Figure 1. Unlike previous conceptualizations, this model is process-based, in that the ‘microanalytic attributes’ of organizational and managerial processes are further elaborated by the application of Selznick’s (1949, 1957) theory of commitment, thereby capturing the multi-faceted nature of the phenomenon. The role of the explicit and tacit knowledge as the tangible and intangible resources which underpins capability development is also recognized (Nonaka & Takeuchi, 1995; Andreu & Ciborra, 1996; Fransman, 1998). Furthermore, the model’s scope and constituent concepts map well onto Benbasat and Zmud’s (2003) “view…of the phenomena studied by IS scholars” and its articulation in their conceptualization of the “IT artifact and its immediate nomological net” (p. 186).

As IT hardware and software infrastructures are increasingly being leveraged to deliver superior value propositions and services to internal stakeholders, customers, and business partners

Figure 1. An integrative theoretical model for understanding the development and application of IT capabilities and resources
(e.g. in B2B/B2C/B2G etc.), they have acquired the status of firm-specific (i.e., valuable, rare, appropriate, imperfectly imitable, non-substitutable, and imperfectly mobile) resources: accordingly, the IT capabilities that are used to acquire, build, deploy and manage these resources in pursuit of business objectives have become core capabilities for business enterprises. It is important to note therefore that important synergies and relationships exist between business and IT capabilities and resources.

**Theoretical Propositions and Analysis**

We now present several propositions drawn from this study’s theoretical model and based on insights from the literature cited previously. Each proposition is elaborated by empirical examples drawn from extensive research by Butler (2002) and related publications, which assesses the business and IT competence profiles of four organizations: two newspaper company’s—News International Newspapers Ltd. and Examiner Publications Ltd. (EPL); microelectronics manufacturer, Analog Devices Inc. (ADI); and Interactive Multimedia Systems Ltd. (IMS), a software company. The propositions are built on the fundamental assumption that a firm’s IT capabilities and resources are the product of its history. This assumption indicates the need to study the historical activities and performance of firms: path dependencies, for example, are argued: (a) to influence a firm’s organizational and managerial processes; (b) to build commitments; and (c) to shape the formation of asset positions. The theoretical propositions and the associated model therefore prepare the way for future process-based research of an interpretive nature on IT capabilities and resources, while also helping to inform the conduct of variance-based research strategies.

Butler (2002) illustrates the way in which News International Newspapers Ltd. developed its IT capabilities and resources to meet specific business objectives. It is significant that many component IT resources (both software and hardware) at News International were commodities, while others were industry specific. However, innovative customization and unique recombination of what were supplemental and enabling IT resources through the application of firm-specific IT capabilities made such resources them core or strategic (Butler, 2002; Butler and Murphy, 1999).

**Proposition 1:** Three types of capabilities and resources coalesce to form a firm’s competitive position: that is, IT capabilities and resources (tangible and intangible) may be core (that is firm-specific, valuable, rare, and inimitable), enabling (industry specific), or supplemental (commodities).

In all four organisations studied by Butler (2002) the existence of core business and IT capabilities and resources were observed to be a function of the optimal alignment of individual, group/sectional, social and cultural commitments with business objectives, as expressed by commitments to organisational imperatives. In two of the organisations, News International and EPL, core rigidities—that is attachment to outmoded capabilities and resources—were only overcome when the various commitments identified by Selznick (1949) were properly aligned in the pursuance of business objectives.

**Proposition 2:** The development and application of IT capabilities and resources are influenced and shaped by the commitments entered into by an organization, its members, and wider institutions.

Butler (2002) and Butler and Murphy (2008) report that the software development company IMS possessed a range of software capabilities, based on idiosyncratic knowledge of particular technologies (e.g. multimedia and Case-based
Reasoning (CBR), that enabled it to produce software-based services in the area of learning and knowledge management to customers in the financial services, electronic and real estate sectors. Furthermore, Butler’s (2002) case study of Analog Devices Inc. illustrates how IT-literate business managers made all the difference in applying supplemental and enabling IT resources through their in-depth knowledge of their business practices and products. Without such firm-specific capabilities and knowledge, commodity-like IT resources would, in and of themselves, not have delivered valuable services to internal or external stakeholders and customers.

**Proposition 3:** IT capabilities operate on resources to produce services that are of value to internal and external stakeholders and customers.

IT capabilities are, at base, knowledge in action: they are often embedded in the processes, routines and operational procedures of an organization. Butler (2002) illustrates that the Sales and Marketing Divisions at Analog Devices Inc. possessed a unique blend of business and IT experiential and technical knowledge that saw user-led development of IT-based strategic sales and marketing solutions (Butler, 2003). The case study of News International and EPL described how these companies were leaders in the innovative application of IT to stay ahead of competitors in the newspaper industry. They achieved this through a mixture of experimentation and collaborative partnerships that saw transfers of knowledge within and between suppliers and partners, IT professionals and business staff. Butler and Murphy (2008) also report that IMS’ success in developing and applying innovative CBR technologies grew in a similar fashion through pan-European collaborations. These cases revealed that integration, learning and reconfiguration and transformation IT capabilities are the product of systematic, patterned, responsive interaction of committed individuals and groups shape an organization’s business and IT capabilities.

**Proposition 4:** Valuable IT capabilities will be dynamic in nature and are evidenced by a firm’s and/or IS function’s integrative capacities, ability to learn, and abilities to transform and reconfigure their operations in response to environmental conditions.

Butler (2002) and Butler and Murphy (2008) demonstrate the institutional and cultural conditions that are conducive to capability transfers within and between organisations; however, these studies also show that interorganisational knowledge and capability transfers (e.g. in the newspaper industry, where organisation-specific commitments militate against learning) are difficult to achieve (Butler, 1999). Thus we present the following proposition.

**Proposition 5:** Firm-specific capabilities will be ‘sticky’ and difficult to imitate, or replicate, even across ‘communities-of-practice’ in and across organisations.

Nordhaug (1994) and Nonaka and Takeuchi (1995) delineate the relationship between explicit and tacit knowledge and capabilities. Tangible and intangible experiential knowledge of the use and deployment of IT artefacts is the differentiating factor across competing firms (Butler, 2002, 2003; Butler and Murphy, 1999, 2008). In the latter studies, it was found that tangible IT resources were sourced from the marketplace and customized using the tangible and intangible experiential knowledge of key social actors.

**Proposition 6:** Tangible and Intangible knowledge resources (experiential and technical) underpin all business and IT capabilities.

These propositions describe at a high level of analysis the central tenets of this paper’s elaboration of the RBV and the role of commitment in shaping the development and application of capabilities. The propositions are the product of logical deductions informed by a critical analysis
of the different strands of institutional thought that surround the RBV. As such, they address many of the theoretical limitations of the RBV (Nanda, 1996; Priem & Butler, 2002; Newbert, 2007), while also extending and elaborating the theory of dynamic capabilities. They also incorporate a behavioural dimension by applying a theory of commitment that operates on several levels of analysis.

CONCLUSION

This chapter has drawn on old and new institutional thought in economics and sociology in order to posit a theory of business and IT capabilities, resources, and commitments that spans all three pillars or approaches—regulative, normative and cultural-cognitive—to understanding organisational processes and structures (Scott, 1995). In extending and elaborating upon extant treatments of the resource-based view (see, for example, Wheeler, 2002; Wade & Hulland, 2004), this chapter’s theoretical model and associated framework presents IS researchers with a comprehensive perspective on the development and application of capabilities and resources in organizations. For example, the model’s behavioural theory component views IT professionals and organizational actors as intentional, purposeful entities who commit themselves to particular courses of action as part of socially constructed ‘communities-of-practice’. Furthermore, the theoretical model and its associated research framework illustrates that an understanding of the institutional and organizational mechanisms which shape and influence knowledge construction in social contexts, and of the commitments which shape and influence the development and application of such knowledge, is vital if the capabilities of IT professionals—core, enabling and supplemental—that are used to build and leverage IT resources to deliver valuable services are to be fully comprehended and explained.

In conclusion, the outcome of this chapter’s integration and elaboration of institutional theory from economics and sociology has, we believe, resulted in a logically consistent theory, model and framework that helps explain better the processes by which IT capabilities and resources are developed and applied in organisations. It therefore provides a foundation for future academic research on this important topic.

REFERENCES


**KEY TERMS AND DEFINITIONS**

**Asset Positions**: (Technological, Complementary Financial and Locational Assets) include a firm’s endowment of technology and intellectual property, as indicated by its difficult–to-trade knowledge assets as well as its relational assets with partners, customers and suppliers.
Capabilities: Include core capabilities are “honed to a user need”, are “unique”, and are “difficult to replicate”; enabling capabilities are those deemed necessary for firms to enter the game; and supplemental capabilities are non-proprietary and imitable.

Commitment: Is an enforced component of social action; as such, it refers to the binding of an individual to particular behavioural acts in the pursuit of organisational objectives. It is through commitment, enforced as it is by a complex web of factors and circumstances, and operating at all levels within an organisation, that social actors influence organisational strategies and outcomes.

Distinctive Competence: Is a function of the commitments of organisational groupings and social actors to develop and apply business and IT capabilities and resources to deliver services that are of value to customers.

Dynamic Capabilities: This concept is based on two valuable observations: first, the shifting character of the economic environment renders it dynamic; second, organizational capabilities lie at the source of competitive success.

Organizational and Managerial Processes: Consist of integration processes, learning processes, and reconfiguration and transformation processes.

Paths: Encompass the strategic alternatives available to a firm are a function of its past activities and positions. A consideration of Path Dependencies help us understand exactly how the firm’s present market position is a function of its past performance and future possibilities. However, a firm’s past investments and present repertoire of productive routines may act to constrain its future behaviour and choice of action. The Technological Opportunities presented to a firm are often down to internal and external organizational and institutional structures, collaborations and knowledge links.

ENDNOTES

1 It is important to make a distinction between a competence or capability and the assets or resources which they relate to and operate on. For example, a competence or capability in hammering nails refers to three physical objects or resources/assets—a hammer, nails, and the object(s) to be nailed. In describing a competence or capability, therefore, it is customary to refer to the object or asset/resource that one has a competence in using, but not to include it as a competence or capability.

2 The entire research monograph, including case study narratives and extended analysis is available from http://afis.ucc.ie/tbutler/PhD.htm