

The dynamics of knowledge assets and their link with firm performance

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Summary

Purpose – Organizational knowledge assets have been identified as sources of competitive advantage. It is therefore critical that organizations understand how they impact on performance in order to effectively manage these assets. This paper aims to extend the “knowledge-value chain”, recently introduced in the management literature, by integrating the concept of dynamic capabilities. Based on a systematic review of the literature it seeks to demonstrate the important role of dynamic capabilities in the relationship between knowledge asset management and firm performance. This paper aims to argue that the effective management of knowledge asset enhances the value of organizational competencies, which in turn support organizational processes, products and services. Dynamic capabilities take the role of continuously shaping operating routines and competencies, and consequently deliver superior long-term performance.

Design/methodology/approach – The central objective of the article is to extend the work presented by Carlucci et al. with the concept of dynamic capabilities. Carlucci et al. introduce the “knowledge value chain” as a model linking knowledge assets with firm performance.

Findings – Based on an extensive systematic literature review, a recognized evidence-based tool for theory building, the paper finds that dynamic capabilities represent a missing component in the relationship between knowledge assets and firm performance.

Practical implications – It is believed that the insights presented in this paper represent the theoretical basis for the development of a conceptual framework on how effective knowledge asset management affect the overall business performance and improve the value-generating activity of a company.

Originality/value – The paper reveals that knowledge assets interact with each other through learning mechanisms and knowledge management processes enable the generation of new knowledge, and the development of organizational routines that form the building blocks of firm's competencies. These organizational competencies, hence, condition the efficiency and the effectiveness of business processes, and consequently the value of firm's products and services. Dynamic capabilities shape and systematically reconfigure organizational competencies, through assimilating new knowledge, and linking, organizing and integrating the generated knowledge into organizational routines.

Keywords Assets, Organizational performance, Resources, Knowledge management

Paper type Research paper

1. Introduction

Over the last 15 years advocates of the resource-based view have tried to explain “why firms differ and how it matters?” (Nelson, 1991; Barney, 1991; Wernerfelt, 1984; Hoopes *et al.*, 2003). According to the resource-based view rival firms compete on the basis of the heterogeneity and immobility of their resources and capabilities (Barney, 1991; Amit and Schoemaker, 1993; Dierickx and Cool, 1989; Peteraf and Bergen, 2003). Resources can be physical, human and organizational in nature, and they can be used to implement value-creating strategies (Grant, 1991, 1996). In fact, it is suggested that resources which are valuable, rare, inimitable, and non-substitutable, have the potential to provide firms with a sustainable competitive advantage (Barney, 1991). A set of resources that seem to match the above criteria are knowledge assets.

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However, scholars have questioned whether the mere possession of bundles of these strategic assets is sufficient to sustain any competitive advantage, especially in situations of rapid and unpredictable market change, termed high velocity or dynamic markets (D'Aveni, 1995; Sanchez and Heene, 1997; Teece *et al.*, 1997; Eisenhardt and Martin, 2000). It is believed that a competitive advantage in today's economy depends upon the way firms manage their knowledge assets, and how effective and efficient their knowledge management processes are applied to accumulate, articulate, codify, and use knowledge assets to create value and enhance performance over time (Teece, 1998; Boisot, 1998; Wiig, 1997).

Carlucci *et al.* (2004) show how the management of knowledge assets impact business performance. It is argued that business performance equates to value generated for the key stakeholders of an organization. The generated value is the result of an organization's ability to manage its business processes and, on the other hand, the effectiveness and efficiency of performing organizational processes are based on organizational competencies. Finally, the management of knowledge assets enables an organization to grow and develop the appropriate organizational competencies. Therefore, the fact that organizational competencies are based on the effective and efficient management of knowledge assets puts it at the heart of business performance and value creation.

Similarly, the effectiveness of knowledge asset management provides firms with an ability to constantly reconfigure, accumulate, and dispose of knowledge resources to meet the demands of a shifting market. Recently, strategic management scholars have begun to refer to these processes as dynamic capabilities (Teece *et al.*, 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002; Zott, 2003). Dynamic capabilities are therefore the organizational and strategic routines which firms use to achieve new resource configurations as markets emerge, collide, split, evolve and die (Eisenhardt and Martin, 2000). Teece *et al.* (1997) suggest that dynamic capabilities are unique to individual firms, reflecting their individual idiosyncrasies, their specific path-dependencies, and hence are considered the source of sustainable competitive advantage and long-term superior performance.

This paper aims to extend the framework developed by Carlucci *et al.* (2004) through highlighting the role of dynamic capabilities in creating and sustaining a competitive advantage. In fact, this paper intends to further our understanding of the theoretical foundations of knowledge assets; how knowledge management practices improve the quality of business processes through shaping and renewing of organizational competencies; and the role of dynamic capabilities in providing sustainable competitive advantage and supra-normal profitability. In doing so, the paper intends to offer a clearer understanding of the role of knowledge asset management in sustaining a company's competitiveness.

For the purpose of this research we have conducted a systematic literature review as a recognized evidence-based tool for theory building. The remainder of this paper is organized in the following parts. First, we explain the methodology of our systematic review. Second, we define knowledge assets, and how they are enhanced, nurtured, enriched, and renewed through knowledge management processes. Third, we will explain how knowledge management practices support business processes and activities through renewing organizational competencies. Fourth, we will define the concept of dynamic capabilities and discuss their importance in enhancing the firm's overall performance through reshaping the organizational competencies that underpin its business processes and activities. Finally, a conclusion will be drawn up and some directions for further research will be provided.

2. Systematic review methodology

In order to fully understand the prior research in this field a systematic literature review was undertaken (Tranfield *et al.*, 2003). Traditional "narrative" reviews often lack rigor, and in many cases are not undertaken as genuine pieces of investigatory science. Tranfield *et al.* (2003) recommend the specific principles of the systematic review methodology that are used in medical science in order to counteract bias and produce transparent, high-quality and relevant literature reviews in management research. Conducting a systematic review means adopting a replicable, scientific and transparent process, in other words a detailed process that minimizes bias through exhaustive literature searches of published and unpublished studies and by providing an audit trail of the reviewers decisions, procedures



and conclusions (Cook *et al.*, 1997). The way whereby the systematic review was undertaken ensured that it was both methodical and replicable.

In order to assess the relevance and size of the literature the scope of the literature review process was delimited by factors of disciplinary perspective, keywords and the quality of the research sources. The keywords listed below have been defined by the review team based on their prior experience, the literature related to each construct, and in discussion with members of a consultation panel consisting of five acknowledged and widely published tenured professors in the field:

- knowledge economy;
- knowledge-based economy;
- resource-based view;
- resource-based theory;
- knowledge-based view;
- knowledge-based theory;
- knowledge assets;
- intangible assets;
- invisible assets;
- intellectual capital;
- knowledge strategy;
- knowledge processes;
- knowledge management strategy;
- knowledge management processes;
- knowledge management systems;
- knowledge management practices;
- organizational learning;
- organizational routines;
- dynamic capability (or capabilities);
- absorptive capacity;
- combinative capabilities;
- core competence (or competences or competencies);
- competitive advantage;
- business performance;
- firm performance; and
- value creation.

The keywords were then constructed into 15 search strings which were used to conduct searches in four electronic journal databases: ProQuest, EBSCO, Emerald, and Wiley Interscience (Table I):

1. knowledge economy OR knowledge-based economy;
2. resource-based AND view OR theory;
3. knowledge-based AND view OR theory;
4. knowledge assets;
5. intangible assets OR invisible assets;
6. intellectual capital;

Table I Journal databases

Database	Areas	Truncation symbol, e.g. <i>educat*</i>	Wildcard symbol e.g. <i>organi?ation</i>	Phrase searching
ABI ProQuest	This database includes details on virtually every aspect of business and management from 1986	*	?	Two or more words default to a phrase
EBSCO Business Source Premier	This database is the world's largest full text database for scholarly business journal and peer-reviewed publications, including virtually all subject areas related to business	*	?	Two or more words default to a phrase
Emerald	Emerald publishes the world's widest range of business and management journals allowing access to the latest research and global thinking	*	Not available	Enclose phrases in double quotes
Wiley Interscience	This database contains some of the finest full text business and management journals around the globe	*	Not available	Two or more words default to a phrase

7. knowledge strategy OR knowledge process*;
8. knowledge management AND strategy OR process* OR system* OR practices;
9. organi?ational learning OR organi?ational routines;
10. dynamic capability OR dynamic capabilities;
11. absorptive capacity OR combinative capabilities;
12. core competence*;
13. sustained competitive advantage OR sustainable competitive advantage;
14. business performance OR firm performance AND (resources OR knowledge assets OR intangible assets OR intellectual capital OR knowledge management OR organi?ational learning OR absorptive capacity OR core competence*); and
15. value creation AND (resources OR knowledge assets OR intangible assets OR intellectual capital OR knowledge management OR organi?ational learning OR absorptive capacity OR core competence*).

For the purpose of this study scholarly articles published in English language between 1985 and 2004 were included (Table II).

The review has followed a number of stages as recommended by Tranfield *et al.* (2003) to provide a systematic and explicit method as shown below:

1. We planned the review, formed a consultation panel, and produced a review protocol.
2. The review team identified keywords based on their prior experience, the literature related to each construct, and in discussion with members of the consultation panel.
3. The keywords were constructed into 15 search strings.
4. The four databases chosen were reviewed using the search strings identified in step 3.
5. The identified papers were reviewed using the inclusion and exclusion criteria, to reduce the number of articles/papers. Both, article titles and article abstracts were analyzed and evaluated using the exclusion criteria and inclusion criteria.
6. The retained papers were imported from the electronic databases into a reference management database (Procite), downloaded in full text format and peer-reviewed by both authors according to the quality assessment criteria based on a question based appraisal tool. Only after both reviewers deemed the quality of a paper as high (= only "yes;" answers to the questions in the assessment tool) were papers included. In two



Table II Inclusion and exclusion criteria

No.	Criteria	Reason for inclusion
<i>Inclusion criteria</i>		
1.	Published papers/articles since 1 January 1985	The main contributions to the theoretical concepts that we intended to explore were published after 1985
2.	Papers/articles in English language	The language in which most relevant scholarly business journals are published is English
3.	Papers/articles that aim to understand the studied constructs	To enable us to address the first objective of this review: to understand the meaning of each theoretical concept
4.	Papers/articles that address the relationships between at least two or more of the studied constructs	To enable us to address the second objective of this review: to understand the interdependencies and the relationships between the different theoretical concepts
5.	Papers/articles that take a strategy or business policy perspective	The main theoretical contributions related to the studied concepts have been made by strategic management scholars
6.	Scholarly published papers/articles	To provide more rigorous arguments and theoretical foundations for the propositions and assumptions that the review intend to develop
<i>Exclusion criteria</i>		
1.	Papers/articles focused on financial accounting, economics, or pure disclosure issues	These are concepts that we did not intend to explore and the papers/articles focusing on such issues would not provide meaningful insights as regards to the purpose of this review
2.	Papers/articles without theoretical grounding	The purpose of this review was to synthesize existing theoretical knowledge into a new framework, for which theoretical insights are pre-requisite

cases of differing assessments, the relevant papers were discussed between the researchers until consensus was reached.

7. The content of the papers relevant to the study was stored in a Procite database with a descriptive analysis. The other information sources and the papers recommended by the members of the consultation panel and not included previously were also added to the database with a descriptive analysis.
8. Grounded Theory Method was used to synthesize the gathered information, to build on it in order to generate the assumptions underpinning the relationships between the studied constructs, and develop the foundations of a theoretical model.

The initial search on papers using the specified keyword strings, resulted in 6,917 papers being stored and their abstracts initially assessed to determine their relevance with regard to the purpose of the systematic review. Following the initial assessment using the inclusion and exclusion criteria, 381 papers were deemed to be both relevant and of a suitable quality to be fully read and analyzed further. These papers have then been imported into a reference manager database (Procite), and downloaded in a full-text format. Another 24 articles were recommended by the members of the consultation panel. The total of 405 articles were reviewed in full by both of the authors according to question-based quality assessment criteria (Popay and Williams, 1998), as shown below:

1. Was an explicit account of the theoretical framework given?
2. Was there a succinct statement of objectives or research questions?
3. Was there a clear description of the context?
4. Was the sample chosen adequately?
5. Was there a clear description of data analysis methods and were they appropriate?
6. Did the research move adequately from the raw data (numbers, quotations or examples), to an analysis and interpretation of the meaning and the significance of it?
7. Were the findings relevant to theory?

At the end of this quality assessment phase, 146 papers were retained (see Table III for a breakdown of the number of articles retained for each of the search strings applied).

A descriptive analysis of each paper was conducted and the results were stored in the reference manager database. A grounded theory approach (Glaser and Strauss, 1967) was used for the purpose of synthesizing the findings captured from the articles and to build the theoretical foundations of knowledge assets and knowledge management and their impact on business performance. Grounded Theory is recognized as a method for building higher-order theoretical constructs and the assumptions underpinning their relationships (Glaser and Strauss, 1967). We have followed an inductive process based on a comparative analysis to synthesise the gathered information, to build on it in order to emphasise the meaning of each concept, and to develop the propositions underpinning the relationships between the studied constructs, which in turn form the foundations of the theoretical understanding put forward in the following sections.

3. Knowledge asset management

In this section we begin by defining knowledge assets and their theoretical foundations, then we highlight some empirical evidence on how knowledge assets impact business performance. Subsequently, we focus on knowledge asset management, by defining the concept of knowledge management, and showing the role of learning mechanisms and knowledge management processes in enhancing, enriching, and continually renewing a firm's knowledge assets.

3.1 Defining knowledge assets

In the management literature many terms have been used to refer to the concept of "knowledge assets". In the strategic management literature the concept of "resources" has been used to define "all the firms assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney, 1991). In fact, a resource refers to an asset or input to production (tangible or intangible) that an organization owns,

Table III Search results, fully reviewed papers, and included papers

<i>Search strings</i>	<i>Search results from journal databases</i>	<i>Relevant papers to be fully reviewed</i>	<i>Included papers</i>
knowledge economy OR knowledge-based economy	228	10	5
resource-based AND view OR theory	445	92	44
knowledge-based AND view OR theory	278	17	4
knowledge assets	63	11	5
intangible assets OR invisible assets	428	21	5
intellectual capital	447	22	6
knowledge strategy OR knowledge process*	99	8	0
knowledge management AND strategy OR process* OR system* OR practices	1,309	61	7
organi?ational learning OR organi?ational routines	2,419	64	6
dynamic capability OR dynamic capabilities	81	27	21
absorptive capacity OR combinative capabilities	92	8	2
core competence*	135	8	3
sustained competitive advantage OR sustainable competitive advantage	520	22	15
business performance OR firm performance AND (resources OR knowledge assets OR intangible assets OR intellectual capital OR knowledge management OR organi?ational learning OR absorptive capacity OR core competence*)	306	7	0
value creation AND (resources OR knowledge assets OR intangible assets OR intellectual capital OR knowledge management OR organi?ational learning OR absorptive capacity OR core competence*)	67	3	0
Sub-total	6,917	381	123
Consultation panel		6	6
Other information sources		18	17
Total	6,917	405	146



controls, or has to on a semi-permanent basis (Helfat and Peteraf, 2003). Resources of firms include, for example, capital equipment, skills of individual employees, patents, brand names, finance, and so on (Grant, 1991). Fahy (2000) states that “resources” encompass three distinct sub-groups namely, tangible assets, intangible assets, and capabilities.

However, “resources” have been defined in a very inclusive way to comprise other attributes such as a firm’s capabilities (Priem and Butler, 2001). Grant (1991) argues that “resources are inputs into the production function – they are the basic units of analysis. A capability is the capacity of a team of resources to perform some task or capacity”. Knowledge, in fact, is seen as a “resource” that supports capabilities, activities, and products, and that in turn arises from experience (Helfat and Raubitschek, 2000). Hall (1992) focuses on intangible resources and classifies them into “assets” (e.g., intellectual property rights and reputation) and “skills” (i.e. know-how of employees as well as suppliers and advisers and the collective aptitudes which add up to organizational culture). The concept of knowledge assets refers to these intangible resources. According to Nonaka *et al.* (2000a), knowledge assets describe “firm-specific resources that are indispensable to create values for the firm”. Also, intangibility is considered as an important characteristic of knowledge assets (Michalisin *et al.*, 1997).

The concept of “intangible assets” has also been used to refer to the firm’s knowledge assets (Hall, 1993). For example, Dawson (2000), based on prior work of other scholars, identifies three groups of intangible assets, which are human capital (i.e. the skills and know-how of the people in the organization, working individually and in teams); structural capital (i.e. organizational infrastructures, and processes which do not depend on key staff); and, relationship capital (relationships with clients, suppliers and others, as well as organizational image and brands). This concept, i.e. intangible assets, is synonymous to what many authors have referred as “intellectual capital” (Roos and Roos, 1997; Bontis and Fitz-enz, 2002; Marr *et al.*, 2003a). Marr and Schiuma (2001) define intellectual capital as “the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of this organization by adding value to the defined key stakeholders”.

Based on this review, we propose the following working definition for knowledge assets: “Knowledge assets are strategically relevant intangible resources a firm possesses which can take the form of employees’ skills and know-how, organizational routines, relationships with stakeholders, organizational image and reputation, technological infrastructure, and intellectual property”.

3.2 Knowledge assets and firm performance

There are not many contributions that have investigated how knowledge assets enhance different performance dimensions in organizations. Barth *et al.* (2003) state that brand value estimates are significantly associated with equity market values (share prices) and market returns. Also, Deng *et al.* (2003) point out that patent measures, reflecting the volume of companies’ research activity, the impact of companies’ research on subsequent innovations, and the closeness of R&D to science are reliably associated with the future performance of R&D-intensive companies in capital markets. Another example is given by Hand (2003a) who finds that successful investments in intangibles, i.e. R&D, advertising and personnel, have become a critical means by which firms create value. Hand (2003b), also, states that stock markets only attribute future benefits to intangibles (i.e. marketing and R&D assets) when intangibles play a dominant role in the firm’s business strategy. By focusing on human capital, Hitt *et al.* (2001) demonstrate that the prestige of partners in service firms, their tacit knowledge gained through experience, and their social capital can be helpful in the implementation of their firm’s strategy. In addition, a study conducted by Lev and Sougiannis (2003) shows that investors price stocks with an expectation that current R&D expenditures have strong future benefits. Also, cross-industry diversification, geographic diversification, and firm size have been found to add value in the presence of intangibles related to R&D and advertising, but destroy value in their absence (Morck and Yeung, 2003). Finally, internally developed trademarks are considered to be valuable and value-relevant,



as they explain future sales, current stock prices, and future stock returns (Seethamraju, 2003).

Knowledge assets represent the “Crown Jewels” (Grant, 1991) of companies and their strategic role to create value and improve business performance has incited organizations to invest heavily in methodologies, processes, and technologies to enrich, nurture, and renew them over time. Teece (1998) argues that “the competitive advantage of companies in today’s economy stems not from market position, but from difficult to replicate knowledge assets and the manner in which they are deployed”. Hence, knowledge management practices have emerged as the processes to accumulate, articulate, codify, and effectively use knowledge assets and enhance their value continually. Below we discuss the strategic role of knowledge management in further details.

3.3 Knowledge management and firm’s knowledge assets

In this section, we first discuss the concept of “knowledge management;” before exploring its role in enhancing the value of knowledge assets over time.

3.3.1 Defining knowledge management. Teece (2000) defines knowledge management as “the panoply of procedures and techniques used to get the most from a firm’s knowledge assets”. According to Wiig (1997), knowledge management has two main objectives:

1. to make the organization act as intelligently as possible in order to secure its viability and overall success; and
2. to otherwise realize the best value of its knowledge assets.

Three major schools of thought on what knowledge management is could be identified (Bollinger and Smith, 2001):

1. the first school suggests that knowledge management is primarily an information technology issue;
2. the second school suggests that knowledge management is more of a human resource issue; and
3. the third school promotes the development of processes to measure and capture the organization’s know-how.

To date, a major focus of scholars has been on the process aspect of knowledge management. In fact, knowledge management has been widely considered as consisting of processes that facilitate the application and development of firm’s knowledge assets. Nonaka *et al.* (2000a) state that knowledge management includes three primary activities: knowledge generation, which describes the way employees improvise and organizations innovate; knowledge integration, which describes how employees transform their tacit knowledge into explicit knowledge by codifying their ideas into the systems of the organization; and, knowledge sharing, which describes the socialization process through which employees share knowledge with one another. More broadly, Marr *et al.* (2003b) identify seven processes to manage knowledge assets:

1. knowledge generation;
2. knowledge codification;
3. knowledge application;
4. knowledge storing;
5. knowledge mapping;
6. knowledge sharing; and
7. knowledge transfer.

These processes are based on an understanding that knowledge is dynamic in nature, and on this basis they provide guidelines of how to use, transfer, share, develop, and renovate the knowledge assets of an organization (Wiig, 1997).



3.3.2 Managing knowledge assets. Knowledge assets are dynamic in nature, interact and depend on each other to create value (Barney, 2001; Roos and Roos, 1997). This interconnectivity is enabled by learning mechanisms and knowledge management processes (Marr and Schiuma, 2001; Carlucci *et al.*, 2004; McGaughey, 2002). Knowledge assets are often organization specific, and organizations can employ strategic interventions through developing and implementing programs and procedures to develop, enhance, or protect those knowledge assets (Aaker, 1989; Dierickx and Cool, 1989; McGaughey, 2002).

Hence, the overall purpose of knowledge management is to maximize the enterprise's knowledge-related effectiveness of its knowledge assets and to renew and leverage them constantly (Wiig, 1997; Bontis and Fitz-enz, 2002). In fact, knowledge management is recognized as the fundamental activity for obtaining, growing and sustaining knowledge assets in organizations, and the successful management of knowledge assets is closely linked to knowledge management processes an organization has in place (Marr *et al.*, 2003b).

Knowledge is about learning and development (Korac-Kakabadse *et al.*, 2002). Development facilitates learning processes and as such increases knowledge generation. Also, knowledge creation is the final result of learning process and conversely, learning occurs when knowledge creation, sharing, and use take place (Loermans, 2002). While organizational learning generates new knowledge, the organization that is skilled in knowledge management efficiently and effectively manages knowledge which has been created. Put differently, the knowledge management discipline takes the output from organizational learning, manages it and ensures that an appropriate environment to perpetuate the generation and management of knowledge assets is being properly maintained (Loermans, 2002).

One of the most recognized and comprehensive frameworks of knowledge asset management was developed by Nonaka *et al.* (2000b). Nonaka *et al.* (2000b) point out that knowledge creation consists of three elements, which are:

1. the SECI process (i.e. socialization, externalization, combination, and internalization), the process of knowledge creation through conversion between tacit and explicit knowledge;
2. *ba*, the shared context for knowledge creation; and
3. knowledge assets, or the inputs, outputs, and moderator of the knowledge creation process.

Knowledge creation in firms cannot only rely on technology and technical knowledge. Knowledge develops if the firm acts as a social community, and specific skills of orienting, communicating, translating, and diffusing "how to know;" are developed (Turvani, 2001). These skills, in the form of visions, cognitive models, and idiosyncratic interpretations of reality, are built up over time and they give a firm its own specific character and path of development.

4. Knowledge asset management, organizational competencies, and business processes effectiveness

Knowledge management integrates processes, people, and technology to enhance the effectiveness of an organization's operational processes and competencies through learning (Armistead, 1999). While knowledge assets are grounded in the experience and expertise of individuals, firms provide the physical, social, and resource allocation structure so that knowledge can be shaped into organizational competencies (Adams and Lamont, 2003). A firm's ability to act is based on its competencies, which in turn are based on the firm's knowledge base and the effectiveness of learning mechanisms that enable the generation of new competencies. Hence, a company's competencies are seen as a combination of all knowledge assets and cognitive processes that allow an organization to carry out its business processes (Marr and Schiuma, 2001; Prahalad and Hamel, 1990; Miller, 2003; Montealegre, 2002). These competencies reflect the firm's ability to repeatedly perform a coordinated set of tasks which relates either directly or indirectly to a firm's





capacity for creating value through effecting the transformation of inputs into outputs (Helfat and Peteraf, 2003; Von Krogh and Roos, 1995).

Leonard-Barton (1992) indicates that knowledge creation activities are essential for the generation as well as for the maintenance of competencies. New knowledge is created through learning mechanisms and knowledge management processes (Meso and Smith, 2000; Pemberton and Stonehouse, 2000). This knowledge is then used to support the firm's activities, processes, and products (Helfat and Raubitschek, 2000). Competencies are complex knowledge sets, which are acquired through learning, and include technological skills, complementary assets, as well as routines (Coates and McDermott, 2002). Nelson (1991) asserts that organizational competencies together with firm-specific organizational routines are the result of an internal learning process and that organizational routines are the key building blocks under the concept of organizational competencies. When firm-specific assets are assembled in integrated clusters spanning individuals and groups so that they enable distinctive activities to be performed, these activities constitute organizational routines (Teece and Pisano, 1994; Ulrich and Smallwood, 2004). Organizational routines are defined as behaviors that are learned, highly patterned, repetitious, or quasi-repetitious, founded in part in tacit knowledge, that characterize organizational reactions to variegated, internal and external stimuli (Nelson and Winter, 1982; Winter, 2003). Hence, organizational competencies are defined as a collection of organizational routines (Winter, 2000) that provide an organization's management with a set of decision options for producing significant outputs of a particular type. Therefore, these competencies represent the organizational activities geared towards the operational functioning of the firm (Zollo and Winter, 2002).

Organizational competences also condition the way activities fit and reinforce one another, which in turn sustain the operational effectiveness (Porter, 1996). As they are built internally through complex social and learning processes, organizational competencies are causally ambiguous (Lippman and Rumelt, 1982; Reed and DeFillippi, 1990; King and Zeithaml, 2001), and consequently they are difficult to trade or imitate, scarce, valuable, and non-substitutable (Barney, 1991). These characteristics make them the source of sustainable competitive advantage, and thereby the basis of "long-term profitability" and "above-average performance in the long run" (Amit and Schoemaker, 1993; Porter, 1985). In fact, organizational competencies, when leveraged into products and services, generate value and abnormal profitability and impact consequently the overall firm performance (Rouse and Daellenbach, 2002; Acquaah, 2003).

The analysis of the results of the case studies suggests some fundamental managerial insights for managing knowledge assets in order to support NPD process performance.

5. The role of dynamic capabilities in providing long-term superior performance

The concept of "dynamic capabilities;" has recently emerged in the strategic management literature to denote "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece *et al.*, 1997). A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness (Zollo and Winter, 2002). Building dynamic capabilities relates especially to the environmental and technological sensing apparatus that the firm has established, the choice of organizational form, and the ability to strategize (Teece, 1998; Zott, 2003). Dynamic capabilities are developed through learning mechanisms, which continually shape the firm's organizational competencies (Zollo and Winter, 2002; Teece and Pisano, 1994). Dynamic capabilities allow a firm to assimilate new knowledge from their business environment, and configure their knowledge sets, operating routines, and organizational competencies to meet the new market needs (Zahra and George, 2002).

According to Eisenhardt and Martin (2000), some dynamic capabilities integrate resources (e.g., product development routines, strategic decision making), others focus on reconfigurations of resources within firms (e.g., transfer processes including routines for replication and brokering), and others are related to gain in and release in resources (e.g., knowledge creation routines, alliance and acquisition routines).

Also, effective patterns of dynamic capabilities vary with market dynamics (Eisenhardt and Martin, 2000). In moderately dynamic markets, dynamic capabilities resemble to traditional conception of routines as they are complicated, detailed, analytic, and linear. However, in high-velocity markets, dynamic capabilities are simple, experiential, unstable, and iterative. Dynamic capabilities are especially relevant in a Schumpeterian world of innovation-based competition, price-performance competitive advantage, rivalry, increasing returns, and the “creative destruction;” of existing competencies (Teece *et al.*, 1997). From this perspective, the coordinating and resource allocating capabilities featured in dynamic capabilities shape markets, as markets shape firms. Put simply, dynamic capabilities enable the co-evolution of firms and markets (Chandler, 1990).

Teece *et al.* (1997) state that a firm’s dynamic capabilities are the major source of its competitive advantage as they are usually the source of Schumpeterian rents (Teece and Pisano, 1994). Whereas Ricardian rents are quasi-rents and are easily competed away, Schumpeterian rents have the possibility of being sustained indefinitely so long as the dynamic capability is maintained. Also, the long-term competitive advantage lies in using dynamic capabilities sooner, more astutely, or more fortuitously than the competition (Eisenhardt and Martin, 2000).

6. Conclusion

Building on Carlucci *et al.*’s (2004) attempt to explain the role of knowledge asset management in sustaining a company’s competitiveness, this paper proposes some assumptions to further our understanding of how knowledge assets, if they are managed effectively and efficiently, impact firm performance. Especially, the paper highlights the role of dynamic capabilities in providing long-term superior performance and above average and long-term profitability. In fact, knowledge assets are seen as a set of intangible resources, i.e. assets and skills, which interact with each other through learning mechanisms. Knowledge management processes enable the generation of new knowledge, and the development of organizational routines that form the building blocks of firm’s competencies or the way it performs its operational processes and activities. These organizational competencies, hence, condition the efficiency and the effectiveness of business processes, and consequently the value of firm’s products and services. Dynamic capabilities shape and systematically reconfigure organizational competencies, through assimilating new knowledge, and linking, organizing and integrating the generated knowledge into organizational routines.

We believe that the insights discussed in this paper represent the theoretical basis for the development of a conceptual framework on how effective knowledge asset management affect the overall business performance and improve the value-generating activity of a company. The ideas presented in this paper can help also in the development of a knowledge-based performance management and measurement system. For this purpose, we encourage further research to disentangle the complexities in the relationship between knowledge asset management and business performance. Also, more empirical inquiry and in-depth case studies are needed to define the modalities and procedures that help organizations identify their knowledge assets and implement appropriate knowledge management practices that ensure the effectiveness of their business processes and in turn the value of their products and services.

References

- Aaker, D.A. (1989), “Managing assets and skills: the key to a sustainable competitive advantage”, *California Management Review*, Vol. 31 No. 2, p. 91.
- Acquaah, M. (2003), “Corporate management, industry competition and the sustainability of firm abnormal profitability”, *Journal of Management & Governance*, Vol. 7 No. 1, p. 57.
- Adams, G.L. and Lamont, B.T. (2003), “Knowledge management systems and developing sustainable competitive advantage”, *Journal of Knowledge Management*, Vol. 7 No. 2, p. 142.
- Amit, R. and Schoemaker, P.J.H. (1993), “Strategic assets and organizational rent”, *Strategic Management Journal*, Vol. 14 No. 1, p. 33.



- Armistead, C. (1999), "Knowledge management and process performance", *Journal of Knowledge Management*, Vol. 3 No. 2, p. 143.
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, p. 99.
- Barney, J.B. (2001), "Is the resource-based view a useful perspective for strategic management research? Yes", *Academy of Management Review*, Vol. 26 No. 1, p. 41.
- Barth, M.E., Clement, M.B., Foster, G. and Kasznik, R. (2003), "Brand values and capital market valuation", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY.
- Boisot, M. (1998), *Knowledge Assets: Securing Competitive Advantage in the Information Economy*, Oxford University Press, New York, NY.
- Bollinger, A.S. and Smith, R.D. (2001), "Managing organizational knowledge as a strategic asset", *Journal of Knowledge Management*, Vol. 5 No. 1, p. 8.
- Bontis, N. and Fitz-enz, J. (2002), "Intellectual capital roi: a causal map of human capital antecedents and consequents", *Journal of Intellectual Capital*, Vol. 3 No. 3, p. 223.
- Carlucci, D., Marr, B. and Schiuma, G. (2004), "The knowledge value chain – how intellectual capital impacts business performance", *International Journal of Technology Management*, Vol. 27 Nos 6/7, p. 575.
- Chandler, A.D. (1990), *Scale and Scope: The Dynamics of Industrial Capitalism*, Belknap, Cambridge, MA.
- Coates, T.T. and McDermott, C.M. (2002), "An exploratory analysis of new competencies: a resource based view perspective", *Journal of Operations Management*, Vol. 20 No. 5, p. 435.
- Cook, D.J., Mulrow, C.D. and Haynes, R.B. (1997), "Systematic reviews: synthesis of best evidence for practical decisions", *Annals of Internal Medicine*, Vol. 126 No. 5, pp. 376-80.
- D'Aveni, R.A. (1995), "Coping With hypercompetition: utilizing the new 7s's framework", *Academy of Management Executive*, Vol. 9 No. 3, p. 45.
- Dawson, R. (2000), "Knowledge capabilities as the focus of organisational development and strategy", *Journal of Knowledge Management*, Vol. 4 No. 4, p. 320.
- Deng, Z., Lev, B. and Narin, F. (2003), "Science and technology as predictors of stock performance", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY.
- Dierickx, I. and Cool, K. (1989), "Asset stock accumulation and sustainability of competitive advantage", *Management Science*, Vol. 35 No. 12, p. 1504.
- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 Nos 10/11, p. 1105.
- Fahy, J. (2000), "The resource-based view of the firm: some stumbling-blocks on the road to understanding sustainable competitive advantage", *Journal of European Industrial Training*, Vol. 24 Nos 2/3/4, p. 94.
- Glaser, B.G. and Strauss, A.L. (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Adline, Chicago, IL.
- Grant, R.M. (1991), "The resource-based theory of competitive advantage: implications for strategy formulation", *California Management Review*, Vol. 33 No. 3, p. 114.
- Grant, R.M. (1996), "Prospering in dynamically-competitive environments: organizational capability as knowledge integration", *Organization Science*, Vol. 7 No. 4, p. 375.
- Hall, R. (1992), "The strategic analysis of intangible resources", *Strategic Management Journal*, Vol. 13 No. 2, p. 135.
- Hall, R. (1993), "A framework linking intangible resources and capabilities to sustainable competitive advantage", *Strategic Management Journal*, Vol. 14 No. 8, p. 607.
- Hand, J.R.M. (2003a), "The increasing returns-to-scale of intangibles", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY.



- Hand, J.R.M. (2003b), "Profits, losses, and the nonlinear pricing of internet stocks", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY.
- Helfat, C.E. and Peteraf, M.A. (2003), "The dynamic resource-based view: capability lifecycle", *Strategic Management Journal*, Vol. 24 No. 10, p. 997.
- Helfat, C.E. and Raubitschek, R.S. (2000), "Product sequencing: co-evolution of knowledge, capabilities and products", *Strategic Management Journal*, Vol. 21 Nos 10/11, p. 961.
- Hitt, M.A., Bierman, L., Shimizu, K. and Kochhar, R. (2001), "Direct and moderating effects of human capital on strategy and performance in professional service firms: a resource-based perspective", *Academy of Management Journal*, Vol. 44 No. 1, p. 13.
- Hoopes, D.G., Madsen, T.L. and Walker, G. (2003), "Guest editors' introduction to the special issue: why is there a resource-based view? Toward a theory of competitive heterogeneity", *Strategic Management Journal*, Vol. 24 No. 10, p. 889.
- King, A.W. and Zeithaml, C.P. (2001), "Competencies and firm performance: examining the causal ambiguity paradox", *Strategic Management Journal*, Vol. 22 No. 1, p. 75.
- Korac-Kakabadse, N., Kouzmin, A. and Kakabadse, A. (2002), "Knowledge management: strategic change capacity or the attempted routinization of professionals?", *Strategic Change*, Vol. 11 No. 2, p. 59.
- Leonard-Barton, D. (1992), "Core capabilities and core rigidities: a paradox in managing new product development", *Strategic Management Journal*, Vol. 13, p. 111.
- Lev, B. and Sougiannis, T. (2003), "The capitalization, amortization, and value-relevance of R&D", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Values, Measures and Risks*, Oxford University Press, New York, NY.
- Lippman, S.A. and Rumelt, R.P. (1982), "Uncertain imitability: an analysis of interfirm differences in efficiency under competition", *Bell Journal of Economics*, Vol. 13 No. 2, p. 418.
- Loermans, J. (2002), "Synergizing the learning organization and knowledge management", *Journal of Knowledge Management*, Vol. 6 No. 3, p. 285.
- McGaughey, S.L. (2002), "Strategic interventions in intellectual asset flows", *Academy of Management Review*, Vol. 27 No. 2, p. 248.
- Marr, B. and Schiuma, G. (2001), "Measuring and managing intellectual capital and knowledge assets in new economy organisations", in Bourne, M. (Ed.), *Performance Measurement Handbook*, GEE Publishing, Wokingham.
- Marr, B., Gray, D. and Neely, A. (2003a), "Why do firms measure their intellectual capital?", *Journal of Intellectual Capital*, Vol. 4 No. 4, p. 441.
- Marr, B., Gupta, O., Pike, S. and Roos, G. (2003b), "Intellectual capital and knowledge management effectiveness", *Management Decision*, Vol. 41 No. 8, p. 771.
- Meso, P. and Smith, R. (2000), "A resource-based view of organizational knowledge management systems", *Journal of Knowledge Management*, Vol. 4 No. 3, p. 224.
- Michalisin, M.D., Smith, R.D. and Kline, D.M. (1997), "In search of strategic assets", *International Journal of Organizational Analysis*, Vol. 5 No. 4, p. 360.
- Miller, D. (2003), "An asymmetry-based view of advantage: towards an attainable sustainability", *Strategic Management Journal*, Vol. 24 No. 10, p. 961.
- Montealegre, R. (2002), "A process model of capability development: lessons from the electronic commerce strategy at Bolsa De Valores De Guayaquil", *Organization Science*, Vol. 13 No. 5, p. 514.
- Morck, R. and Yeung, B. (2003), "Why firms diversify: internalization vs agency behaviour", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY.
- Nelson, R.R. (1991), "Why do firms differ, and how does it matter?", *Strategic Management Journal*, Vol. 12, p. 61.
- Nelson, R. and Winter, S. (1982), *Evolutionary Theory of Economic Change*, Harvard Business Press, Cambridge, MA.



- Nonaka, I., Toyama, R. and Konno, N. (2000a), "SECI, *Ba* and leadership: a unified model of dynamic knowledge creation", *Long Range Planning*, Vol. 33 No. 1, p. 5.
- Nonaka, I., Toyama, R. and Nagata, A. (2000b), "A firm as a knowledge-creating entity: a new perspective on the theory of the firm", *Industrial and Corporate Change*, Vol. 9 No. 1, p. 1.
- Pemberton, J.D. and Stonehouse, G.H. (2000), "Organizational learning and knowledge assets – an essential partnership", *The Learning Organization*, Vol. 7 No. 4, p. 184.
- Peteraf, M.A. and Bergen, M.E. (2003), "Scanning dynamic competitive landscapes: a market-based and resource-based framework", *Strategic Management Journal*, Vol. 24 No. 10, p. 1027.
- Popay, J. and Williams, G. (1998), "Qualitative research and evidence based health care", *Qualitative Health Research*, Vol. 8 No. 3, pp. 341-51.
- Porter, M.E. (1985), *Competitive Strategy*, Free Press, New York, NY.
- Porter, M.E. (1996), "What is strategy?", *Harvard Business Review*, Vol. 74 No. 6, p. 61.
- Prahalad, C.K. and Hamel, G. (1990), "The core competence of the corporation", *Harvard Business Review*, Vol. 68 No. 3, p. 79.
- Priem, R.L. and Butler, J.E. (2001), "Is the resource-based view a useful perspective for strategic management research?", *Academy of Management Review*, Vol. 26 No. 1, p. 22.
- Reed, R. and DeFillippi, R.J. (1990), "Causal ambiguity, barriers to imitation, and sustainable competitive advantage", *Academy of Management Review*, Vol. 15 No. 1, p. 88.
- Roos, G. and Roos, J. (1997), "Measuring your company's intellectual performance", *Long Range Planning*, Vol. 30 No. 3, p. 413.
- Rouse, M.J. and Daellenbach, U.S. (2002), "More thinking on research methods for the resource-based perspective", *Strategic Management Journal*, Vol. 23 No. 10, p. 963.
- Sanchez, R. and Heene, A. (1997), "Managing for an uncertain future: a systems view of strategic organizational change", *International Studies of Management & Organization*, Vol. 27 No. 2, p. 21.
- Seethamraju, C. (2003), "The value relevance of trademarks", in Hand, J. and Lev, B. (Eds), *Intangible Assets: Measures, Values and Risks*, Oxford University Press, New York, NY, p. NY.
- Teece, D. and Pisano, G. (1994), "The dynamic capabilities of firms: an introduction", *Industrial and Corporate Change*, Vol. 3 No. 3, pp. 537-56.
- Teece, D., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, p. 509.
- Teece, D.J. (1998), "Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets", *California Management Review*, Vol. 40 No. 3, p. 55.
- Teece, D.J. (2000), "Strategies for managing knowledge assets: the role of firm structure and industrial context", *Long Range Planning*, Vol. 33 No. 1, p. 34.
- Tranfield, D., Denyer, D. and Smart, P. (2003), "Towards a methodology for developing evidence-informed management knowledge by means of systematic review", *British Journal of Management*, Vol. 14 No. 3, p. 207.
- Turvani, M. (2001), "Microfoundations of knowledge dynamics within the firm", *Industry and Innovation*, Vol. 8 No. 3, p. 309.
- Ulrich, D. and Smallwood, N. (2004), "Capitalizing on capabilities", *Harvard Business Review*, Vol. 82 No. 6, p. 119.
- Von Krogh, G. and Roos, J. (1995), "A perspective on knowledge, competence and strategy", *Personnel Review*, Vol. 24 No. 3, p. 56.
- Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, p. 171.
- Wiig, K.M. (1997), "Integrating intellectual capital and knowledge management", *Long Range Planning*, Vol. 30 No. 3, p. 399.
- Winter, S.G. (2000), "The satisficing principle in capability learning", *Strategic Management Journal*, Vol. 21 Nos 10/11, p. 981.



Winter, S.G. (2003), "Understanding dynamic capabilities", *Strategic Management Journal*, Vol. 24 No. 10, p. 991.

Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", *Academy of Management Review*, Vol. 27 No. 2, p. 185.

Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, p. 339.

Zott, C. (2003), "Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study", *Strategic Management Journal*, Vol. 24 No. 2, p. 97.

Further reading

Venzin, M., Von Krogh, G. and Roos, J. (1998), "Future research into knowledge management", in Von Krogh, G., Roos, J. and Kleine, D. (Eds), *Knowing in Firms*, Sage Publications, London.

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