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ENTERPRISE 2.0: THE "NEW KNOWLEDGE MANAGEMENT" OR JUST ANOTHER BUZZWORD?

Dimitris Bibikas[1]
SEERC - South East European Research Centre of the University of Sheffield and CITY College

Iraklis Paraskakis
SEERC - South East European Research Centre of the University of Sheffield and CITY College

Ana Cristina Vasconcelos
The University of Sheffield Regent Court, Department of Information Studies

Alexandros G. Psychogios
Business Administration & Economics Department
City College, Affiliated Institution of The University of Sheffield

Abstract

The purpose of this paper is to explore the role of Enterprise 2.0 inside a complex business process, seen through the relationship between dynamic capabilities and key knowledge activities. In particular, we investigate the effect of a Wiki in a product management process in a small UK-based software development company. The study draws upon existing theoretical foundations, such as the linkage between key knowledge management activities and dynamic capabilities, as well as characteristics of enterprise social software. The research was performed using a case study qualitative approach. Overall, the Wiki was observed to play an active role in key knowledge activities, with a clear emphasis on those led by the software development team. The boundaries of the Wiki's use were restricted to the roles of technical-oriented individuals, failing to affect activities perform by sales and product management units.

Keywords: Enterprise 2.0, Wiki, key knowledge management activities, dynamic capabilities, SMEs.

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[1] 17, Mitropoleos Str., 54624 Thessaloniki, Greece, Tel: +30 2310 253477, Fax: +30 2310 253478, E-mail: dbibikas@seerc.org

1 INTRODUCTION

Over the past few months there has been an increasing interest in business magazines and academic journals alike concerning the concept of Enterprise 2.0 (Allen, 2008; Bibikas *et al.*, 2009; Bughin, 2008; Ip and Wagner, 2008; Marfleet, 2008). The use of the decimal point in the term implies a proposed discontinuity from previous forms of organizational contextures, emphasizing the transformational role of social computing inside companies (e.g. wikis, blogs, podcasts, Really Simple Syndication, Instant Messaging, social bookmarking, etc) (McAfee, 2006). On the other hand, scepticism regarding the potential for organisational rejuvenation of social software deployment inside organizations has also been expressed (Stenmark, 2008; Davenport, 2007). Can some of the basic social organizational constructions (e.g. individual, team, and unit) be affected by the deployment of such tools, or should the term be approached merely as a metaphor? Has Enterprise 2.0 some actual meaning, or it is just another "dot.com" type buzzword?

In this paper, we explore whether Enterprise 2.0 can provide strategic business value and affect key knowledge processes and adaptive capabilities of organizations. The notion of Enterprise 2.0 has promptly followed the widespread of the so-called "Web 2.0" and has dominated the discourse surrounding not only to enterprise information applications, but also to associated managerial approaches (Hamel, 2007). Consequently, there is a heated debate between sceptics who argue that the term "Enterprise 2.0" has nothing to offer other than basic managerial aspects regarding the utilization of generic networked business applications, while supporters claim that the term conveys something new: a flexible and adaptable perspective to organizational knowledge strategies (Patrick and Dotsika, 2007; Coakes, 2006; McAfee, 2006) and a key driver towards the development of dynamic capabilities (Shuen, 2008).

The first objective of this paper is to perform a systematic literature review and examine various aspects of the Enterprise 2.0 conception. Knowledge management literature has discussed issues concerning the role of generic groupware technologies (e.g. e-mail, electronic bulletin boards, mobile communication, etc) on knowledge processes inside organizations (Bhatt et al., 2005). However, there are limited analyses of the use of various enterprise social computing tools during the process of managing knowledge that subsequently explore their effects – if any – on organizational dynamic capabilities development. We draw upon recent advancements in knowledge management, which go beyond the notion of asset exploitation strategies for growth and increased operational efficiency (Davenport and Prusak, 1998). Rather, we conceive knowledge management processes as tightly integrated with the firms' ability to identify critical shifts in the external environment and its capacity to apply appropriate procedures in order to renew its core competencies (Nielsen, 2006). In light of the above, the claim that Enterprise 2.0 allows knowledge to organically emerge and eventually self-organize through knowledge workers practices and outputs (Bibikas *et al.*, 2009; Bibikas *et al.*, 2008; McKelvie et al., 2007; Patrick and Dotsika, 2007; Coakes, 2006; McAfee, 2006) is investigated.

The second objective of this paper is to determine how specific social software tools are currently applied in certain business processes. Although empirical studies providing insights and results on the use of social computing tools for knowledge management purposes are rare, there are few preliminary studies which present some early indication of the current status. We provide empirical data from a single business setting and analyze whether these tools can offer something new in key knowledge activities and adaptive capabilities inside the deploying organizations. This case study covers the software development business sector and explores a small-sized company in particular.

It is an early exploratory study based on qualitative data analysis, focusing on the application of Enterprise 2.0 in the light of relationship between key knowledge management activities and organizational dynamic capabilities.

The paper is structured in five sections. The first explores the concept of dynamic capabilities in the context of small business settings. Based on an existing model, we illustrate key knowledge management activities which are linked with organizational dynamic capabilities. The second section portrays facets of the Enterprise 2.0 notion as described by various researchers and commentators in scientific journals and business magazines. Next, we present empirical data from a single case study in which a specific social computing tool (i.e. Wiki) was deployed in a small software company and discuss its implications on the process of product management. Finally, we conclude with a section describing the contributions of the study, limitations and future research directions.

2 THEORETICAL FOUNDATIONS
We establish the foundation of our study upon two broad research strands. The first one is based on dynamic capabilities and knowledge management inside small business contexts and their work practices. The second is the use of social software tools inside business settings investigated based on cited characteristics of Enterprise 2.0.

2.1 Dynamic capabilities, knowledge management and SMEs
The concept of dynamic capabilities was first introduced by Teece et al. (Teece and Pisano, 1994; Teece et al., 1997) who suggested that organizations should develop internal processes aiming at the continuous change and renewal of their capabilities, according to the shifting demands of a changing external environment. The ultimate target of such strategy is the provision of new and innovative products and services to customers. Teece et al. (1997, p. 516) define dynamic capabilities as:

"…the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments."

Dynamic capabilities enable organizations to respond to external challenges by recombining and reconfiguring their internal capabilities, thus achieving and sustaining a competitive advantage (Winter, 2003). After the initial introduction of the dynamic capability concept, its contextualization and operationalization in the management literature has been subject to diverse interpretations (Zahra et al., 2006; Schreyogg and Kliesch-Eberl, 2007). There are, however, two generic common factors in the multiplicity of defining facets (Lee and Kelley, 2008), which provide distinctive characteristics to dynamic capabilities. These are: i) environmental and organizational change (Eisenhardt and Martin, 2000; Zollo and Winter, 2002; Winter, 2003; Zahra et al., 2006) and ii) extension of existing organizational practices to face challenges and tackle problems (Zahra et al., 2006). These themes are the differentiating factors which distinguish dynamic capabilities from repetitive and routinized organizational capabilities (Winter, 2003). Consequently, organizational capabilities can be defined as (Grant, 1996a, p. 377):

"…the firm's ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs."

Therefore, repetitive organizational capacities are generated or renewed through the influential effect of dynamic capabilities (Winter, 2000, 2003; Zollo and Winter, 2002). The 'dynamic' element can be viewed as organizational practices by which individuals – having the authority for doing so – can alter the resource base of the firm (Eisenhardt and Martin, 2000). Moreover, 'dynamic' focuses on the ability of the organization to renew itself according to environmental changes. It refers to the capacity of being flexible and anticipatiing future market alternations, business trends and technological changes. Subsequently, 'capabilities' reflect those repetitive routines which can effectively integrate and synthesize "in-house" skills, resources and procedures with "external" trends to create change or align with environmental change (Lee and Kelley, 2008).

'Dynamicity' is often quoted as a characteristic of small and knowledge-intensive companies. SMEs are presented as being fairly flexible and responsive to market changes and shifting demands (Afuah, 1998; Acs and Audretsch, 1990; Dodgson, 1993). The knack of the founder or manager to connect external market needs with in-house capabilities is considered key to the prosperity of the small company (Lipparini and Sobrero, 1994). Moreover, SMEs present high levels of adaptability (Simon et al., 2002) and market focus (Laforet and Tann, 2006), as well as the capacity to perform swift adjustments to rapidly changing business environments (Kanter, 1985).

Dynamic capabilities have at their core activities such as acquiring, discarding, combining and integrating resources to generate value (Grant, 1996a). They represent the vehicles that lead the generation, transformation and reconfiguration of existing resources into new resource configurations, which in their turn can provide a source for competitive advantage (Teece et al., 1997). Sher and Lee (2003) advise us that dynamic capabilities address the level of responsiveness of organizations in rapidly changing external environments and they investigate the enhancement of dynamic capabilities by an effective synthesis of endogenous knowledge – stemming from internally residing resources -, and exogenous knowledge – resulting from business value chain communications, such as customers, partners, suppliers, and even competitors. The internalization of exogenous knowledge and its synthesis with endogenous knowledge is suggested to be of pivotal importance (Sher and Lee, 2003). Similarly, the eventual transformation of exogenous into endogenous knowledge is of significant importance to SMEs as well, since small companies largely lack internal resources to generate large amounts of endogenous knowledge. Rather, they rely on their agility to adapt to knowledge flows initialized from external resources, such as customers, partners or even competitors (Robinson, 1982).

Dynamic capabilities can be viewed as a core element of management practices (Sher and Lee, 2004), in which key business activities occur (e.g. market positioning, sales strategy, product and service management, etc). Despite the fact that dynamic capabilities can be identified in specific business processes, their nature often presents somewhat 'fluid' attributes, such as problem solving orientation in an ad-hoc manner (Winter, 2003), iterative adaptation to highly unpredictable outcomes (Eisenhardt and Martin, 2000), and dependence on a wide variety of tasks with unknown outcomes (Zollo and Winter, 2002). Such characteristics indicate a close association between the nature of dynamic capabilities and the way small companies operate in their every-day context. SMEs rely mostly on informal person-to-person communications and people-centric operations (Desouza and Awazu, 2006) that take place in largely ad-hoc and non-standardised ways (Nunes et al., 2006).

For the purpose of this research we approach dynamic capabilities as key knowledge activities, following the work of Nielsen (2006), who adopts a knowledge-based perspective of the firm and establishes a layered connection between eight different knowledge management activities (Alavi and Leidner, 2001; Teece, 1998; O'Dell and Grayson, 1998) and three dynamic capabilities processes (Verona and Ravasi, 2003; Eisenhardt and Martin, 2000). Namely, he explores the following key complementary knowledge activities:

- Knowledge creation, where new organizational knowledge is developed from within the firm through formal initiatives;
- Knowledge acquisition, in which knowledge from external sources is acquired - illustrating varying levels of absorptive capacity (Cohen and Levithal, 1990; Zahra and George, 2002);
- Knowledge capture and articulation, where newly created knowledge is accessible to a wider community inside the organization and transferred to various individuals;
- Knowledge assembly, where internal knowledge is identified and re-configured intending to enter the value offerings of the organization (e.g. products, services);
- Knowledge sharing, in which knowledge demands are fulfilled by knowledge supply activities through transferring codified and articulated knowledge;
- Knowledge integration and re-combination, where new and widely available knowledge resources are being related and combined with existing ones;
- Knowledge leverage, where knowledge shifts beyond the previous experimental phase and enters a more exploitive stage taking into account external partnerships and alliances (Van Gils and Zwart, 2004);
- Knowledge application and exploitation, where knowledge reaches the firm's customers through the provision of services and/or products.

The above key knowledge management activities, essentially, can be thought of as an iterative and integrated knowledge process lifecycle. They initiate with the preliminary creation of "untested" knowledge, often coming from external knowledge flows, and they continue with the diffusion and maturity of the newly acquired resource. Thus, they provide a step further towards the internalization of the introduced asset. Then, internal capabilities are affected and re-configured, until the initial resource is finally integrated into the organization's every-day activities and reaches its value offering system (e.g. products, services, etc). Such key knowledge activities can be observed in every-day working practices of SMEs and in problem-solving activities in a non-standardized way (Nunes et al., 2006; Alvesson, 1995). Most of the above knowledge operations are practiced by SMEs, although approached informally and without the use of a formal KM vocabulary and terminology (Hutchinson and Quintas, 2008). Such a behavior is in agreement with both Desouza and Awazu (2006), who asserted that socialization was a significant means of transferring and developing common knowledge. Additionally, it agrees with Nunes et al.(2006) who conclude that knowledge management in SMEs tends to happen through informal means. However, this 'informality' which knowledge management in SMEs is based upon (e.g. through often unstructured and not always deliberate activities) does not reduce the importance or the actual performance thereof.

The abovementioned key knowledge management activities are connected in the work of Nielsen (2006) in terms of the following dynamic capabilities:

- Knowledge development, where the organization develops, absorbs new knowledge.

- Knowledge (re)combination, where internal knowledge stocks are re-configured and re-combined to produce new organizational capabilities.
- Knowledge use, in which the newly re-combined knowledge resources are exploited as value offerings to customers.

The following figure (*Figure 1*) integrates the concept of dynamic capabilities in the context of key knowledge management activities performed in specific business processes.

Business processes

Market positioning

Sales strategy

Product Management

1. Knowledge development
Knowledge creation
Knowledge acquisition
Knowledge capture

2. Knowledge (re)combination
Knowledge assembly
Knowledge sharing
Knowledge integration

Dynamic Capabilities

3. Knowledge use
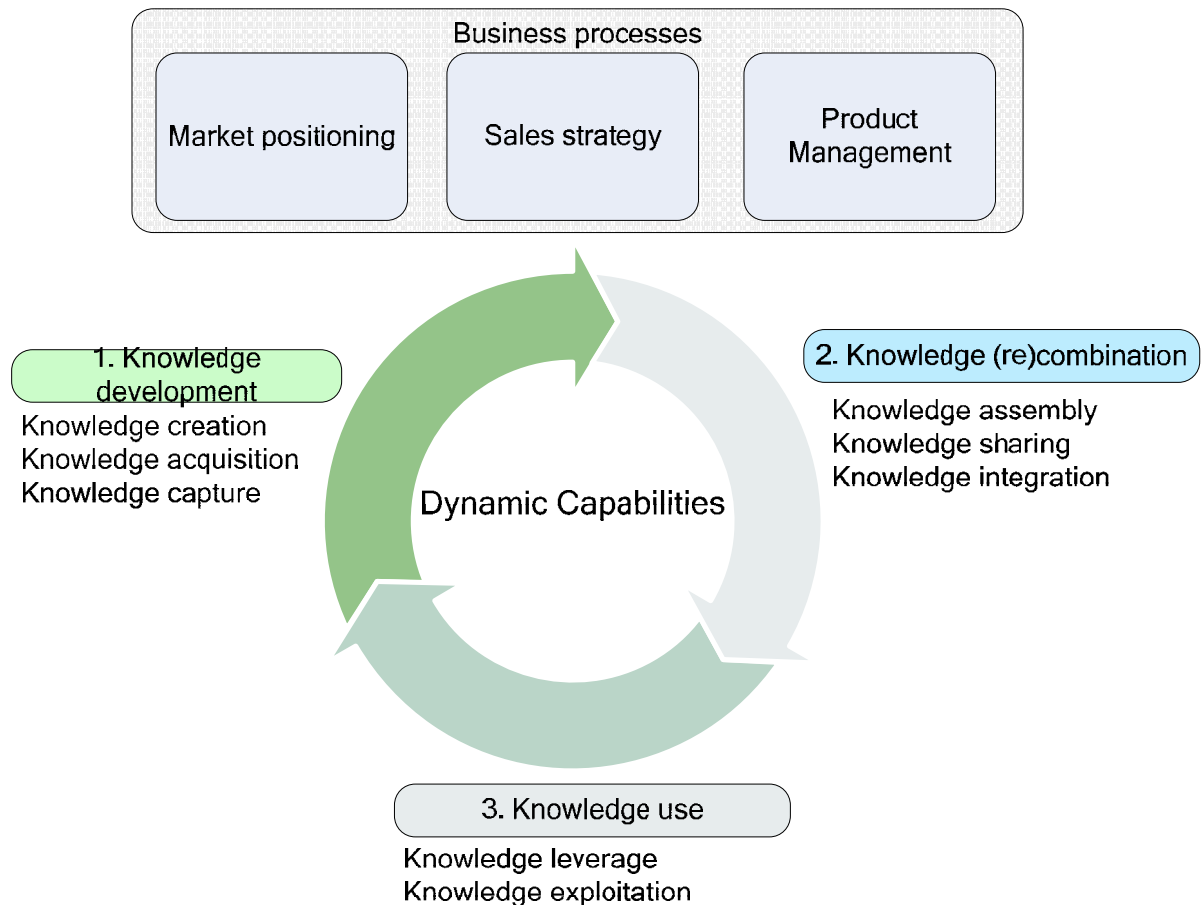Knowledge leverage
Knowledge exploitation

Figure 1 – Dynamic capabilities viewed as key knowledge activities in business processes

Having explored the first theoretical foundation of our study, the link between knowledge activities and dynamic capabilities, we continue with a review on the cited characteristics of social software in business settings.

2.2 Social software in bounded environments
McAfee in 2006 initiated an active debate on the potential effect of the use of social software tools (e.g. wikis, blogs, podcasts, collaborative bookmarking, etc) inside organizations and in collaborative activities and knowledge sharing in particular. He defined the concept of "Enterprise 2.0" as (McAfee, 2006):

"…the use of emergent social software platforms within companies, or between companies and their partners or customers."

In this definition, there are two important aspects of social software as defined by McAfee (2006): i) emergent character, in the sense of deployment and content structures, and, ii) high level of visibility and persistency of content. These exact elements – emergent character and extensive commonality of content – are proposed to differentiate social software from existing groupware technologies (e.g. e-mail, document management systems, web portals, etc).

Under the same light, Coakes (2006) advises that social software tools rely mostly on social aspects of every-day organizational life, rather than technological ones, and can facilitate knowledge exchange and sense-making. Consequently, plurality and emergence of topics discussed via such tools are mentioned as well (Coakes, 2006).

Similarly, Grudin (2006) suggests that social software can present a better fit between informal employee knowledge exchange behaviors and digital technologies. He argues that current technology is often used to manage merely explicit and formal representations of knowledge, while common conversational and socialisation practices of employees are largely neglected. He concludes that social software offers the potential of lifting the weight of formally expressing knowledge inside organizations through technological means (Grudin, 2006).

Tredinnick (2006), similarly, proposes that potential for innovation of social software inside organizations does not stem from technological breakthroughs. Rather, it derives from the potential to change the role of the social actors and constructs (e.g. individuals, teams, departments) in information environments. In particular, he mentions that specific attributes of social software (e.g. openness, self-organized information structures) can enable the organization to capitalize upon the collective experience of users.

O'Leary (2008) provides a keen view of social software and of the Wiki tool in particular. He proposes that Wikis can provide organizations with numerous "*additional capabilities*" through their capacity to capture and articulate knowledge.

McKelvie et al. (2007) illustrate through a case study how a Wiki can become a central means to knowledge sharing and a "*starting point for new activities*" (p. 420). In this exploratory case, the Wiki is reported to have affected various business activities of the investigated company (i.e. product development, marketing, meetings and conference notes, etc).

Finally, Shuen (2008), the co-author of the influential work on dynamic capabilities (Teece et al., 1997), explicitly associates the use of Web 2.0 technologies inside businesses with their dynamic capabilities development. She argues that the continuous evolution of an organization inside a wide and diverse network of global partners, customers and competitors, can be enhanced by social software functionalities. Shuen advises that organizations can catalyze their absorptive capacity by exploiting the functionalities of social software in business ecosystems contexts (e.g. content syndication).

A wide range of literature addresses the role of IT in developing organizational capabilities (see Bhatt and Grover, 2005). However, and despite of the fact that much has been written to claim the transformative role of enterprise social software in organizations (Allen, 2008; Bughin, 2008; Ip and Wagner, 2008; Marfleet, 2008), there

is limited work that investigates the actual effect of these tools into specific business processes linked with dynamic capabilities development.

2.3 Research implications

The above discussion lead us to certain research questions as to better understand whether and how social software can affect the development of dynamic capabilities. The literature provides an overview of social software characteristics and also identifies certain knowledge processes that are related with dynamic capabilities. This study aims to explore the connection – if any – between the use of such tools and dynamic capabilities in a small business environment, as illustrated in the following figure (*Figure 2*).

Social software characteristics

Potential effects

High commonality (openness)
Flexibility of structures
Informal knowledge exchange
Networking of business ecosystems

?

New activities
Additional capabilities
Effect on business activities
Higher absorptive capacities

Business process

Product Management

1. Knowledge development

Knowledge creation
Knowledge acquisition
Knowledge capture

Dynamic Capabilities

2. Knowledge (re)combination

Knowledge assembly
Knowledge sharing
Knowledge integration

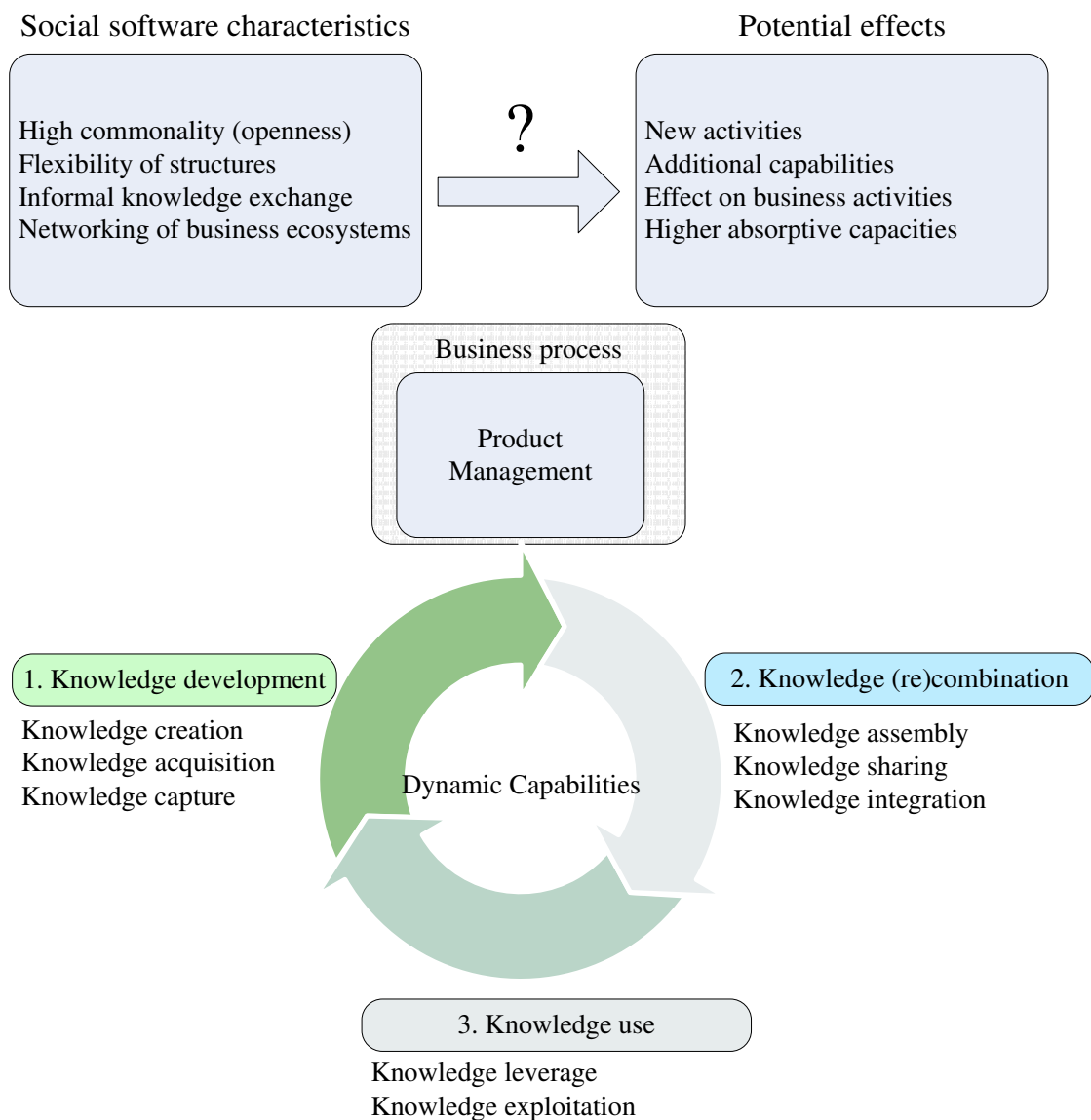3. Knowledge use

Knowledge leverage
Knowledge exploitation

Figure 2 – Literature review model

3 METHODOLOGICAL APPROACH

Since the aim of this paper is exploratory in nature, a qualitative case study method was selected, as it allows the development of an understanding of 'how' or 'why' a particular phenomenon occurs (Yin, 2003). According to Miles and Huberman (1994) a qualitative research approach is appropriate for understanding complex phenomena from the perspective of those who live it. In this study, we aimed at understanding the multifaceted process of product management and 'how' and 'why' was affected by the use of a social software tool (i.e. Wiki). We used a single case study methodology that enabled the researchers to explore in-depth the process of product development, which spans numerous individuals with different roles, backgrounds and responsibilities. The research design aimed at exploring the issues of 'where', 'what', and, 'how' the data would be collected and analyzed. The table below (*Table 1*) illustrates the stage, aim and tasks of each research step. The following sections discuss in more detail our research context, data collection techniques and data analysis issues.

Stages	Aim	Task
1	Research strategic overview and approach	Evaluate different research approaches based on our goal. The case study research design was conceived as the most appropriate.
2	Decide upon the data collection method and research context	Compare and contrast various data collection techniques relative to the case study research approach. Semi-structured interviews, informal conversations, observation and documentation were selected.
3	Data collection	Realize and record 12 semi-structured interviews, taking field-notes and conducting on-site observation.
4	Data preparation	Transcribe interview recordings.
5	Data analysis	Identify emerging concepts. Creating categories by grouping similar concepts together.

Table 1 – The stages, aims and tasks of each research step

3.1 Study sample

The interviewees of the case study were selected based on their position to the company and their availability to the researchers. Table 2 briefly describes the small knowledge-intensive company as to industry and size, and lists the roles of the people interviewed in the company.

Organisation	Industry	Size	Roles of people Interviewed
TranslationSoftCo	Translation and Localization Services	~ 35	Founder, project managers, translators, product manager, sales executive, IT administrator, IT product development manager.

Table 2 – Description of the study sample

3.2 Data collection

For the purpose of the research, we employed various evidence collection techniques, such as on-site observation, semi-structured interviews, informal dialogues (including conversations with the researched via email, telephone, or conversation without any prior arrangement) and field-note taking to ensure the richness of the resulting insights. Prior to the company visit, informal discussions were conducted with the company's managing director, in order not only for the researchers to familiarize themselves with

the relevant social settings, but also to foster better understanding of the organization's structures, roles, software tools used and relevant business processes. Such a consideration facilitated the realization of the interview questions.

3.3 Interview schedule

To undertake the case study, an interview schedule was created with the following objectives:

- To understand every-day working practices of the company, with an emphasis on the product management process.
- To understand knowledge creation, sharing and use practices – whether formal or informal – inside the general setting and the above process in particular.
- To understand the deployment of the Wiki and the way in which it was used during the product management process.

Data was collected through face-to-face interviews conducted by the researchers. Interviews were recorded and lasted from 45 minutes to about one hour and a half. Table 3 provides details on the components of the protocol and indicative questions relating to each component. All questions were posed in an open ended manner. Thus, it was expected that potential effects of the social software tool every-day business practices would eventually emerge from the case study findings.

Protocol component	Indicative question
Every-day work practices/ Project- related work	*Can I ask you to take us through a typical work day?* *What tools do you use throughout these activities?*
Informal knowledge practices	*What information do you need throughout the day?*
IT infrastructure	*Do you use software tools? If so, which tools and how do you use them?*

Table 3 – Indicative questions asked

3.4 Data analysis

Data from conducted interviews were transcribed and then analyzed t. The target was to identify the effect of these tools into key knowledge activities of the company. Prior to data analysis, certain preparatory steps were performed such as transcribing interview recordings, typing and filling research notes, summarizing documents and clustering them into groups. The analysis was based on the derivation of several content categories and subcategories which emerged during the interviews. This categorization was the foundation upon which the exploration of the relevant content was generated. Table 4 illustrates this structure.

Categories	Subcategories
Social software	Commonality of content
	Emergent and self-organized structures
	Freeform use without rigid rules
Dynamic capabilities	Knowledge development
	Knowledge (re)configuration
	Knowledge use
Knowledge development	Creation
	Acquisition
	Capture
Knowledge	Assembly

(re)configuration	Sharing
	Integration
Knowledge use	Leverage
	Exploitation
Product management process	Market needs – connect with the environment and acquire knowledge on its requirements
	Analysis – capture knowledge and share thoughts internally
	Implementation – re-configure and integrate internal assets with environmental requirements
	Marketing – leverage and exploit internal knowledge

Table 4 – Categorization of data analysis

4 CASE DISCUSSION

TranslationSoftCo is a translation/localization and translation management software development company based in UK. The company was established in its current legal form during the early nineties and has approximately 35 employees. TranslationSoftCo operates in three areas: i) service provision (e.g. translation, localization, translation training, etc), product development (e.g. translation process management software), and, iii) translation consultancy (e.g. advising large organizations concerning translation products, procedures and techniques). *TranslationSoftCo* carries out interpretation and localization services, online help, user and training manuals for both large and smaller European businesses. For those clients, the company also provides computer-assisted translation services and its own translation process management product. On the consultancy side, *TranslationSoftCo* advises clients on implementation and customization issues regarding translation products and on optimization of processes related to multilingual material production. *TranslationSoftCo* is one of the very first – and up to now very few – highly specialised companies in the translation industry operating both as a software house as well as translation service provider. The company successfully integrates the service provisioning activity along with software product development. Its business model strongly relies upon the development and delivery of its translation management software package to clients and in large corporations in particular. The translation management suite is conceived as the most critical differentiating factor – and a strong competitive advantage – of the company in relation to the translation industry, which was stated to be characterized by fragmented service and software business activities. Effectively, this implies that the product management activity of the firm is among the most critical processes which eventually lead to competitive advantage. As such, the product management process is closely related to managing knowledge in order to develop and continuously renew the product in accordance with both software and translation industrial trends, user needs and technological advancements.

4.1 Analysis and findings

4.1.1 The initial deployment of the Wiki

The Wiki was implemented in the company initially as a potential assistance to an "information recurrence" problem and limited internal documentation. The lack of documentation spanned various areas of the business, such as software development, general business rules, every-day activities and job descriptions, issues of technical interest like computer and telephone use, etc. The absence of such information in codified and easily accessible means often resulted in repetition and was conceived as a

waste of time by the initiators of the Wiki. The system administrator explains the concept behind the Wiki installation:

"…It's a big problem in [the company]*, where some information is repeated because it hasn't been properly documented.* […] *One of the reasons we implemented a Wiki was to remove a lot of that repeat made through information sharing* […] *It* [meaning the Wiki] *is fully open."*

The Wiki was made available to all the company's employees without rigid upfront roles and strict contribution procedures. The Wiki was conceived by the initiators as a tool by which the company could be assisted in developing "common knowledge", thus avoiding the pitfall of providing incorrect information to its customer base:

"…we may communicate something to a customer which shouldn't be communicated or isn't exactly correct… for example a feature that is in a product that doesn't really exist… A Wiki would avoid that because it could have such information and could be easily added."

The deployment of this particular social software originated from a software development team member. After the installation of its potential for being used as an information integration platform throughout the company was discussed. The system administrator notes on the history of the deployment:

"It wasn't actually suggested… It was one of our developers who he was getting tired of information being lost and repeated and not being absorbed. Then the development team decided to implement it themselves. It's really cropped out from there… We then saw where else in business could it be used…"

In this brief summary of the course of the company's Wiki, we can observe that it complies with the three elements that characterize enterprise social software according to McAfee (2006):

- Contributions can be widely visible and time-persistent: the Wiki was deployed as a means of company-wide documentation and for information sharing purposes.
- Emergent character: the Wiki was initially conceived as a tool suitable for the development team and the technical-oriented employees of the company, yet soon there were thoughts of expending its use to other – non-technical – departments.
- Freeform: the tool is of optional use and the content structures are developing according to the changing needs of the users.

In the following paragraphs we move beyond the initial deployment phase of the Wiki and we explore the iterative cycle of design, development and maintenance of the company's product under the lens of key knowledge activities. The product management process encompasses most of the company's departments, since it requires close collaboration between the sales and marketing unit, product management department, product development team and systems administrator with varying levels of involvement. More importantly, the role of the Wiki inside this knowledge cycle is investigated.

4.1.2 Knowledge development (creation, acquisition, capture)

This first stage of the knowledge lifecycle reflects some levels of the company's adaptability in relation to the changing environmental demands. The company's product has followed a development path according to the shifting requirements of existing and future clients. Preliminary ideas and "untested" knowledge on the product's functionalities usually come from the sales executive. This is an expected source of new ideas since this particular individual has the most direct communication with potential clients as well as competitors. From typical sales activities, such as presenting the software to interested parties, talking to clients over the phone, attending conferences and exhibitions, the first step of knowledge creation occurs around the software functionalities and capabilities. Early thoughts are initiated through interactions with the external environment. The sales executive comments:

"Once in a while [the customers] *will come up with something that's really interesting that we haven't for some reason encountered before or haven't considered, so I'm able to feed that back to the product or the product development manager".*

The product manager – who is responsible for the product's overall direction, is also in direct contact with potential clients, assisting in sales and marketing activities. The significant role of exogenous knowledge flows is illustrated by the product manger as well:

"From demonstration and training activities is where you get a lot of feedback from users, and also see how people react to new features, or to existing features, that's where I pick up further ideas"

Groundwork knowledge of the product's features in accordance to market demands is gradually acquired and transferred internally to the company. There, it reaches the wider audience of other departments and individuals. The sales executive and product manager, both active in marketing activities, are in direct communication and able to articulate and exchange initial ideas. These then become more mature and increasingly established. Discussions usually take place in a verbal manner. The sales executive explains:

"The product manager is sitting next to me. We have a sort of open discussion. We book time in our diary to come away from the desk, not taking calls and being interrupted."

During the knowledge development phase, interactions and communications heavily rely on socialization rather than on the exchange.of codified ideas Due to lack of time and resources, the sales executive and product manager rarely use codification means. The product manager is sceptical about the use of the Wiki as a documentation tool:

"… [the Wiki] *hasn't taken off entirely…It's just, I think, the time that you need to spend to actually put information on and the sales and marketing team to learn to use it… it cannot be a priority at the moment"*

The Wiki does not seem to affect the "knowledge development" activity very much. This is due to the fact that the individuals who perform knowledge creation, acquisition and capture activities do not codify their knowledge and rely mostly on informal discussions and socialization in general. More importantly, these non-technical individuals – sales executive and the product manager – view the Wiki as a time-consuming and not as effortless a tool as reported in literature (McAfee, 2006).

4.1.3 Knowledge (re)combination (assembly, sharing, integration)

Once initial knowledge and ideas on the product's features are discussed between the sales and product manager, these requirements are transferred to the product development team. This team is comprised of software engineers and has a lead technical director, who communicates with the product manager. The goal of this initial analysis phase is to estimate whether an idea can be implemented as a feature of the product, how much effort is required, what consequences that new feature might have to existing ones, etc. During this stage, internal knowledge is identified and negotiated in order to investigate the possibility of entering into the value offerings of the company. The product manager is responsible for this stage and essentially attempts to "translate" clients' business needs to technical requirements comprehensible by the development team. This process was presented as being quite complicated:

"Understanding the requirements, understanding what [the customer requests] *mean and then translating them into product features and see where they can fit in…then to bring that information to the development team is ver, -very difficult, because often things are misinterpreted."*

The knowledge (re)combination phase is characterized by a continuous negotiation between technical and non-technical individuals based on the professional knowledge background of each group. Namely, there is an iterative process of knowledge demand and supply between the product manager and the technical director of the company concerning the product's features. In this process, the product manager provides customers' needs and requests feasibility insights. On the other hand, the technical leader offers practical estimations on development and cost issues and requires final decision on the implementation of the original request. This knowledge negotiation usually takes place in face-to-face meetings, which the product manager, the development team and the system administrator attend. In these meetings, there is a progressive discursive adjustment of the knowledge basis of the two sides of the business.

Only some parts of these knowledge exchange episodes are codified. The product manager avoids codifying information, due to lack of available time, even though the advantages of doing so are recognised. The product manager notes:

"Obviously we can create documents and describe things… if it's a little amendment or a small feature we don't always have time to go into detail and to describe it fully, or even make that information accessible to everyone."

During meetings in which the planning and estimation of effort and cost takes place, the system administrator together with members of the development team undertake the task of codifying pieces of information in the form of meeting minutes, using the Wiki.

Once the implementation of the decided functionalities is commenced, the Wiki is used by the development team as a product and software code documentation tool. Various members of the development team contribute with content to the Wiki. During the implementation phase, knowledge provided by the technical department is integrated into the product's functionalities and features. Available knowledge resources (e.g. product technical documentation) are connected and re-combined with new ideas and agreed upon features. In this stage, the Wiki serves as an organizational memory tool, used by the development team and system administrator to document meeting minutes, software components development and other technical issues.

Contrary to the less technical organizational members the product development team views the Wiki as a very useful and easy-to-use tool. The technical leader describes:

"The Wiki is easily accessible by all the [development] *team and it is user-friendly… We are putting information into the system* [Wiki] *and we can go back and see that information… this is some sort of knowledge-base for us"*

In these "knowledge (re)combination" activities, the Wiki plays an active role. Namely, during the assembly of available knowledge, sharing of resources and the integration of ideas into product's functionalities, the Wiki is being used as an organizational memory system which accumulates thoughts, points of action and technical suggestions. However, this is left entirely to the involvement of the development team and the system administrator, implying a barrier to the Wiki's company-wide adoption as a documentation and discussion facilitating tool.

4.1.4 Knowledge use (leverage, exploitation)
Once the new functionalities are implemented, the software goes through testing and validation phases to ensure that there are no errors on the supposed way of working. As long as the software is tested and validated it can be released to the market as a new version. This is where the marketing and sales team comes in to leverage the knowledge embodied into the new software package release.

During sales and promotional related tasks, there are certain knowledge application activities, by which the company's accumulated knowledge reaches customers and attempts to affect (shape) the market. In effect, having displayed levels of adaptive and absorptive behavior in the early knowledge development activities, passed through a re-configuration stage in which new ideas and existing resources were integrated into the software product, the company now applies its knowledge to the market by attracting new customers and benchmark the new product in relation to competition. In this knowledge exploitation phase, the sales executive communicates extensively with potential customers, as well as partners and even competitors in an attempt to leverage the company's knowledge by seeking the new product's competitive advantages. Internally, the sales executive interacts with both the product manager, as well as the technical director. This is due to the fact that in some cases potential customers may require in-depth technical information of the product that the sales executive cannot provide at hand. The sales executive explains:

"I will obviously from time to time need to get some direct technical advice from the IT project manager or the IT administrator."

The communication between the sales executive and the product development team is mostly mediated by the product manager, who has the final decision on the application and exploitation of the company's knowledge embodied into the software product. The sales executive advises the product manager for such issues:

"If, for example, I have a lack of understanding on a technical issue, I normally say to the Product Manager "the client needs this, can we do it?", "is there any extra cost?"

Communication patterns again rely on socialization mechanisms, avoiding the codification of information,as stated:

"It's inevitably more efficient to immediately raise the question with the product manager, who can then feedback to the product development manager."

During the knowledge utilization activities,the Wiki is used purely by the development team for customer support and generic technical documentation issues. Key tasks of marketing strategy, benchmarking and customer acquisitions are left virtually unaffected by this software tool.

5 DISCUSSIONAND CONCLUSIONS

This paper explored the role of a Wiki inside a product management process of a small UK-based software development company. The theoretical foundations of the study are: i) the linkage between key knowledge management activities and dynamic capabilities, and, ii) the cited characteristics of enterprise social software. The research was performed using a single-case study and analyzed collective data in a qualitative approach.

The implementation of the Wiki was decided and underaken by technically-oriented oragnisational members, namely the software development team and the system administrator. The tool was thought of as a potential solution to a stated "repetition of activities" problem and lack of codified information. The Wiki's course of deployment largely is in agreement with the view of McAfee (2006) who states that Enterprise 2.0 tools should be emergent and freeform avoiding rigid rules on access, participation and content structures.

However, non-technical organizational memebers such as the sales and product management executives, did not share the same view over the importance of codifying information. Socialization aspects were of particular importance for them (i.e. communicating with clients, presenting in exhibitions, promoting the product, etc) and strongly embedded in their ever-day work lives. Therefore, documentation tasks were avoided resulting in diminished prioritization of the Wiki use.

Such differentiating factor between technical and non-technical teams directly affected the role of the Wiki on key knowledge activities concerning the product management process. Namely, the Wiki seemed to play an active role on the knowledge activities which are led by technical individuals (i.e. product development team). These are knowledge assembly, sharing, integration, which correspond to knowledge (re)combination aspect of dynamic capabilities. During these activities, the software development team actively uses the Wiki to document meeting minutes, software code suggestions, critical points of new features, etc. There, the Wiki essentially acts as an "organizational memory" system, by which the technical team can track projects, decisions and common technical pitfalls. During these knowledge activities the Wiki assisted in developing "common knowledge" among software engineers.

Quite the opposite was observed in knowledge activities led by non-technical individuals. Namely, in knowledge development and later exploitation, the Wiki did not have an active role. This was due to the fact that during the product management process, activities such as knowledge acquisition and exploitation were performed by sales and product managers, who on their turn did not see the need of codifying information and documenting knowledge. Rather, they strongly relied on socialization practices and face-to-face communication. Thus, the Wiki did not have an active role in knowledge development and use activities of the product management business process.

Overall, the Wiki seemed to play an active role in key knowledge activities of dynamic capabilities. Nevertheless, the emphasis was obviously on activities led by technical-oriented individuals assisting them to document issues of their every-day work advancing the levels of common knowledge. The boundaries of such a role were restricted purely inside the engineering team, failing to surpass the technical group and affect activities performed by sales and product management departments.

This study has some obvious limitations. Firstly, the single case-study approach leaves little room for generalization. We explored one specific company in a particular industry (i.e. software development). Research at other business settings, perhaps, covering various industries is required. In addition, within our case, we investigated a certain business process, the product management procedure. Other identified business processes of dynamic capabilities should be explored as well (e.g. market positioning, innovation management, etc). Finally, we analyzed the use of a specific social software tool, the Wiki. This leaves a wide area of exploring different Enterprise 2.0 tools in key knowledge management activities, such as Blogs, social bookmarking, etc. A diverse array of tools might provide different results of their role in developing organizational dynamic capabilities.

References

Acs, Z.J. and Audretsch, D.B. (1990), Innovation and Small Firms, The MIT Press, Cambridge.

Afuah, A. (1998), Innovation Management: Strategies, Implementation and Profits, Oxford University Press, New York, NY.

Alavi, M. and Leidner, D.E. (2001), "Review: knowledge management and knowledge management systems: conceptual foundations and research issues", *MIS Quarterly*, vol. 25, no. 1, pp. 107-136.

Allen, K. (2008), "Developing trends and challenges for the information industry examined in the context of the Online Information Conference", *Business Information Review*, vol. 25, no. 2, pp. 81-85.

Alvesson, M. (1995): Management of knowledge-intensive companies. de Gruyter, Berlin, New York

Bhatt, G., Gupta, J.N.D. and Kitchens, F. (2005), "An exploratory study of groupware use in the knowledge management process", *The Journal of Enterprise Information Management*, vol. 18, no. 1, pp. 28-46.

Bhatt, G.D. and Grover, V. (2005), "Types of Information Technology, Capabilities and Their Role in Competitive Advantage: An Empirical Study", *Journal of Management Information Systems*, vol. 22, no, 2. pp. 253-277.

Bibikas, D., Kourtesis, D., Paraskakis, I., Bernardi, A., Sauermann, L., Apostolou, D., Mentzas, G. and Vasconcelos, A.C., (2009), "A socio-technical approach to knowledge management in the era of Enterprise 2.0: The case of OrganiK", *Scalable Computing: Practice and Experience*, Special Issue: The Web on the Move (Editors: Flejter, D., Kaczmarek, T. and Kowalkiewicz, M.), vol. 9, no. 4, pp. 315–327.

Bibikas, D., Kourtesis, D., Paraskakis, I., Bernardi, A., Sauermann, L., Apostolou, D., Mentzas, D. and Vasconcelos, A.C. (2008), "Organisational Knowledge Management Systems in the Era of Enterprise 2.0: The case of OrganiK", *In Proceedings of the 2nd Workshop on Social Aspects of the Web (SAW 2008)*, held in conjunction with the 11th International Conference on Business Information Systems (BIS 2008), Innsbruck, Austria, May 2008.

Bughin, J. (2008), "The rise of enterprise 2.0", *Journal of Direct, Data and Digital Marketing Practice*, vol. 9, pp. 251-259.

Coakes, E. (2006), "Storing and sharing knowledge: Supporting the management of knowledge made explicit in transnational organisations", *The Learning Organization*, vol. 13, no. 6, pp. 579-593.

Cohen, W.M. and Levithal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, vol. 35, no. 1, pp. 128-52.

Davenport, T. (2007), "Why Enterprise 2.0 Won't Transform Organizations", *Harvard Business Online*, March. Available at:

http://discussionleader.hbsp.com/davenport/2007/03/why_enterprise_20_wont_transfo.html

Davenport, T.H. and Prusak, L. (1998), Working Knowledge: How Organizations Manage What They Know, Harvard Business School Press, Boston, MA.

Desouza, K.C., Awazu, Y. (2006), "Knowledge Management at SMEs: five peculiarities". *Journal of Knowledge Management*, vol. 10, no. 1, pp. 32-43.

Dodgson, M. (1993), Technological Collaboration in Industry: Strategy, Policy and Internationalisation in Innovation, Routledge, London.

Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities what are they?", *Strategic Management Journal*, vol. 21, pp. 1105-1121.

Grant, R.M. (1996a), "Prospering in dynamically-competitive environments: organizational capability as knowledge integration", *Organization Science*, vol. 7, no. 4, pp. 375-387.

Grudin, J. (2006), "Enterprise Knowledge Management and Emerging Technologies". *In Proceedings of the 39th Annual Hawaii International Conference on System Sciences* (HICSS'06) Track 3, 2006.

Hamel, G. (2007), The Future of Management, Harvard Business School Press, Boston, Massachusetts.

Hutchinson, V. and Quintas, P. (2008), "Do SMEs do Knowledge Management?", *International Small Business Journal*, vol. 26, no. 2, pp.131-154.

Ip, R. and Wagner, C. (2008), "Weblogging: A Study of Social Computing and Its Impact on Organizations", *Decision Support Systems*, vol. 45, no. 2, pp. 242-250.

Kanter, R.M. (1985), "Supporting innovation and venture development in established companies", *Journal of Business Venturing*, vol. 1, no. 1, pp. 47-60.

Laforet, S. and Tann, J. (2006), "Innovative characteristics of small manufacturing firms", *Journal of Small Business and Enterprise Development*, vol. 13, no. 3, pp. 363-380.

Lee H. and Kelley, D. (2008), "Building dynamic capabilities for innovation: an exploratory study of key management practices", *R&D Management*, vol. 38, no. 2, pp. 155-168.

Lipparini, A. and Sobrero, M. (1994), "The glue and the pieces: Entrepreneurship and innovation in small-firm networks", *Journal of Business Venturing*, vol. 9, no. 2, pp. 125-140.

Marfleet, J. (2008), "Enterprise 2.0 What's your game plan?: What, if any, will be the role of the information", *Business Information Review*, vol. 25, no. 3, pp. 152-157.

McAfee, A.P. (2006), "Enterprise 2.0: The Dawn of Emergent Collaboration", *MIT Sloan Management Review*, vol. 47, no. 3, pp. 21-28.

McKelvie, G., Dotsika, F., Patrick, K. (2007), "Interactive business development, capturing business knowledge and practice: A case study", *The Learning Organization*, vol. 14, no. 5, pp. 407-422.

Miles, M.B. and Huberman, A.M. (1994), Qualitative Data Analysis, Sage Publications, Newbury Park, CA.

Nielsen, A.P. (2006), "Understanding dynamic capabilities through knowledge management", *Journal of Knowledge Management*, vol. 10, no. 4, pp. 59-71.

Nunes, M.B., Annansingh, F., Eaglestone, B. (2006), "Knowledge management issues in knowledge-intensive SMEs", *Journal of Documentation*, vol. 62, no. 1, pp. 101-119.

O'Dell, C. and Grayson, C.J. Jr. (1998), "If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice", The Free Press, New York, NY.

O'Leary, D.E. (2008), "Wikis: From Each According to His Knowledge", *Computer*, vol. 41, no. 2, pp. 34-41.

Patrick, K., Dotsika, F. (2007), "Knowledge sharing: developing from within", *The Learning Organization*, vol. 14, no. 5, pp. 395-406.

Robinson, R.B. Jr (1982), "The importance of 'outsiders' in small firm strategic planning", Academy of Management Journal, vol. 25, pp. 80-93.

Schreyogg, G. and Kliesch-Eberl, M. (2007), "How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization", *Strategic Management Journal*, Vol. 28, pp. 913–933.

Shuen, A. (2008). Web 2.0: A Strategy Guide, O'Reilly Media, Gravenstein Highway North, Sebastopol, CA

Stenmark, D. (2008). "Web 2.0 in the business environment: The new intranet or a passing hype?", *In Proceedings of the 16th European Conference on Information Systems* (ECIS 2008), Galway, Ireland, June 9-11, 2008.

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.J. (1998), "Capturing value from knowledge assets", *California Management Review*, Vol. 40 No. 3, pp. 55-79.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, vol. 18, no. 7, pp. 509-33.

Tredinnick, L. (2006), "Web 2.0 and Business", *Business Information Review*, vol. 23, no. 4, pp. 228-234

Van Gils, A. and Zwart, P. (2004), ''Knowledge acquisition and learning in Dutch and Belgian SMEs: the role of strategic alliances'', *European Management Journal*, vol. 22 no. 6, pp. 685-92.

Verona, G. and Ravasi, D. (2003), "Unbundling dynamic capabilities: an exploratory study of continuous product innovation", *Industrial and Corporate Change*, vol. 12, no. 3, pp. 577-606.

Winter, S.G. (2000), "The satisfying principle in capability learning", *Strategic Management Journal*, vol. 21, pp. 981-996.

Winter, S.G. (2003), "Understanding dynamic capabilities", *Strategic Management Journal*, vol. 24, no. 10, pp. 991-1005.

Yin, R.K. (2003), Case Study Research: Design and Methods, 3rd ed., Sage Publications, Newbury Park, CA.

Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", *Academy of Management Review*, vol. 27, no. 2, pp. 185-203.

Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, model and research agenda", *Journal of Management Studies*, vol. 43, pp. 917–955.

Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, vol. 13, no. 3, pp. 339-351.