



Intellectual capital in business-to-business markets[☆]

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ABSTRACT

This paper reports on research concerning the level of knowledge assets possessed by firms in business-oriented vs. consumer-oriented industries. Further, the research also covers the level of competitive intelligence activity in these industry groups, estimating the level of interest of competitors in acquiring another firm's knowledge assets. From this information, we can begin to develop ideas about what types of firms and industries can really benefit from knowledge management systems and investment, as well as which can benefit from knowledge protection systems. As a result, the issues of knowledge management and knowledge protection become much more strategic and more obviously dependent on circumstances. Such a conclusion begs the question of what measures will help us to determine important circumstances and optimal knowledge strategies for competitive advantage, clearly opening up the field to a wide range of future research streams.

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1. Introduction

Intellectual capital (IC) and knowledge management (KM) are related in a number of ways, including their growth in practitioner circles prior to scholarly interest. Although there is a deep and lengthy research history in the broader area of organizational learning, the more specific concept of actually identifying and managing the knowledge possessed by employees is younger and grew out of observed phenomena affecting firms, phenomena such as sky-high market capitalizations relative to physical assets, losses of key employees and their expertise, and new abilities to share knowledge across modern information technology systems. Both IC and KM concern themselves with identifying and better leveraging the knowledge assets of the organization.

But the two concepts also differ somewhat in emphasis and application. KM tends to be more human resources oriented, including both the big IT systems necessary to collect, store, and distribute codified knowledge and more person-to-person applications such as communities of practice, storytelling, wikis, and related techniques. KM also tends to focus more on the details of the nature of the knowledge (e.g. tacit vs. explicit) and the motivational issues involved in getting individuals to participate in knowledge-sharing systems.

IC, on the other hand, grew more out of accounting, trying to tease out the components of the intangible assets that have become so

prominent in recent decades. By determining ways to measure specific intangibles, especially those we would consider knowledge assets, we can then better manage them. As the metrics and understanding get more precise, our ability to manage human capital, structural capital, and relational capital improves.

So the two fields, KM and IC, are talking about the same things, just with slightly different emphases. Both get into the strategic and competitive issues we'll be addressing in this paper. Consequently, this literature review includes background on both disciplines as a foundation for our study. The main thrust of the study, however, uses a measure of intellectual capital to assess the level of knowledge assets (and, thus, knowledge management success) in business-oriented vs. consumer-oriented industries. Similarly, we assess the level of competitive intelligence activity in business and consumer industries. In general, it appears that industrial markets do not manage or protect knowledge assets at as high a level as consumer markets.

2. Literature review

The basic idea that there is something of value in an organization beyond the physical assets has been around for a long time, probably most notably expressed by Tobin's q, the measure of the difference between a firm's value and the replacement cost of its physical assets (Tobin & Brainard, 1977). The insight that these intangibles might be characterized as something related to knowledge has an even longer history with common credits to Schumpeter (1934) for recognizing the role of knowledge combination in innovation, Penrose (1959) for characterizing firms as knowledge storehouses, and Nelson and Winter (1982) for noting the routines that could develop knowledge in organizations.

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From these beginnings, it was a natural move to the suggestion that organizational knowledge can lead to competitive advantage (Winter, 1987). Indeed, as the resource-based view of the firm gained support, knowledge came to be identified as one of the key resources that could grant competitive advantage (DeCarolis & Deeds, 1999; Grant, 1996; Gupta & Govindarajan, 2000a; Zack, 1999a). Throughout the early 1990s, then, theory and practice moved toward a firmer grasp of what knowledge was and how it contributed to a firm's success. On the conceptual side, scholars began to consider the difference between knowledge stocks and flows (Dierickx & Cool, 1989) and the idea that these could be managed by adding to the stocks and then better employing them (Teece, 1998). On the practitioner side, managers, observers and consultants began to explicitly identify and try to better manage this "intellectual capital" (Davenport & Prusak, 1997; Edvinsson & Malone, 1997; Stewart, 1997). Indeed, companies such as Edvinsson's Skandia started to attempt to measure intellectual capital as a part of their annual reports. The well-known Balanced Scorecard (Kaplan & Norton, 1992) also contributed to growing interest in competing more effectively by identifying and better managing these intangible assets.

Simultaneously, theory began to develop concerning the knowledge assets themselves. One early and important theoretical distinction had to do with tacit vs. explicit knowledge. Emerging out of Polanyi's (1967) more general work, specific applications concerning business organizations by Nonaka and Takeuchi (1995) received wide acceptance. The core idea is that a difference exists between explicit knowledge, easily expressed, codifiable, and transferable, and tacit knowledge, hard or even impossible to explain, hard to formalize, and hard to pass on to others (Choi & Lee, 2003).

The distinction is important as the type of knowledge affects how hard it is to identify, capture, and share throughout an organization. Almost by definition since it's codifiable, explicit knowledge is easier to store and diffuse throughout an organization and beyond (Boisot, 1995). It can be captured in IT systems and, sometimes, formalized as intellectual property. Tacit knowledge can also be identified and shared throughout entities, but the task is often more of a challenge. Further, the mechanisms used for managing tacit knowledge are different (Choi & Lee, 2003; Schulz & Jobe, 2001). Rather than large libraries or databases, knowledge exchanges involving tacit knowledge generally need to be more personal, as through apprenticeships or tools such as storytelling and communities of practice. IT systems can help to manage tacit knowledge, identifying holders of specific knowledge assets, but are generally less effective at storing and sharing out such knowledge assets.

Another important conceptualization of knowledge assets, flowing principally from the intellectual capital side of things, is the distinction between human capital, structural capital, and relational/collaborative capital (Bontis, 1999; Edvinsson & Sullivan, 1996). Human capital (HC) refers to individual knowledge, specifically about how to perform one's job. As workers and managers gain experience, obtain more education and training, or otherwise improve their job-specific knowledge, their human capital increases. Organizations with a highly skilled workforce hold considerable human capital. Structural capital (SC) is more embedded within the organization itself, in IT systems, in corporate cultures, or in structural, persistent aspects of the entity that go beyond specific individuals. Relational capital (RC) is found in the knowledge within organizations concerning outside entities, whether customers, suppliers, vendors, operational partners, research partners, regulators, community groups, or any other external relation or collaborator. Firms with numerous or strong outside relationships possess high relational capital. A fourth area of intellectual capital, competitive capital, is also sometimes discussed (Rothberg & Erickson, 2002), though the value of knowledge concerning competitors is not as widely accepted as the three main pieces of IC.

As might be expected from IC concepts, the importance of HC, SC, and RC is found in measuring and then managing their levels.

Relatively low levels of human capital, for example, might spur investment in training workers. Scholarship in the area has often focused on measuring absolute levels of IC in individual firms or groups of firms and/or trying to tease out the impact of investment and growth in HC vs. investment and growth in SC vs. investment and growth in RC. We'll discuss some of this specific work later.

So there is a conceptual foundation to KM and IC which has been explored over the years in a number of ways. Initially, a substantial amount of work has been done with case studies of how particular, often exemplary firms manage their knowledge assets (Davenport, DeLong, & Beers, 1998; Gupta & Govindarajan, 2000b; Hansen, Nohria, & Tierney, 1999; Zack, 1999b). Secondly, more empirical work has been done, often within a single firm or a small group of firms within a given industry, trying to assess the level and type of knowledge (e.g. Mouritsen, Larsen, & Bukh, 2002). Thirdly, the KM side has been more focused on the circumstances allowing effective management of knowledge assets, including the tacit/explicit distinction, knowledge complexity, knowledge transfer/stickiness, organizational absorptive capacity, and social capital, among other topics. This research typically addresses the types of knowledge and conditions under which combination and exchange most effectively take place (Kogut & Zander, 1992; Nahapiet & Ghoshal, 1998; Zander & Kogut, 1995). Though enlightening and a great help in developing theory, most of these studies are limited to specific industries, at best, and sometimes only the firm in question. Exceptions exist, of course, but the fields of KM and IC have principally been focused on a firm or a small group of firms, especially in empirical work.

As a result, the past two decades have seen the study of organizational knowledge assets come a long way, regardless of discipline and emphasis. Especially in terms of the day-to-day management of knowledge, we know a lot about types of knowledge, identification, growth, and application (basically an information systems orientation). We also know a lot about managing the people end of knowledge acquisition and sharing, even though the actual execution of such concepts is still extremely difficult (more of a human resources orientation). Finally, we know something about identifying, classifying, and measuring knowledge assets (accounting orientation). But a number of holes in the literature remain. And as the field moves away from its concentrations in human resources, accounting, and information technology, marketing may have the perspective to address these holes.

Initially, marketing adds a more formal generic competitive strategy perspective. An underlying, sometimes explicit but often implicit assumption of existing KM/IC work is that better identification and management of knowledge assets leads to competitive advantage. Although approached in some of the studies, the overall performance of firms that better manage knowledge has not been studied in any empirically convincing manner beyond the odd case study (McEvily & Chakravarthy, 2002). Although it seems odd that this core issue has not been convincingly addressed in a broad empirical manner, the fields have simply moved on without really demonstrating that all the measurements and all the KM techniques actually lead to better marketplace and/or financial performance. As we'll discuss in the methodology section, individual components of managing knowledge are frequently evaluated for their effect on performance. The higher-level relationship between generating more total knowledge assets and overall financial performance is rarely questioned or tested.

Secondly and relatedly, very little research has been done on a broad basis, beyond a single firm or a group of closely connected firms. Attempts to measure intellectual capital at the national level have met with some success (e.g. Bontis, 2003) but the methodology and measures are still under development, without full agreement among researchers. Generally, scholars have not examined knowledge assets and competitive advantage on a wide level such as an entire industry. The underlying assumption is that better management of knowledge assets is applicable, in pretty much the same manner, for all types of

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