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Knowledge Management and Sustained Competitive Advantage: A Resource-Based Analysis

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ABSTRACT

The resource-based view of the firm (RBV) is used to study the role of organizational knowledge in establishing sustained competitive advantage. A framework for studying the three dimensions knowledge capabilities, knowledge (K)-infrastructures, knowledge (K)- processes, and knowledge (K)-skills, is introduced. This framework is used to analyze the case of First American Corporation. The analysis shows that organizational knowledge capabilities really grants a sustained competitive advantage if the managers develop the managerial skills and a particular leadership on the matter.

INTRODUCTION

The resource-based view of the firm (RBV) discusses the nature of resources possessed by organizations and details the qualities that such resources must maintain in order to be converted into sustainable competitive advantages over time (Barney, 1991; Wernerfelt, 1984). According to this view, "the organizations must possess the ability to effectively and efficiently exploit the full potential of its resources, in order to develop and maintain any potential competitive advantages" (Adams and Lamont, 2003). Dierickx and Cool (1986) made the difference between resources, stocks and flow and defended the thesis according to which % the strategic factors necessary to obtain a durable competitive advantage % must be developed with the intern and cannot be in any case bought on the market. Therefore, in order to have a competitive advantage, the firm must develop resources and competences which would be difficult to imitate or to acquire by the competitors, i.e., intangible resource such as knowledge, reputation, etc. (Wernerfelt, 1984; Barney, 1991; Grant, 1991; Foss, 1996; Conner and Prahalad, 1996). The importance of organizational knowledge in sustaining firm's competitive advantage is addresses by several authors (e.g., Sharkie, 2003; Roth, 2003). For example, Roth (2003) insists on the importance of the implementation of a consistent and single strategy within a firm in order to develop the sustainable competitive advantage starting from internal knowledge of the firm.

The issue addressed in this paper is to study the role of organizational knowledge in establishing sustained competitive advantage through the lens of RBV.

The remainder of this paper is organized as follows. In the next section, the Resource-Based View of Firm's Competitive Advantage is briefly discussed. In the following section a framework for studying knowledge capabilities is introduced. This framework is then used to study the case of First American Corporation. The paper then concludes by discussing the significance and contribution of this work, as well as the possible areas of future research.

THE RESOURCE-BASED VIEW OF FIRM'S COMPETITIVE ADVANTAGE

Rooted in management strategy literature, the resource-based view of the firm posits that firms compete on the basis of "unique" corporate resources that are valuable, rare, difficult to imitate, and non-substitutable by other resources. It is based on two underlying assertions, as developed in strategic management theory (Barney, 1991; Barney, 1986; Conner, 1991; Rumelt, 1984; Wernerfelt, 1984):

- (1) that the resources and capabilities possessed by competing firms may differ (resource heterogeneity); and
- (2) that these differences may be long lasting (resource immobility).

The condition of resource heterogeneity is connected to sustained competitive advantage in the following way. If a firm possesses a resource that is not currently possessed by competing firms, the condition of resource heterogeneity is met, and a firm may obtain at least a temporary competitive advantage.

The second resource-based condition, the condition of resource immobility, becomes important in understanding when a firm's resources and capabilities will be sources of sustained competitive advantage. A resource is mobile if firms without a resource (or capability) face no cost disadvantage in developing, acquiring, and using that resource compared to firms that already possess and use it. In this case, that resource (i.e., mobile resource) can only be a source of temporary competitive advantage at best. On the other hand, if a firm without a resource or capability does face a cost disadvantage in obtaining, developing, and using it compared to a firm that already possesses that resource (i.e., resource immobility), then the firm that already possesses that resource can have a sustained competitive advantage (Barney, 1991).

KNOWLEDGE-BASED VIEW OF FIRM'S RESOURCES AND CAPABILITIES

Organizational Knowledge as Strategic Assets

While having unique access to valuable resources is one way to create competitive advantage, in some cases either this may not be possible, or competitors may imitate or develop substitutes for those resources. Firms having superior knowledge, however, are able to coordinate and combine their traditional resources in new and distinctive ways, providing more value for their customers than can their competitors (Penrose, 1959; Teece, Pisano, & Shuen, 1997). That is, by having superior *intellectual* resources, a firm can understand how to exploit and develop their traditional resources better than competitors. Therefore, *knowl-*

edge can be considered the most important strategic resource, and the ability to generate, mobilize and utilize it the most important capability for building and sustaining competitive advantage (Grant, 1996; Kogut & Zander, 1992; Spender, 1994; Winter, 1987). The broadest value proposition, then, for engaging in knowledge management is that it can enhance the organization's fundamental ability to compete.

However, which is the knowledge that makes the advantage sustainable? It is the context-specific and tacit knowledge embedded in complex organizational routines and developed from experience. Such type of organizational knowledge possesses four characteristics namely: being valuable; being rare; being inimitable; and being non-substitutable (Michalisin, Smith, & Kline, 1997). First, it is valuable as it usually results in improved products, processes, technologies, or services. Second, it is rare as it is dependent on the knowledge and experiences of current and past employees, and is built on specific organizational prior knowledge. Third, it is inimitable as it builds on the unique past history of the organization's own experiences and accumulated expertise (Reed & DeFillippi, 1990). Finally, it is non-substitutable, as the context in which it has been created and used cannot be replicated.

Knowledge (K-) Capability of the Firm (Abou-Zeid, 2003)

Although proponents of the resource-based view generally tend to define resources broadly, to include tangible, and personnel-based resources, (Grant, 1991) distinguishes between *resources* and *capabilities*. While resources serve as the basic units of analyses, firms create competitive advantage by assembling resources that work together to create *organizational capabilities*. Capabilities, thus, refer to an *organization's ability to assemble, integrate, and deploy valued resources, usually, in combination or co-presence* (Amit & H, 1993; Russo & Fouts, 1997; Schendel, 1994). Extending the traditional notion of organizational capabilities to a firm's KM function, a firm's *KM capability* is defined here as its *ability to generate, mobilize and utilize organizational explicit and tacit knowledge in combination or co-presence with other resources and capabilities*. KM-capability can be analyzed along three dimensions, namely: *knowledge (K)-infrastructures*, *knowledge (K)-processes*, and *knowledge (K)-skills*.

The *K-technical infrastructure* includes IT-enabled technologies that support KM activities such as business intelligence, collaboration and distributed learning, K-discovery, K-mapping, opportunity generation and security. The *K-structural infrastructure* refers to the presence of enabling formal organization structures and the organization's system of rewards and incentives. Finally, the *K-cultural infrastructure* involves elements such as corporate vision and the organization's system of values (Gold et al., 2001).

The second dimension of the KM-capability, Knowledge (K)-processes, deals with the processes that change the states of organizational knowledge. Based on the literature review (e.g., (Firestone, 1999; Nissen, Kamel, & Sengupta, 2000; Nonaka, 1994; Probst, Raub, & Romhardt, 2000; Zack, 1999) and on analysis of several KM initiatives (e.g., (Davenport, 1998; Elliott, 1997, 1998) K-manipulation processes can be classified into three main categories, i.e., K-generation, K-mobilization and K-application. The knowledge generation process includes all activities by which new knowledge is generated within the organization. Knowledge mobilization means increasing the visibility of knowledge by sharing it or transferring it from one bearer (the knowledge provider, owner or source) to another (the knowledge seeker or target) through space or time. The knowledge bearer could be an artifact, such as technical documents or best practice databases, or human, such as experts in a certain domain. Based on the nature of the provider/source and seeker/target, four K-mobilization types can be distinguished, i.e., human-human, human-artifact, artifact-human and artifact-artifact (Abou-Zeid, 2002). Finally, during K-application processes knowledge is embodied in various forms. Knowledge can be used to develop new product/service/business processes or to improve existing ones. Associated with the processes of K-application are the processes of K-evaluation which includes all the activities that aim at justifying and measuring the business value of the knowledge.

However, knowledge processes are characterized by their dual nature. On the one hand there are K-manipulating processes, i.e., processes such as acquiring knowledge, converting it into a useful form, applying it, and protecting it. On the other hand, it has been identified that cultural and organizational issues are crucial in the successful deployment of KMS (Alavi & Leidner, 1999; von Krogh, Ichijo, & Nonaka, 2000). Therefore, each K-manipulating process should be associated with one or more K-enabling process such as managing conversation, mobilizing knowledge activists, creating the right context (von Krogh et al., 2000).

The last dimension of the K-capability is K-skills. KM processes are by their very nature multifaceted. They involve many dimensions such as technical, organizational and human. This characteristic of KM processes reflects on the nature of skills required to perform them. For example, Malhotra (Malhotra, 1997) defines a Senior Knowledge Executive, such as a Chief Knowledge Officer (CKO) or an Organizational Knowledge Architect, as the person who should have the combined capabilities of a business strategist, technology analyst, and a human resource professional. The ability to facilitate the ongoing process of knowledge sharing and knowledge renewal, the ability to develop the human and cultural infrastructure that facilitates information sharing, and the ability to utilize the available technologies for serving the creation, sharing and documentation of knowledge are some examples of the required skills.

A CASE STUDY (COOPER ET AL., 2000)

In 1990, First American Corporation (FAC) lost \$60 million and was operating under letters of agreement with regulators. By 1999, FAC was a profitable (\$211 million in 1998) innovative leader in the financial services industry. This change in fortune was the result of an ambitious strategic vision with major investments in data warehouse technologies that made the vision possible. Indeed, since 1991, a new team was installed and immediately identified the bottlenecks which prevented the organization from prospering. Since, FAC was not able to compete with its competitors taking into account the costs related to the operations. The new top management of FAC thus defined a long-term strategy based primarily on the valorization and the use of the internal resources, such as the knowledge of the customer by installing and exploiting data warehouse to stress the difference. FAC wanted to thus obtain information about preferences which would justify its customer's behavior and on profitability, for FAC, of each client relationship. Table 1 shows a KM-capability framework discussed in the previous section helps to analyze the FAC's case.

We realize that, the one hand, any organizational knowledge, alone, does not bring the performance and the consequent competitive advantage in the absence of a strategy turned towards the internal resources of the organization instead of a strategy turned towards the market or industry. On the other hand, knowledge management create *organizational capabilities* that help firms to create competitive advantage by facilitating coordination and products knowledge. It is what defends holders of the RBV and which allowed, in an implicit way, to FAC to carry out the spectacular performances and, consequently, to obtain the competitive advantage on its principal competitors.

The concept of resource rises from the will to describe with precision the whole potential of the firm which must be used with the aim of creating value for the customer as understood by the leaders of FAC (Cooper and Al, 2000). According to Barney (1991) and Conner (1991), the principle of RBV consists in modeling the firm in a whole of resources which, developed and combined, lead to a certain number of specific organizational capabilities. This enables to identify, define and classify the specific resources of the company. The data warehouse, as any strategic resource, can be necessary without providing a specified competitive advantage (Mata et al., 1995). It would thus have been necessary to bring the resources which contribute directly to the competitive advantage and bring the value as Grant (1996) and Barney (1986) suggested such as the tangible resources, the intangible resources and human resources. We thus retain that in the FAC case, the strategic character of the resources is tested by the impact of their affectivity,

Table 1.

Elements of firm's KM-capability	Evidences from FAC's case
Knowledge (K)-infrastructures	
K-technical infrastructure	The main K-technical infrastructure used in FAC case is the data warehouse: the new business vision was made possible thanks to the data warehouse which facilitated the storage of information regarding the customer's behaviors (ex. attitudes, needs) and the positioning of the customer's value in term of profitability.
K-structural infrastructure	Employees' motivation: the managerial team of FAC had understood that it was necessary to reassure effective usage of the new technology and generated knowledge. To achieve this goal, it succeeded in managing the organizational changes, have participation of the employees and encourages all them to effectively use the new technology and knowledge on the customers and with creation of personal initiatives in order to achieve the goals relating to its new strategy.
K-cultural infrastructure	FAC created a customer orientated strategy which is called "Tailored Client Solutions" (TCS) in which all the internal operations of the company put the customer at the center of any activity. Thus, client information was the first of TCS. FAC wanted to know more about its customers, and to utilize that knowledge in every aspect of its business. FAC wanted also information about how its customers preferred to do business and how profitable each client relationship was to FAC. The second part of TCS was a flexible product line. The third component of TCS (consistent service) focused on determining and meeting client needs.
Knowledge (K)- processes	
K-manipulation processes	Thus, to carry out its new strategy, FAC by his project team built a data warehouse platform using the NCR 5150M configured with five SMP nodes running the Teradata Relational Data Base System. This configuration provided 1.5 TB of storage to FAC, and it supported 200 GB of raw data. The database held 2 million accounts and information about 1.2 million households, and FAC planned to store up to 37 rolling months of history for analysis. The warehouse utilized over 100 source files that were extracted from 26 legacy applications. From the mainframe environment, VSAM and IMS files were sent by ftp to a file server, where Informatica's Powermart applied business rules to transform the data.
K-enabling process	The resulting files were loaded into a warehouse staging area where business users validated the data. After the users examined the files and approved the data quality, the data moved into Teradata base tables that were organized by account and by activity. Concurrently, files from external data sources were incorporated into the warehouse. All data could be analyzed at any level of aggregation, from bank-wide or line of business down to individual account or client relationship.
Knowledge (K)-skills	
	The new managers of FAC had been characterized by exceptional managerial skills: (1) on the technical level, they identified, developed and exploited advisedly the data warehouse by mobilizing the necessary resources, (2) on the organizational level, they carried out the identification of a clear business strategy and knew to manage all the knowledge project activities, and finally, (3) in the plan of the human resource, they knew to mobilize and to use the internal and external human resources, with consequent motivation, while being ensured of the implication of the managers of any edge to each stage of the project.

the development of consumer's loyalty, improvement of services, creation of new products, contribution to costs reduction, response to the threats of competition.

With regard to the tangible resources, the construction of a data warehouse, as a k-technical infrastructure, where the customer is at the center of the concern of the activities of the firm is an investment in tangible technological resources and who supports the new vision of the company. Its rational use, as a new technology of KM contributing to the decision-making, with the management and the development of customer loyalty, by all the actors concerned with the project, makes the data warehouse a strategic resource likely to improve the performance and to bring the competing advantage. That was confirmed by the data warehouse established by FAC and which made it possible to innovate and to facilitate the coordination of the various units of businesses and the improvement of the customer's relationship. Even if a competitor would try to imitate, it would be difficult for him, to obtain the same results and that will take more time for him to catch up with FAC (Roy and Aubert, 2001). With the success and the exploitation that FAC made of its data warehouse in order to materialize the new business vision which puts the customer at the center of his activities, FAC improved not only the client relationship but also puts himself in first place in the industry. This in turn increased its reputation and thus the confidence of its customers as Bharadwaj (2000) underlines it. According to the author idea, if the KM investments can easily be copied by the competitors, these investments do not confer sustained competitive advantage. It is rather the capacity which a company has to level its investments, to create the unique KM resources and skills which determine the superiority of the firm.

The effective use of the data warehouse, the leadership of the top management who had the vision for the businesses, managerial ability of organizational knowledge, coordination of activities, the policy of employees motivation and the contribution of the external expertise for the development of the relation with (knowledge of) the customer are the key elements which enabled FAC to improve considerably its

performance and to obtain the competitive advantage in the industry of the Financial Services instead of strategies built on industrial competition.

CONCLUSION

The paradigm of the resources explains that it is from exploitation of rare, inimitable and non-substitutable resources valorized by the customer that the organization gets its competitive advantages; which enables it to maintain or to precede competition (Barney, 1991). The case of FAC, which we have just evoked, illustrates well the firm based on its internal resources in general and particularly on KM. Organizational knowledge is identified more and more as rare intangible organizational resources likely to grant the competitive advantage (Bharadwaj, 2000). The KM thus gives to the firms the role of coordinating individuals, through organizational structures for the value creation. Knowledge equips the company with key competences (Prahalad and Hamel, 1990) and with the dynamic capacities (Teece, 1998). The well-managed knowledge, within an organization, gives a competitive advantage as we noted with the case of FAC.

From the analysis of the above mentioned case, we conclude that organizational knowledge capabilities really grants the competitive advantage if the managers develop the managerial skills and a particular leadership on the matter (Mata et al., 1995; Bharadwaj, 2000).

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