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The Relationship between Knowledge Transfer and Competitiveness in “SMES” with Emphasis on Absorptive Capacity and Combinative Capabilities

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Abstract: In order to improve SMES' competitiveness, introduction of Knowledge into all aspects of production process and management levels is essential. The question is how the knowledge can be transfer into firms?

The purpose of this study is to examine the role of knowledge transfer in Firm's competitiveness. Firms' need to manage resources flow effectively to be able to survive and to grow in competitive business environment.

How can they do this?

Over the last decade, the knowledge- based view has rapidly seized a prominent role in strategy research. The knowledge – based view explains that tacit knowledge is the critical component of the value that a firm adds to input , and that a firm's ability to transfer this tacit knowledge is the essential source of sustained competitive advantage. Firms which have a good absorptive capacity and combinative capabilities are able to compete effectively. Absorptive capacity and combinative capability are main aspect of knowledge - transfer which has captured the attention of numerous studies in recent years. Large firms have possibilities to invest a large amount of money into R&D and to monopolize the knowledge which they have explored and then to exploit it, but the questions are:

What about SMES?

Are they able to explore and to exploit new knowledge?

What are the advantages of K-T in SMES' competitiveness?

With consideration of SMES' expansion in developed and developing countries, growth and survival of them depend on K-T in these firms and its relationship with firms' competitiveness. When firms interact with external constituents, be they suppliers or customers, they seek to acquire and/or maintain access to knowledge that otherwise would not efficiently available. Based on the literature review a theoretical model of

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Small and medium enterprises (SME'S) competitiveness relating to that knowledge transfer is a function of absorptive capacity and combinative capability that characterize the competitiveness.

Small and medium enterprises (SMEs) are assumed to play a key role in social and economic development. The theoretical model that was developed in this study predicted that knowledge transfer is a function of absorptive capacity and combinative capability that characterize the SMEs' competitiveness. Absorptive capacity refers to the capability to understand and use new knowledge.

Results from this study indicate that two dimensions of absorptive capacity, available complementary knowledge and prior related experience, are both important antecedents of knowledge transfer. Combinative capability refers to a firm's capacity to combine and recombine existing knowledge. The theoretical model predicted that this capacity is a function of the opportunity, motivation, and ability to share knowledge.

Key words: Competitiveness; Firm; Tacit; Strategy; Absorptive; Combinative; Knowledge; SMES; Capability; Capacity; Motivation

INTRODUCTION

The 21st century seems to have begun with events indicative of the turbulence, challenges and opportunities ahead. Survival and success in such turbulent times increasingly depend on competitiveness. Competitiveness has been described many by researchers as a multidimensional and relative concept. The significance of different criteria of competitiveness changes with time and context. Theories and frameworks must be flexible enough to integrate the change with key strategic management processes if their utility is sustained in practice. While there are many theories about competitiveness and related inter-disciplinary fields of strategy, operations, resource-based view (Barney, 2001), and economics, they are not used widely by practitioners in their decisions for enhancing or sustaining competitiveness.

Research efforts have brought many interesting perspectives and frameworks at the country, industry, and firm level.

The turbulent start of the new century has brought new challenges for firms, industries and countries. Success in such times is demanding new perspectives on competitiveness. Detailed structuring of competitiveness related problems firms identified weaknesses in understanding about the concept and its implementation as root causes. Review of competitiveness-related literature, by classifying it at three levels, clearly indicated the importance of the firm level.

SMES, are assumed to play a key role in social and economic development, such a role maybe expressed in terms of job creation, income generation and imposed balance of trade. However, an enterprise will not achieve such goals unless it is capable of operating competitively. To operate competitively, firms should distinguish their potentials and capabilities.

Nowadays obtain ability and utilizing knowledge cause growth and survival for SMES, absorptive capacity of the firm exploit the external knowledge from environment and combinative capability explore existing knowledge. This study comprises in three sections, First to review competitive literature particularly in SMES, Second to study absorptive capacity studies, Third to understand the concept of Knowledge – transfer , Fourth to establish the relationship between these three and to design a conceptual model and to suggest propositions and to highlight new area for empirical studies in different firms' activities. The current study utilizes recent theoretical developments in the knowledge-based view of the firm with the intention of providing insight into factors that influence knowledge transfer for firm competitiveness. This perspective contends that, in pursuit of sustainable competitive advantage in dynamic business environments, firms are to a large extent devoted to exploiting available knowledge and exploring new knowledge to develop sustainable competitive advantages (Grant, 1996a, 1996b; Kogut and Zander, 1992, 1993). Particularly, *tacit* knowledge, which covers know-how, know-why, and skills (Polanyi, 1966), rather than *explicit* knowledge that can be expressed in words and numbers (Nonaka, 1994), is the key resource of the firm because it is more difficult to replicate and imitate by competitors

(Grant, 1996a). Transfer of tacit knowledge within the complex networks of MNCs, therefore, becomes essential for firm performance (Barlett and Ghoshal, 1987; Gupta and Govindarajan, 2000; Ghoshal and Barlett, 1990; Hu, 1995; Kogut and Zander, 1993; Kostova, 1999; Lord and Ranft, 2000; Subramaniam and Venkatraman, 2001; Szulanski, 1996). By reviewing different literatures in Competition and Knowledge-Transfer in firms following questions will be under consideration:

- Q1. What type of relationship does exist between Knowledge- Transfer and Competitiveness?
- Q2. How can SMES become competitive?
- Q3. What is the effect of absorptive capacity on Knowledge-Transfer in SMES?
- Q4. What is the effect of combinative capability on Knowledge-Transfer in SMES?

DEFINITIONS

A universal and exact definition for competitiveness does not exist. As a result, competitiveness means different things to different organizations. Some organizations view competitiveness as the ability to persuade customers to choose their offerings over alternatives while others view competitiveness as the ability to improve continuously process capabilities. In other words, core competences as well as capabilities that drive such competences are considered to form the essence of competitiveness. However, these factors are interrelated and difficult to quantify, thereby reducing the potential of their application in the process of strategy development. There is a need for a holistic definition of competitiveness which makes it possible to determine the competitive position of an organization in a measurable form. Such a measurement should allow a comparison of the competitive position of an organization against that of its competitors.

Redefine the concept of competitiveness by integrating the notions of customer values, shareholder values and an organization's ability to act and react within its changing competitive environment. Introduce the concept of sustainable competitiveness and demonstrate the conflicting nature of the factors which determine an organization's competitiveness. Develop a concept which enables mapping the competitive position of an organization and its competitors. Construct a framework for measuring competitiveness. Demonstrate the way in which the competitive position map can be used in the development of business strategies.

Redefining Competitiveness

In determining a definition for competitiveness it is important to question the *raison d'être* of an organization and the key players who determine its survival. Many of the current definitions of competitiveness are mainly based on the capabilities and offerings of an organization in relation to the competitors. In other words, the key players are the organization, its customers and competitors. No account is given to the shareholders who provide the necessary capital base and influence the business objectives. Furthermore, the current definitions also view competitiveness as a static concept (i.e. how competitive an organization is at a particular moment in time) and little consideration is given to its sustainability. Another dimension of competitiveness is the organization's ability to act and react within its competitive environment which requires financial strength to make the essential investments in technology and people. Organizations will therefore have to go through a process of continuous change in order to improve their market position as well as maximizing their potential for making a greater profit level as they are competing with other forms of investment opportunities in attracting the necessary funds provided by their shareholders.

Sustainability

Sustainability is a measure which describes the potential of an organization to maintain or improve its competitive position in the eyes of its customers and shareholders while having the ability to act and react within a changing competitive environment. Competitive advantage can only be sustained as long as this potential remains high.

Competitiveness is relative and not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment and the potential of people and technology in implementing the necessary strategic changes. Competitiveness can only be sustained if an appropriate balance is maintained between these factors which can be of a conflicting nature.

Competitiveness is a multidimensional concept. It can be looked at from three different levels: country, industry, and firm level. Competitiveness originated from the Latin word, *competer*, which means involvement in a business rivalry for markets.

Table 1: Definitions of Competitiveness

Authors	Level of Emphasis	Definition
Aviation week & Space Technology (1996)	Firm	Continuously satisfying more customers at a higher level of Profit than the competitors.
Buckley et al. (1991)	Firm – International	The ability of a firm to meet and beat its rival in supplying a Product (service) on a sustainable (long – term) and viable (profitable) basis.
Cook and Bredahl (1991)	Firm – International	The ability to deliver goods and services at the time, place and from sought by buyers, in both domestic and international markets, at prices as good or better than those of other potential suppliers, while earning at least opportunity cost on resources employed.
Department of Trade & Industry, UK Government (1995)	Firm – International	The ability to produce the right goods and services of the right quality, at the right price, at right time. It means meeting customers' needs more efficiently and more effectively than other firms.
Fainzylher (1988)	National	A country's capacity to sustain and expand its share of International markets and at the same time to improve its people's standards of living.
Feurer & Chaharbaghi (1994)	Firm	Competitiveness is relative and not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment, and the potential of people and technology in implementing the necessary strategic changes. Competitiveness can only be sustained if an appropriate balance is maintained between these factors which can be of a conflicting nature.
Hoff et al.(1997)	Firm & Industry	The ability to produce goods or services that meet or exceed quality expectations of the customer; deliver goods or services at the time, place, and price required by the customer; and deliver these goods or services in the form and quantity required by the customer.
Martin et al. (1991)	Firm	Sustained ability to gain profitably and maintain market share.
Ramasamy (1995)	Firm & industry	The ability to increase market share, profit and growth in Value added, and to stay competitive for a long duration.
Bowen (1985) in Report of the president's Commission on Industrial Competitiveness World	National	The degree to which a nation can under free and fair market conditions, produce goods and services that meet the test of international markets while simultaneously maintaining or expanding the real incomes of its citizens.
Competitiveness Report (1993)	Firm – International	The ability of a company to generate proportionally more profit than its competitors in world markets.

It has become common to describe economic strength of an entity with respect to its competitors in the global market economy in which goods, services, people, skills, and ideas move freely across geographical borders (Murths, 1998).

Firm level competitiveness can be defined as the ability of firm to design, produce and or market products superior to those offered by competitors, considering the price and non-price qualities (D'Cruz, 1992). Competitiveness processes are those processes, which help identify the importance and current performance of core processes such as strategic management processes, human resources processes, operations management processes and technology management processes. The competitiveness process can be viewed as a balancing process that complements traditional functional processes such as operations management and human resources management. It enhances the ability of an organization to compete more effectively. Firm-level competitiveness is of great interest among practitioners. Nations can compete only if their firms can compete, argues Christensen of Harvard Business School. Porter says "it is the firms, not nations, which compete in international markets", (Porter, 1998). The environmental factors are more or less uniform for all competing firms. Research shows that 36 per cent of the variance in profitability could be attributed to the firms' characteristics and actions (McGahan, 1999). Other pro-firm views (Bartlett and Ghoshal, 1989; Prahalad and Doz, and 1987; Prahalad and Hamel, 1990) focus on individual firm and their strategies for global operations, and resource positions to identify the real sources of their competitiveness. Competitiveness can be treated as a dependent or independent variable, depending on the perspectives from which one approaches the issue. Berkely et al (1988) has suggested a framework that has three folds: the competitiveness performance, competitiveness potential, and the management processes. A similar framework can be found in the World Competitive Yearbook (WCY, 2002). In the WCY formula, "world competitiveness" is a combination of assets that are inherent and created as well as processes that transfer assets into economic results (Man, 1998).

Competitiveness involves " a combination of assets and processes, where assets are inherited (natural resources) or created (infrastructure) and processes transform assets to achieve economic gains from sales to customers" (DC, 2001). Outcomes can be achieved through competitive potentials through the competitiveness process (Berkely et al, 1988), similar to the Asset-Process- Performance (APP) framework (Momaya, 2000). Some authors view competitiveness with the competency approach. They emphasis the role of factors internal to the firms such as firm strategy, structures, competencies, capabilities to innovate, and other tangible and intangible resources for their competitive success (Bartlett and Ghoshal, 1989; Doz and Prahalad, 1987; Hamel and Prahalad, 1989, 1990). This view is particularly among the resource-based approach towards competitiveness (Prahalad and Hamel, 1990; Grant, 1991; Barney 2001, 1991; Peteraf, 1993; Ulrich, 1993). Ability to develop and deploy capabilities and talents far more effectively than competitors can help in achieving world-class competitiveness (Smith, 1995). For providing customers with greater value and satisfaction than their competitors, firms must be operationally efficient, cost effective, and quality conscious (Johnson, 1992; Hammer and Champy, 1993). Also related to this condition are a number of studies focusing on particular aspects like marketing (Corbett and Wassenhove, 1993), information technology (Ross et al, 1996), quality of products (Swann and Tahhavi, 1994), and innovative capability of firms (Grupp et al, 1997). Productivity has often been termed as a surrogate of competitiveness and good indicator of long-term competitiveness of a firm by many authors. Porter defined competitiveness at the organisational level as productivity growth that is reflected in either lower costs or differentiated products that command premium prices. The generic strategies given by Porter also emphasis these criteria (Porter, 1990). It has been said the company, industry, or nation with the highest productivity could be seen as the most competitive (McKee and Sessions-Robinson, 1989). In today's turbulent business environment, dynamic capabilities, flexibility, agility, speed, and adaptability are becoming more important sources of competitiveness (Barney, 2001; Sushil, 2000). O'Farell et al (1992, 1989, 1988) have conducted a number of studies on the relationship between sources of competitiveness and firm performance, with focus on price, quality, design, marketing, flexibility, and management. The importance of firm-level competitiveness is confirmed by a large number of studies discussed above. Recognizing the dynamic role processes play in enhancing competitiveness, the role of processes in firm-level competitiveness need to be examined. Many questions about competitiveness remain unanswered despite rich literature about the concept. Some of the key questions such as: How can frameworks and models be adapted for a particular firm in a particular stage of development with different capabilities and resources? Which of the frameworks or models for industries emerging are convenient? Remain unanswered. Attempts to understand the reasons for the failure of literature to find favor with practice hinted at weaknesses in theories or frameworks to integrate competitiveness with strategy and functional processes. For simplicity, firms can be divided into two categories: survival and growth.

Competitiveness at the level of the firm

Few definitions of competitiveness exist in the literature, but of those that do, the Report from the Select Committee of the House of Lords on Overseas Trade (1985) (The Aldington Report) best summarizes those which are tailored to the competitiveness of firms. "A firm is competitive if it can produce products and services of superior quality and lower costs than its domestic and international competitors. Competitiveness is synonymous with a firm's long-run profit performance and its ability to compensate its employees and provide superior returns to its owners". This suggests that measurement of a company's "competitiveness" should incorporate quantitative measures of costs, prices and profitability, and qualitative indicators of non-price factors, specifically quality, if the definition is to be satisfied. These are not, however, the only measures cited in the literature. A parallel approach is taken by the European Management Forum, which defines competitiveness as "the immediate and future ability of, and opportunities for, entrepreneurs to design, produce and market goods worldwide whose price and non-price qualities form a more attractive package than those of foreign and domestic competitors" (European Management Forum 1984.)

Competitiveness at the national level

The latter definition has an underlying element—the idea of world market share as a measure of a firm's competitiveness. This leads from firm level competitiveness to the idea of national competitiveness. Furthermore, much of the recent research has been conducted at a macro-economic level where the competitiveness of nations is assessed. At this level of analysis, the absence of definitions is more marked, but one obvious example was gleaned from the literature. "The definition of competitiveness for a nation must similarly be tied to its ability to generate the resources required to meet its national needs" (Aldington Report 1985). This definition is equivalent to that adopted by Scott and Lodge (1985): "national competitiveness refers to a country's ability to create, produce distribute and/or service products in international trade while earning rising returns on its resources". Measuring competitiveness in terms of "national needs" is clearly a difficult task as it requires a careful clarification of the national needs of each country separately analyzed. Most recent research avoids this issue and concentrates on relative performance measures, cost advantages or qualitative assessments of countries' international business ratings. The work of Scott and Lodge (1985) is an exception to this rule and concentrates largely on the perceived tradeoff between national competitiveness and social goals. Countries are placed, in the chapter written by Scott, in a matrix which has "development oriented strategies" on the vertical axis (work saving, investment) and "distribution oriented strategies" (economic security/entitlements, income redistribution, short term consumer benefits) on the horizontal axis. These competing national strategies, growth/productivity and external competitiveness versus domestic economic security and redistribution of income are deemed to account for differences in the dynamics of changes in rankings of international competitiveness.

Implications

There is need for harmonizing competitiveness and related terms, so that confusion can be minimized. While the Five Forces and Diamond Model by Porter and their variants provide useful insights, their limited use in competitiveness evaluations hints at the need for better frameworks. Use of the competitiveness process as a key coordinating process among key management processes such as strategic management, human resources management, technology management, and operations management may provide a powerful tool. It is necessary for a firm to define competitiveness as part of its strategy. Competitiveness is a multi-dimensional concept with dynamic weight ages of different factors. A systematic evaluation of competitiveness will be of great help to firms. There are many frameworks and models with their own strength and weaknesses. While there are some very rich frameworks, their utility is limited due to their rigidity. There is need for a research network that can develop better tools to improve competitiveness processes in collaboration with industry.

Competitiveness of a firm as a concept may generically be its capacity to achieve its targets. Such targets would typically take full account of competition. They are likely to be expressed in a variety of terms depending on the context. Within a macroeconomic concept and policy makers, a competitive firm

develops and sustains a level of performance that contributes to the Gross Domestic Product, employment opportunities, the wealth of the people, and balance of trade (in terms of upward trend - oriented exports). From the labor's point of view, being employed in a competitive firm may be translated in terms of meeting career aspirations, learning and development, And achieving a satisfactory financial and social compensation and benefits . In synthesis, drawing upon the above, it is of relevance to review competitiveness as a concept to lay the grounds of understanding the firm's dynamics. In turn, it is of bearing to relate competitiveness and the variables associated with it, to be followed by operational strategies that are associated with firms of higher level of competitiveness. The interaction between the firm the characteristics of the market forces represents one of the basic areas of concern in industrial economics. Economists belonging to that school of thought perceive the significance of the link between the environment and the strategies employed by the firm. They relate the following: (i) the structure, organisation, and ownership of the business; (ii) the competitive behaviour and pricing of the enterprise, together with the underlying operational strategies and vision; (iii) results of their strategies in terms of price and production; and (iv) the public policy in relevance. Taking the firm as the unit of analysis, firms typically adopt routes/strategies to move from one point to another- inherently from one competitive position to a higher one. Feurer and Chaharbaghi (1994) claim that there does not exist a unique definition for competitiveness, thus they made an attempt to offer a holistic definition for competitiveness. The authors define competitiveness as formulated of three main elements: shareholders, customers, and financial strength that allow the firm to continuously accommodate to its respective environment. Basically, competitiveness could mean the firm's ability to make customers choose their product rather than that of its competitors or it could imply the capacity to continuously introduce improvement upon their processes. Customer values rating take into account (with different weights depending on the firm) cost, speed, flexibility, and dependability. Shareholders vary in their perception of the competitiveness of a firm. This entails using rate of return, access to state – of – the – art, know – how, risks, etc., in assessing the competitiveness of the enterprise. Shareholders may also typically use return on equity, earnings per share, payout ratio, and dividend yield as measures for competitiveness. Financial strength represents the third element that compromises the competitiveness map the authors suggest. People and technology employed would fall on the fourth axes of the position map. The firm's profile of technologies and skills may be rated in relation to its competitors. The key element of attaining competitiveness is achieving the balance among the above factors. Alternatively, accounting for the various elements comprising the competitiveness map reflecting respective tradeoffs among these elements, recognizing gaps and generating knowledge that supports a viable business strategy conducive to competitiveness. The scope of the market has drastically changed over the years. Firms' scope of competition has expanded in such a manner that – with few exceptions they are all forced to compete within the global market despite their size and target market/ segment. Firms either target a market within a local proximity or regional or multinational/ global. Nevertheless, with the new setting of free trade, organizations are essentially playing against the same rules for survival: efficiency and innovation. To compete today, firms are required to produce with adequate efficiency that requires an alignment among strategy, design, people, culture and processes. Generically, a strategy is set to move the firm's level of competitiveness from a certain level to a relatively higher one. Literature would suggest that the key elements that comprise such a strategy are: price, quality, flexibility, and delivery dependability.

The concept of competitiveness highlighted above will be of no use if it is not furnished with a measurement system. As the factors affecting the competitiveness of an organization are of a conflicting nature and interact acutely, competitiveness cannot be defined by a single measure. It must therefore be described by a set of measures which gauge the relative competitive position of an organization with respect to different components that contribute to overall competitiveness.

CATEGORIES OF MEASURES OF COMPETITIVENESS

An immediate problem thus arises: at what level should the analyses of competitiveness take place? Should it be measured at the firm, industry or national level? Any analysis must specify clearly the level at which measurement is taking place and must specify the unavoidable constraints. Our major concern is with competitiveness at the level of the firm but it is essential also to review macro measures of competitiveness. The time horizon of the analysis needs to be spelled out because binding constraints in the short run become

flexible in the longer time period. Further, the issue of the inclusion of social goals in the definition of competitiveness is open to question. Many of the "measures" of competitiveness implicitly or explicitly include issues of employment generation, quality of employment, distribution of income or other, wide objectives. The diversity of the measures of competitiveness used by researchers, suggests that ideas about this complex concept vary greatly. For some, competitiveness is seen as the ability to perform well, for others, it is the generation and maintenance of competitive advantages, and for the rest it is the process of managing decisions and processes in the "right" way. Consequently measures can be categorized into three groups:

- Competitive performance
- Competitive potential
- Management process

By categorizing the measures in this way it becomes apparent that the "3P's" describe different stages in the competitive process. Potential measures describe the inputs into the operation, performance measures the outcome of the operation and process measures the management of the operation. From this perspective, competitiveness cannot be considered as a static concept, but rather as an ongoing process. The fundamental question which arises from this is "can single measures alone explain the dynamics of competitiveness?".

If only performance measures are considered, the question of the sustainability of such performance remains unanswered. Too many uncertainties remain concerning the management of success, and the regeneration and maintenance of competitive potential which is part of the process of planning for future competitiveness. Conversely, where only competitive potential is measured, no indication is given of whether or not this potential is turned into performance. Assumptions based on the idea that advantages necessarily result in success ignore the possibility of unrealized potential and may consequently lead to distorted results. Research on management processes, by the very nature of what is being measured, depends on qualitative indicators as opposed to quantitative measures.

Table 2: Different Aspects of Measurement in Competitiveness

		Product	Firm	Industry	Country
Performance	Measures by level of analysis	Export market-share	Export market -share	Export market- share	Export market-share%
		Export-growth Profitability	Export dependency Export -growth Profitability	Balance of trade Export -growth Profitability	manufacturing in total output Balance of trade Export -growth Profitability
Potential	Measures by level of analysis	Cost -competitiveness	Cost -competitiveness	Cost -competitiveness	Comparative advantage Cost -competitiveness
		Productivity Price competitiveness	Productivity Price competitiveness	Productivity Price competitiveness	Productivity Price competitiveness
Management Process	Measures by level of analysis	Technology indicators	Technology indicators	Technology indicators	Technology indicators
		Quality competitiveness	Ownership advantage	Commitment to international business	Access to resources (may vary by industry)
		Product champion	Marketing aptitude	Commitment to international business (trade associations, etc)	Commitment to international business
			Management relations		Government policies
			Closeness to customer		Education/ training
			Economies of scale and scope		

Supplanting quantitative measures with qualitative, however, undermines the strength of comparison by ignoring the hard data through which the competitiveness of countries, industries, firms or products can be made. As the concept of competitiveness fundamentally depends on comparison, qualitative assessment of management processes alone may prove unsatisfactory, as it makes no reference to the fruits of management activity in the form of performance measures. It is, however, a critical aspect of research into the process of competitiveness, as it describes how managers turn potential into performance. When statistical measures have been used to show, for example, that one firm performs better in the market place than its competitors, and has generated and sustained more competitive potential, the qualitative information derived from researching management processes helps to explain the reasons for success.

Table3: Performance measures for competitiveness

Author	Target	Suggested / Applied measurement
World Competitiveness Report (1993)	Countries and enterprises	(suggested) market share Profit growth duration
Buckley et al. (1988)	Export firms	(suggested) market share dependency growth profitability
Kravis & Lipsey (1992)	multinational enterprises	(applied) market share
O'Farrell & Hitchens (1993)	Small manufacturing firms	(applied) sales per person net outputs per persons net profit on turnover (%)
Aviation Week & Space Technology (1996)	Large & small aerospace firms	(applied) profitability return on net asset working capital productivity percentage of total revenue dedicated to independent R&D employee productivity
Feurer & Chaharbaghi	financial performance of firms	(suggested) return on equity earning per share payout ratio dividend yield

It is essential also to classify the measures according to whether they are at national level, or applicable to the firm, the industry or the product. This review of the extant literature on competitiveness has led to the view that single measures of competitiveness do not capture all the elements of the research issue.

It is necessary to examine performance, potential and management process in order to evaluate critically changes in competitiveness. This must be done relative to a comparator which must be chosen in order to hold as many extraneous factors constant as possible. Comparators may be parallel bodies, relative to a historical situation or relative to a well defined "alternative position".

It is shown in above table that competitiveness performance is often measured by the business volume (including various profitability measures, sales, outputs), efficiency (productivity, return on equity, net profit on turnover), business growth, and sustainable growth (duration, percentage of total revenues dedicated to independent research and development).

Following a review of the literature on SME competitiveness, we have distinguished between three key aspects affecting an SME's competitiveness, including the internal firm factors, external environment, and the influence of the entrepreneur. These factors in turn impact the performance of the firm. Competitiveness is a concept often related to the long-term performance of large corporations and economies. We will show how it can be applied to the SME context. After introducing the concept of competitiveness — particularly at the firm level and its application to SMEs, we will introduce the concept of knowledge transfer which affect SME`s competitiveness.

SME COMPETITIVENESS

A small firm is not a scaled-down version of larger firms. Larger and smaller firms differ from each other in terms of their organizational structures, responses to the environment,

Managerial styles and, more importantly, the ways in which they compete with other firms. As a result, the competitiveness studies focusing on large corporations may not be applied directly to the SME level. In fact, studies of competitiveness with a focus on SMEs have increased substantially in recent years, with a number of studies devoted to identifying the various factors of competitiveness described below. For example, the framework proposed by Horne et al (1992), stressed that competitiveness for small firms should be the interaction of the scope for action or growth in the business environment, the degree of access to capital resources, and the intrinsic ability of the firm to act as represented in entrepreneurship. This framework corresponds to our review of the recent literature, which distinguishes between three key aspects leading to an SME's competitiveness, including the internal firm factors, external environment and, unique to SMEs, the influence of the entrepreneur. These factors in turn affect the performance of the firm.

Internal firm factors

The capital and resource dimension of the framework of Horne et al. (1992) represents the internal aspect of SME competitiveness. It is seen as one key facilitating element applied to a variety of competitive strategies. Similar internal sources have also been identified in the literature. For example, O'Farrell et al. (1992) and O'Farrell and Hitchens (1988, 1989) have conducted a number of studies on the relationship between sources of competitiveness and firm performance, focusing on price, quality, design, marketing, and management. Slevin and Covin (1995), however, applied a 12-factor instrument to measure the "total competitiveness" of SMEs, including the firm's structure, culture, human resources, product/service development, etc. According to them, total competitiveness means scoring high on all these factors. Pratten's (1991) study of small firms in several industries in the UK also highlighted the importance of product development, the quality of customer service, efficiency of production, marketing expertise, and low overhead costs as the sources of competitiveness. Further lists of the internal factors are also given by Bamberger (1989), Chaston and Mangles (1997), Stoner (1987), and more recently by Chawla et al. (1997). To summarize, these studies have highlighted a number of firm-specific factors such as financial, human and technological resources, organizational structures and systems, productivity, innovation, quality, productivity, image and reputation, culture, product/service variety and flexibility, and customer service.

External environment

The lack of market power and the turbulent nature of newly emerging markets faced by many SMEs often make them more vulnerable to external influences than larger firms. The external environment is therefore particularly influential in determining an SME's competitiveness. Representing this external aspect of competitiveness, the framework of Horne et al. (1992) highlighted the scope for action and growth, which indicates the availability of opportunities to generate increased long-term profitability inherent in the external environment. The OECD (1993) study stressed that changes occurring in the economies can affect the "competitiveness strategy" of the SMEs. Pratten (1991) also suggested the influences of industrial differences on the sources of competitiveness. Although the focuses of the external environment are different, these studies have shown the significant impacts of the external environment on SME competitiveness. Moreover, Barringer et al. (1997) found that rapid-growth entrepreneurial firms operate in more munificent environments than slower-growth ones, suggesting the positive influence of environmental opportunities. Other authors have taken a more proactive approach when considering the external factors. For example, Slevin and Covin (1995) suggested that continuous repositioning is needed for small new firms to anticipate and be responsive to the actions of competitors. Malecki and Tootle (1996) also emphasized the roles played by SME networks in their competitiveness. These studies suggest an interaction between the firm and the environment. Small firms need not behave only as recipients of environmental changes, but can also actively work on the environment.

PROP 1: SMES will be more competitive through Knowledge-Transfer by implementing their absorptive capacity and combinative capability to use internal and external knowledge and opportunities.

Small and Medium Enterprises (SMES) have been extensively researched since the 1970s, primarily as a job creation tool. Tolentino (2000) summarizes SMEs potential economic and social benefits of SMEs to their capacity to: (i) create jobs at low cost of capital; (ii) contribute positively to the Gross Domestic Product (GDP); (iii) improve forward and back-word linkages between different sectors; (iv) create opportunities for employing appropriate technology; (v) provide an opportunity to expand the entrepreneurial base; (vi) expand a pool of skilled and semi – skilled workers; (vii) provide support to large – scale enterprise; (viii) provide the required flexibility to adapt to market failures; (ix) enter into market niches which are not profitable for larger enterprises; (x) contribute to development policies that are more oriented towards decentralization and rural development; and (xi) support governments' efforts to alleviate the negative aftermath of structural adjustment programs. Nevertheless, all the above may never be fully realized without an adequate regulatory system and an encouraging business environment.

On the whole, the small firms sector has been recognized by the government as having a vital part to play in the development of the economy. It has been held responsible for a significant proportion of employment and output, and as a source of competition, innovation, and employment. One government objective is to improve the climate for entrepreneurship and to foster more positive attitudes towards it. In pursuing this aim, Milne and Thompson (1986) indicate the importance of having a good understanding of the characteristics of actual and potential entrepreneurs. Most developed countries have a package of policies designed to assist small firms, primarily on the grounds that the small firms sector is thought to be an important vehicle both for new employment creation and for technical change. The researchers perceive the future of the majority of new businesses to fail in playing a significant role in economy, and are likely to exit the market within a few years of their inception. It may be argued that provision of support might raise the survival rate. However, it is plausible to presume that understanding the business needs of firms that survive and grow is more likely to enhance the provision of improved support.

The firm is a learning organization and the capacity for learning is related to individual skills, as well as the organization of the firm and the institutional set-up of the economy. The learning potential of firms increases as they form effective regional/local networks (Asheim, 1996; Amin and Wilkinson, 1999). Yet, individual skills are very difficult to transfer due to the tacit knowledge they incorporate (Howells 1995). However, personal contacts and interpersonal relationships may enhance the diffusion of this tacit knowledge among people sharing the same culture, traditions and history (Belussi, 2000). Organizational systems that enhance the potential to learn also reduce the costs of learning (European Commission, 1998, CEDFOP, 1999). Furthermore, it is widely recognized that knowledge is the crucial resource and that the process of learning is the most important process within modern capitalistic societies. Network relationships are indispensable to transfer knowledge but, in particular, that part of knowledge which is tacit and difficult to codify. Indeed, one of the reasons why firms establish networks is to gain access to such knowledge (Lundvall and Johnson 1994).

Hayek (1945) highlighted in his seminal work, *'The Use of Knowledge in Society'*, the critical effect distribution of knowledge has on organizational structure. Hayek (1945) explained that business activities commonly require the integration of widely dispersed bits of incomplete and frequently contradictory knowledge, which all separate organizational members possess. Over the last decade, researchers have extensively used a knowledge perspective to explain a variety of strategy topics, such as alliances (e.g., Simonin, 1999), acquisitions (e.g., Bresman et al., 1999), internal transfer of capabilities (e.g., Szulanski, 1996), and development of local competitiveness in foreign markets (e.g., Lord and Ranft, 2000). Review of knowledge transfer research two types of dynamic capabilities are discussed, absorptive capacity and combinative capabilities, which form the core catalysts of knowledge transfer in organizations. Although the knowledge-based view is a relatively new perspective in the field of strategy, it builds on extensive theoretical work in the areas of organizational learning and the resource-based view of the firm. In the following, each foundation is discussed.

Organizational learning

The behavioral approach (or learning theory) in psychology focuses on how the environment influences behavior of individuals. Learning, according to behaviorists, involves the process in which individuals respond to stimuli in the environment and, accordingly, change patterns of behavior. Analogous to

stimulus-response mechanisms at the individual level, organization theorists view organizational learning as a key process wherein firms acquire, disseminate and use information in response to environmental pressures (Cyert and March, 1963; Huber, 1991; Weick, 1991). Organizational routines form the basis of behavior in firms (Cyert and March, 1963; Nelson and Winter, 1982). Organizational routines are shaped and reshaped by interactions of organizational members and over time become part of the 'collective memory' of the firm (Levitt and March, 1988). They are the procedures, rules and formats that firms learn and use when dealing with its environment. When organizational routines determine the organization's strategic differentiation from competition they become corporate capabilities (e.g., Leonard-Barton, 1992; Snow and Hrebiniak, 1980). March (1991) discussed the problem of balancing exploration and exploitation in organizational learning. According to March (1991), exploration of new knowledge provides opportunity to develop new capabilities, but limits the extent to which existing capabilities are refined and used to their maximum potential. On the other hand, excessive exploitation of existing capabilities can lead to core rigidities and restricts exploration of other, potentially better, alternatives (Brown and Eisenhardt, 1997; Levitt and March, 1988; Leonard-Barton, 1992; Miller, 1996). March (1991), therefore, advises organizations to carefully balance investments in exploration and exploitation. Researchers, often discretely, have emphasized the importance of exploration of *new* knowledge (Barkema and Vermeulen, 1998; Cohen and Levinthal, 1991, 1994; Dyer and Singh, 1998; Lane and Lubatkin, 1998; Mowery et al., 1996; Szulanski, 1996; Tsai, 2001; Yli-tenkari, Autio and Sapienza, 2001; Zahra and George, 2002) or exploitation of *existing* knowledge (Kogut and Zander, 1992, 1993, 1996; Galunic and Rodan, 1998; Nahapiet and Ghoshal, 1998; Teece, Pisano and Shuen, 1997; Zander and Kogut, 1995). Learning through exploration requires the ability to absorb new knowledge from the environment. An organization will be better able to recognize, understand and use new knowledge in an area in which it has a knowledge base and experience, than in an area where it is inexperienced. For example, a bank that has experience in providing financial services on the Internet and has developed a knowledge base through investments in research and development in *e-commerce* will be better able to absorb the newest innovations in on-line banking than banks that do not have such a knowledge base and experience. Cohen and Levinthal (1990) have labeled this capability '*absorptive capacity*,' and defined it as "the ability to recognize the value of new information, assimilate it, and apply it to commercial ends". On the other hand, learning through exploitation entails the ability to find new applications by combining and recombining existing knowledge. Since knowledge resides in the individuals or subgroups of organizations it requires sharing knowledge through social interactions (Kogut and Zander, 1992). For example, when individuals with different expertise or when members from different organizational departments intensively interact, this may lead to knowledge combinations and new usages of existing knowledge. Kogut and Zander (1992) refer to '*combinative capabilities*' as the ability to find new applications for existing knowledge and emphasize that organizations foster these capabilities by providing "a social community of voluntaristic action structured by organizing principles". Compared to the concept of absorptive capacity, this concept has received scant attention from subsequent research. However, other studies have referred to socialization, social capital, collaboration, combination, sharability, shared mental models, and the ability to share knowledge across subunits (Galunic and Rodan, 1998; Hansen, 1999; Nahapiet and Ghoshal, 1998; Nonaka, 1994).

In summary, organizational learning research examines the manner in which organizations acquire, understand and use knowledge. It addresses the value of both exploration of new knowledge and exploitation of existing knowledge. The former requires absorptive capacity, which results from experience and a complementary knowledge base in the area of the new knowledge. Exploitation of existing knowledge requires combinative capabilities, which arise from a firm's ability to develop a social community that fosters knowledge sharing. The more socially complex a resource, the more difficult it becomes for any one person to identify the source of competitive advantage. According to the resource-based view, provided that they are of value to the firm and rare, causally ambiguous and socially complex resources are strategically the most significant sources of competitive advantage. Within this new stream of research, a number of researchers have contributed to our understanding of a knowledge-based view of the firm (Conner and Prahalad, 1996; Grant, 1996a, 1996b; Jensen and Meckling, 1994; Kogut and Zander, 1992; Leonard-Barton, 1992; Nahapiet and Ghoshal, 1998). According to these researchers, knowledge is the strategically most important resource and the ability to transfer and integrate knowledge the critical dynamic capabilities. Moreover, since tangible resources, such as machinery or capital, always have their origins outside the firm, they are more likely to be imitated and less likely to create a competitive

advantage. It is the intangible firm specific knowledge that can generate value in a relatively unique and inimitable way (Grant, 1996a; Jensen and Meckling, 1995). Consequently, conceptual and empirical work has focused on catalysts and barriers of transferring knowledge within and between organizations (e.g. Kogut and Zander, 1992). The resource-based view of the firm was proposed in response to certain weaknesses to the economic theory of the firm. Economic theory states that a firm's strategic performance is largely dependent on industry structure, i.e. the competitive situation and the technological, sociological and environmental context (Von Krogh and Grand 2002). As empirical research only partially supported this theory, an alternative was suggested. Resource-based view argues that a firm's strategic performance is largely tied to what type of inputs (resources) it has access to and how it is using them (Dierickx and Cool 1989; grant 1991; Peteraf 1993). This use of resources over time develops into organizational capabilities (Amit and Shoemaker1993). Resources are 'those tangible and intangible and assets that are tied semi permanently to the firm at a given point in time ' (Wernerfeldt, 1984, quoted by Von Krogh and Grant 2002, p.167). A capability can be defined as "a firm's capacity to deploy its assets, tangible or intangible, to perform a task or activity to improve performance" (Maritan, 2001 p.514). Other authors define it as "the firm's ability to manage people to gain competitive advantage" (Ulrich and Lake, 1991, 78). In other words, a capability is the capacity to take action using certain resources.

According to the resource-based view of the firm, firms obtain sustainable competitive advantage by optimally managing and maximizing the value of its resources and capabilities. As mentioned earlier, the basic organizational resource is knowledge (Drucker, 1995; Brooking, 1996). Not surprisingly, the resource-based view was adapted to the knowledge management (KM) field. Notably, Grant (1996) argued that the primary activity of the firm is the integration of knowledge into products and services. Organizational capabilities are hence the outcome of knowledge integration activities of the firm. More recently, Von Krogh and Grand (2002) also argued for a knowledge –based theory of the firm, focusing rather on knowledge creation as the principal activity of the firm. However, as both the above authors and Grant point out, that while the resource-based view of the firm is inadequate in so far as not considering knowledge as the chief strategic asset, the knowledge-based theory is far from being robust and generally accepted.

WHAT IS KNOWLEDGE?

A Key argument proposed by the resource-based view of the firm is that since firms compete based on the resources and capabilities they possess, competitive advantage will be achieved by firms whose resources and capabilities will be hard to imitate (Von Grogh and Grand, 2002). Knowledge is one resource that is difficult to replicate and hence is key in achieving advantage over other firms (Lubit, 2001). Although a philosophical discussion of what is knowledge is beyond the scope of this study, its several key aspects need to be reviewed in order to understand the context within which knowledge will be used in this study. First, knowledge can be tacit or explicit. Tacit knowledge is subconsciously understood, unarticulated and rooted in action and experience (Polanyi, 1962). Explicit knowledge is formally articulated and expressed, albeit taken away from its context of use (Zack 1999). While a good example of tacit knowledge would be know how to drive a car, its explicit counterpart, conveyed in symbolic form, would be exemplified in a driving manual. Second, Nonaka and Takeuchi (1995) have taken the tacit/ explicit categorization of knowledge and have applied it to the organizational setting. They saw knowledge as a justified, true belief and added another dimension to the classification-that of individual vs. collective knowledge. They differentiated between knowledge that is possessed by the individual (skills, expertise, etc.) and those possessed by a group (culture, shared mental models, trust, etc.).Their model will be discussed in detail later. Third, the Alavi and Leider study (2001) suggested six categories of views of knowledge, each having particular implications on the approach used to manage it. The first view of knowledge is that of a state of mind. This view considers that knowledge can only exist within an individual. Once separated, it is no longer knowledge, but information. The second view is knowledge as an object that can be stored and manipulated. A third view is knowledge as a process, i.e. it cannot be separated from action. The fourth view is knowledge as a condition of access to information. This view is an extension to the view of knowledge as an object, with a focus on accessibility of knowledge objects. The fifth view is knowledge as a capability to take action based on interpreted information. The last view is of knowledge vis-à-vis data and information. Data are raw facts, information is data with a meaning and knowledge is personalized

information. Fourth, Zack (1999) defines knowledge as 'that which we come to believe and value on the basis of information (messages) through experience, communication or inference' (p.46). His definition corresponds to two categorization by Alavi and Leider; knowledge as an object and knowledge as a process. Knowledge can be seen as object, i.e. what is known, as well as the process of knowing, i.e. applying expertise. Zack also distinguishes three types of knowledge: declarative knowledge (know-what), procedural (know-how) and causal (know-why). This classification is based on cognitive science theory on types of memory (Tulving, 1995). All of types of knowledge are present in IT projects. *Knowledge as a belief and value resulting from information received through experience, communication or inference.*

Knowledge Transfer

Within the past 20 years an extensive interest has appeared in the topic of knowledge transfer (k-transfer) (Wiig, 1997). The resource-based view of the firm underlines the importance of transferability of the company's resources and capabilities as vital in its gaining of competitive advantage (Barney, 1986). The transferability is especially important within the firm (Grant, 1996). Knowledge transfer has been shown to play a key role in increasing a company's productivity and helping it gain a competitive advantage. For example, Darr et.al (1995) found that in franchise restaurant the unit cost of production decreased as a result of knowledge transfer. Research in strategic management and in interconnected organizations (alliances, franchises and chains) has shown that knowledge transfer has a positive effect on productivity (Argote and Ingram, 2000b). One of the deficiencies in the studies on k-transfer is the lack of definitions of the concept. Although many articles theorize on this topic, most seem to assume that the reader will understand what is meant by k-transfer (Goh, 2002). Yet, such an assumption leaves many unanswered questions, such as: What is difference between k-transfer and learning? And, Does k-transfer simply refer to the communication process and stops short of its use? To facilitate an understanding of k-transfer, we consider two definitions from among the numerous articles that might provide a clear meaning to concept. One such study defines k-transfer as a 'process through which one unit is affected by the experience of another' (Argote and Ingram, 2000a p.151). Another study sees it as process where 'an organization recreates and maintains a complex, causally ambiguous set of routines in a new setting' (Szulanski, 2000). Although the first definition seems to allow the possibility of negative effect resulting from the transfer, both suggest an entity importing or acquiring knowledge it did not previously possess. K-transfer is one aspect of learning, that of acquiring knowledge from an external entity (Garvin, 1993).

The process of k-transfer goes beyond the simple communication process through which knowledge is transmitted. It must be successfully absorbed (Lane and Lubatkin, 1998) or create the capability of using it, and hence create value (Argote and Ingram, 2000a). Unlike the proposal of some research to classify absorption as a firm-level mechanism (Rivera et al.2001), the absorption is an integral part of any transfer process (szulanski, 2000) and involves knowledge utilization (Verkasslo and Lappalainen, 1998). The above discussion is well summarized by a Davenport and Prusak's (1998,p.101) definition:"the transfer of knowledge then involves both the transmission of information to a recipient and absorption and transformation by that person or group". This definition also captures the fact that a k-transfer is a two-way process. It can be broken down into two sub-processes: knowledge distribution (transmission) from the sender's point of view and k-acquisition from the receiver's point of view (Huber, 1991; Schulz, 2000; Bolino, 2001). We will elaborate on the origins of such view of k-transfer next. Any discussion of k-transfer would be incomplete if it did not address the issue of absorptive and absorptive capacity. We will present both the original and the modified theories. Contemplated from the resource-based view of the firm, absorptive capacity can be seen as one of the critical capabilities that are needed in the management of the company's chief resource-knowledge. As mentioned in the definition of k-transfer, the process doesn't top at reception of knowledge. Cohen and Levinthal (1990) postulated that the process is completed only when the knowledge is absorbed. Only then can the transfer be called successful. They argue that a critical element of any k-transfer process is the ability of the receiving end to actually take in or absorb the knowledge. They define absorptive capacity as "the capability to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends" (p.128). This capability is greatly dependent on the current knowledge possessed by the receiving entity. As learning is cumulative, knowledge assimilation is easier and quicker for an entity that already possesses considerable knowledge (sufficiently diverse, but related to the knowledge being received). Research has emphasized a wide variety of catalysts and

impediments of knowledge transfer. However, two key organizational capabilities emerge: absorptive and combinative capabilities.

Absorptive Capacity and Knowledge Transfer

Absorptive capacity (Cohen and Levinthal, 1990) of the knowledge recipient has received much scholarly attention (Gupta and Govindarajan, 2000; Lane and Lubatkin, 1998; Mowery, Oxley and Silverman, 1996; Szulanski, 1996; Tsai, 2001). As mentioned before, absorptive capacity is the ability to value, assimilate, and commercialize new knowledge. Under the umbrella concept of absorptive capacity, researchers have emphasized that the preexisting stock of knowledge (e.g., Szulanski, 1996), R&D intensity (Cohen and Levinthal, 1990; Tsai, 2001), and the degree of similarity among transfer parties (e.g., Gupta and Govindarajan, 2000; Lane and Lubatkin, 1998) promotes new knowledge absorption and transfer. Because of the diversity in components of absorptive capacity examination of the construct is difficult. Zahra and George (2002) reviewed the literature and provided a more general framework. These authors argue that two drivers determine absorptive capacity. Firstly, absorptive capacity of a firm is a function of the relatedness of the new knowledge to the firm's existing stock of knowledge. Secondly, prior related experience enhances the development of path dependent capabilities of acquisition of external knowledge. The absorptive capacity of a firm, thus, is both influenced by the relatedness of the newly acquired bundle of knowledge to the knowledge that the firm already holds. The ability of the firm to use knowledge from outside its boundaries plays an important role in its competitiveness and innovation abilities. For example, the rapid pace of technological change means that few firms have the luxury of developing all of their R&D advances and new products solely from internally generated ideas and knowledge (Ahuja, 2000; Mitchell & Singh, 1996). Instead, many firms have to rely on external sources for at least some of the inputs to their inventive process (Cohen & Levinthal, 1990; Fiol, 1994; Huber, 1991). The ability of the firm to recognize valuable external information, assimilate it, and apply it to commercial ends is commonly referred to as its absorptive capacity (Cohen & Levinthal, 1990). However, the diversity of conceptual and empirical treatments of absorptive capacity creates challenges in advancing this research area (Joglekar, Bohl, & Hamburg, 1997; Zahra & George, 2002). One of the key issues at the root of the lack of consistency is the unidimensional approach many researchers take when studying absorptive capacity. Even though absorptive capacity covers recognizing, assimilating, and applying external knowledge, often it is evaluated using a single measure. Moreover, the nature of these unidimensional measures varies from study to study. To address the lack of consistency across studies of absorptive capacity, we develop a multidimensional model that extends the theoretical development of the construct and also helps to unify much of the diverse empirical research. We draw from the insight that firm knowledge is held both in its individual members as well as collectively in its routines, documentation, procedures, shared experiences, and know-how. This classification is one of the most common distinctions on the nature of knowledge resident within the firm (Lyles & Schwenk, 1992; Matusik & Hill, 1998; Zander & Kogut, 1995). It has been argued that absorptive capacity, too, is made up of collective and individual dimensions, and distinguishing between them can yield important insights. Specifically, we examine three dimensions that comprise the absorptive capacity construct: (a) the firm's relationship to its external environment (porosity of firm boundaries), (b) a collective dimension (its structures, routines, and knowledge base), and (c) an individual dimension (individuals' absorptive abilities).

A Multidimensional Model of Absorptive Capacity

Cohen and Levinthal (1989) introduced the construct of absorptive capacity in their analysis of "the two faces of R&D." They applied traditional economic models of incentives to invest in R&D (industry-level appropriability, technological opportunity, and demand conditions) and showed empirically that these factors leave a large proportion of firm investment in R&D unexplained. They theorized that an additional incentive to invest in R&D is to create absorptive capacity. R&D serves two purposes: to generate new information (the traditional view of the purpose of R&D) and to enhance the ability of the firm to assimilate and exploit existing information. Because Cohen and Levinthal empirically defined absorptive capacity as unexplained variance in R&D intensity after accounting for industry-level predictors of firm investment in R&D, specific theoretical and empirical guideposts on how to measure this construct are absent. From diverse empirical research findings, it is difficult to assess how different elements contribute to the ability

of the firm to build valuable proprietary knowledge or whether the different components of the construct are substitutes for one another. Zahra and George (2002) further highlighted how the empirical studies to date do not capture the rich theoretical arguments and the multidimensionality of the construct. Recent theoretical elaboration of the absorptive capacity construct calls for a disentanglement of the process stages associated with absorptive capacity. Zahra and George (2002) separated the acquisition and assimilation components of the construct from the transformation and exploitation ones. The first two are focused on knowledge creation and the second two on commercially deploying this knowledge. We agree that this rich multidimensional construct would benefit from greater disaggregation to move research in this area forward. To do so, we narrow the scope of our study to how absorptive capacity affects knowledge and knowledge creation. Although absorptive capacity can ultimately affect firm performance and competitive advantage through transformation and exploitation, we agree with Zahra and George (2002) that these effects are outcomes of knowledge production that also require additional firm resources to commercially exploit knowledge produced by the firm. Separately examining knowledge production from longer linked performance outcomes is an important step in understanding absorptive capacity.

Relationship to the External Environment

To gain external information, pathways of access to this information first have to exist. Network research indicates that the number and type of ties within a network are positively related to assimilating the knowledge and practices within the network. The knowledge creation literature further supports the idea that there is a positive relationship between porous firm boundaries and knowledge creation. Exploration as well as exploitation activities are important in efforts to continually build knowledge (March, 1991). Exploration involves trying new processes and developing ideas that are outside of an organization's repertoire of routines. Moderate turnover promotes exploration activities (March, 1991), which stimulates knowledge creation. In addition, the presence of new individuals makes tacit knowledge more visible, allowing firms to reexamine routines and practices (Brown & Duguid, 1991). The process whereby knowledge is converted into different forms (e.g., from tacit to explicit and vice versa) is central to creating new knowledge (Nonaka, 1994). Thus, porous firm boundaries with regard to the flow of individuals across these boundaries may facilitate knowledge creation and firm knowledge levels. Combining the above streams of research together suggests that the level of contact and the intensity of contact with the external environment affect the ability of the firm to absorb and assimilate external knowledge.

The Collective Dimension

Firm knowledge is held both in individuals as well as collectively in routines, procedures, documentation, systems, shared experiences, and know-how (Lyles & Schwenk, 1992; Matusik & Hill, 1998; Zander & Kogut, 1995). Collective knowledge consists of two elements: (a) components, that is, discrete aspects of the organization's operations or its parts, or (b) architecture, that is, how routines are developed to put components to productive use (Matusik & Hill, 1998). The ability of the firm to absorb and assimilate new external knowledge (its absorptive capacity) is influenced by the nature of both elements of its collective knowledge. However, firms must absorb and assimilate external knowledge from multiple sources on an ongoing basis (in contexts outside of structured transfer opportunities) and must also be able to recognize what new external knowledge is potentially valuable and so should be absorbed. This has two important implications. First, firms must have stocks of knowledge that are related to new external knowledge they may want to assimilate. Second, because the new external knowledge resides outside of the boundaries of the firm, the relevant knowledge possessed by the firm must be "public" in nature. That is, the knowledge should be related to developments external to the firm that it may want to absorb. Knowledge available in the public domain consists of items such as industry best practices or information that can be learned through means such as formal coursework and published books (Matusik & Hill, 1998). Thus, the level of relevant public industry knowledge is an important component of absorptive capacity and so affects knowledge creation activities and private knowledge. Another element of firm collective knowledge is architectural—that is, how activities in the firm are interconnected. For absorptive capacity to increase, the ability to route new external knowledge to the appropriate people and areas within the firm is central. Research on product development and best-practice transfers highlights the importance of formal structure, integrating mechanisms, and the routines surrounding the transfer situation (Dewar & Dutton, 1986; Hamel,

1991; Levinthal & March, 1993; Moenart & Souder, 1990; Nonaka, 1994). firms must absorb and assimilate external knowledge from multiple sources on an ongoing basis, in contexts outside of structured transfer opportunities, and must also be able to recognize what new external knowledge is potentially valuable and so should be absorbed. This has an important implication for the nature of routines and structures for absorptive capacity outside of a structured transfer context.

The Individual Dimension

The ability of the firm to absorb information from its external environment is also a function of the absorptive abilities of its individual members. This absorptive ability is related to the knowledge and skills of individuals on technical practices, their common communication styles, and their shared understandings of goals. Of individuals' abilities to acquire and use knowledge result from prior learning experiences in similar tasks and problem-solving capabilities in related areas. Memory is enhanced through associative learning (Cohen & Levinthal, 1990). Thus, the importance of prior related knowledge in determining the ability of individuals to assimilate and retain new related knowledge is well established at the individual level.

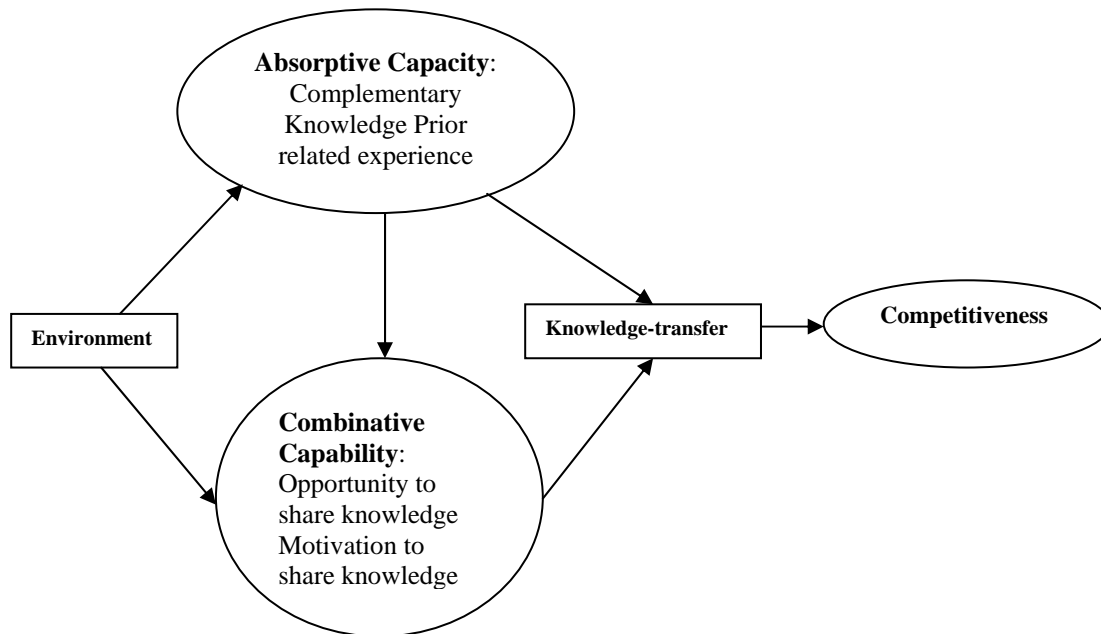
PROP2 : Absorptive capacity has a positive effect on SMES' competitiveness.

Combinative Capabilities and Knowledge Transfer

The knowledge-based view contends that while knowledge resides in organizational members, this knowledge can only become a real benefit when it is exchanged and combined among organizational members. Kogut and Zander (1992, 1993, 1996) view firms as social communities that specialize in the internal transfer and creation of knowledge. According to these authors and others (e.g., Grant, 1996a), organizations do not arise out of the failures of markets in buying and selling knowledge, but out of the organization's supremacy as a vehicle by which to transfer and integrate knowledge. Kogut and Zander (1992) describe combinative capabilities as the organization's ability to synthesize knowledge-based resources and generate new use from those resources. The role of organizations as social communities is important in the discussion of the knowledge-based view, because it is this community that generates combinative capabilities through direction and coordination and a general atmosphere that promotes coordination and cooperation for knowledge integration (Grant, 1996a; Kogut and Zander, 1992). Combinative capabilities are organizational routines that are not reducible to individuals, but rather are embedded in the social fabric of the organization. Contrary to transfer of tangible material and products, transfer of knowledge based resources is an activity that cannot be readily supervised (Kim and Mauborgne, 1998). While rules and regulations can provide organizational members with directions, knowledge transfer requires voluntary cooperation from organizational members (Kogut and Zander, 1992). Thus, if knowledge transfer is a key determinant of organizational performance, then it is critical that organizations develop combinative capabilities. Several authors stress factors within the social context of the organization as catalysts of knowledge transfer. For example, some authors have emphasized the importance of the motivation to share knowledge (Gupta and Govindarajan, 2000; Osterloh and Frey, 2000; Szulanski, 1996). Hoopes and Postrell (1999) highlight the role of a sense of coordination and cooperation among organizational members to avoid knowledge "glitches" (i.e., lack of shared knowledge). Still others have stressed the importance of rich (or weak) communication channels (Bresman et al., 1999; Gupta and Govindarajan, 2000; Hansen, 1999; Inkpen and Dinur, 1998; Ranft, 1997; Subramanian and Venkatraman, 2001; Szulanski, 1996), organizational factors, such as centralization and reward systems (e.g., Lord and Ranft, 2000). In addition, researchers have suggested that similarity in decision-making, organizational cultures, and other organizational design factors, may facilitate knowledge transfer in alliances (Lane and Lubatkin, 1998; Simonin, 1999). Although all these factors shed light on the manner in which the organization encourages or discourages sharing of knowledge, it is unclear how they, collectively, contribute to the development of combinative capabilities. While combinative capabilities are associated with the term "integrative mechanisms" as used by Grant (1996a) and, therefore, can play a central role in the knowledge-based view, the construct needs further conceptual development. Relatively independent from knowledge-based research, recent research on social capital theory has provided further clarification about the factors that contribute to combinative capabilities of organizations. For example, Putman (1995) defines social capital as "features of social organizations such as networks, norms, and social trust that

facilitate coordination and cooperation for mutual benefit” (67). Research has identified three components of networks that make them valuable for organizations: opportunity, motivation, and ability. This research stream helps define combinative capabilities as a firm’s capability to provide the opportunity, motivation, and ability to share knowledge.

Opportunity to share knowledge: signifies the presence of network ties within the social community that make information flows possible (Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998). Put differently, a formal and, more so, informal structure needs to be in place that provides the opportunity for voluntary knowledge transfer (Hoopes and Postrell, 1998; Kim and Mauborgne, 1998). The opportunity component of combinative capabilities, therefore, refers to the structural quality (or structural dimension – Nahapiet and Ghoshal, 1998) of the network of ties among organizational members. Firms provide organizational members the opportunity to share knowledge through direction, policies and coordination (Grant, 1996a; Van den Bosch, Volberda and De Boer, 1999). From a social capital approach, the opportunity of the social community to share knowledge can be assessed by structural factors, such as frequency, intensity, and multiplexity of ties among organizational members (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Yli-Renko et al.,2001). While opportunity describes impersonal organizational characteristics, motivation involves the personal relationships organizational members develop with each other (Adler and Kwon, 2002). Several social capital theorists have emphasized the role of trust in social exchanges (Ghoshal and Moran, 1996; Kogut and Zander, 1992; Nahapiet and Ghoshal, 1998; Putman, 1995; Tsai, 2000; Tsai and Ghoshal, 1998). These authors argue that trust constrains opportunistic behaviors and facilitates cooperation. As such, trust members. The development of combinative capability also requires that organizational members have the ability to share knowledge – that is, they need to be able to understand the information and knowledge that they receive through ties. This component requires the development of a shared language because it facilitates the identification and interpretation of information (Galunic and Rodan, 1998; Nahapiet and Ghoshal, 1998).



Organizations, more so than market mechanisms, become vehicles for transferring knowledge because organizational members develop shared language and mental models (Boland and Tenkasi, 1995; Grant, 1996a; Kogut and Zander, 1992; Van den Bosch et al.1999). The model asserts that the ability of a firm to transfer knowledge is a function of two types of dynamic capabilities – absorptive capacity and combinative capability. Absorptive capacity refers to the extent to which the firm is able to understand, acquire and use the (external) knowledge (Cohen and Levinthal, 1990). Absorptive capacity is considered to be an intangible firm level capability that comprises the extent to which the firm possesses complementary knowledge in the area of the newly acquired knowledge and prior related experience (e.g.

doing business in the target market, etc.). Combinative capabilities refer to the extent to which the firm is able to combine and recombine existing (internal) knowledge (e.g., Kogut and Zander, 1992). combinative capabilities is conceived of three components, namely the extent to which the firm provides organizational members the opportunity, the motivation and the ability to share knowledge.

PROP 3: Combinative capability has a positive effect on SMES' competitiveness.

CONCLUSION

This article intends to provide insights to better understanding of competitiveness in what concerns the possibility of influencing knowledge transfer into competitiveness within SMES activities. Its considerations provide considerable support for importance of knowledge –based view of the firms as a decisive contribution to the knowledge-Transfer (KT). To understand better the relationship between absorptive capacity and combinative capabilities and knowledge transfer. The suggested model also enables us to extend some of the frameworks for understanding competitiveness in new view of knowledge perspective and its importance in SMES' competition. SMES are able to foster the opportunity and motivation to share knowledge during integration into clusters by reducing the cost of acquisition knowledge to become competitive. To study different small and medium firms in various sectors in industries to measure competitiveness and to test quantity and quality of different factors which are involved in Knowledge-Transfer can provide new scope for better performance of firms in competitive environment. So far many SMES in different sectors of industry have been successful in competition not only locally but worldwide through knowledge transfer within creation of industrial clusters. For example tile and ceramic's industry in ITALY and SPAIN and clothing industry in ITALY and TURKEY. In developing countries governments can encourage the expansion of SMES by formation of clusters to invest in infrastructures in economic and social aspects community and to protect SMES in competitiveness and job creation which can increase growth of nation. Government can implement different policies in supporting SMES to acquire knowledge.

REFERENCES

- Adler, P. S. & Kwon, S.-W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1), 17-40.
- Ahuja, G. (2000). Collaborative networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly*, 45(3), 425-455.
- Alavi, M. and Leider, D. (2001). Knowledge Management and Knowledge Management Systems : Conceptual Foundations and Research Issues. *MIS Quarterly*, 25(1), 107- 136.
- Amin, A. and Cohendet, P. (1999, November). Organisational learning and governance through embedded practices. Paper presented at workshop of *Information processes and path-dependent evolution: local systems response to changes in context*. Padua University, Padova, Italy.
- Argote, L. and Ingram, P. (2000b). Knowledge Transfer in Organizations: Learning from the Experience of Others. *Organizational Behavior and Human Decision Processes*, 82(1), 1-8.
- Argote, L. and Ingram, P. (2000a). Knowledge Transfer : A Basis For Competitive Advantage in Firms. *Organizational Behavior and Human Decision Processes*, 82(1), 1-8.
- Asheim, B. (1996). Industrial Districts as "Learning Regions": a Condition for Prosperity. *European Planning Studies*, 4.
- Barkema, H. G. & Vermeulen, F. (1998). International expansion through start-up or acquisition: A learning perspective. *Academy of Management Journal*, 41(1), 7-26.
- Barney J, M Wright and DJ Ketchen. (2001). The Resource-based View of the Firm: Ten Years after 1991. *Journal of Management*, 27, 625–641.

- Barney, J. (1986). Strategic Factor Markets: Expectations, Luck and Business Strategy. *Management Science* 21, 1231- 1241.
- Bamberger, I. (1989). Developing competitive advantage in small and medium-sized firms. *Long Range Plann*, 22(5), 80–88.
- Barringer, B.R., Jones, F.F., Lewis, P.S. (1997). A qualitative study of the management practices of rapid-growth entrepreneurial firms. *J. Bus. Entrepreneurship* 9(2), 21–35.
- Bartlett A and S Ghoshal. (1989). *Managing Across Borders*. Boston, MA: Harvard Business School Press.
- Belussi F. (2000a). *Accumulation of tacit knowledge and division of cognitive labour in the industrial district/local production system*. Working Paper On Economics and Evolution, Max Planck Institute, #0012
- Berger, A. and Udell, G. (1998). The Economics of Small Business Finance: The Role of Private Equity and Debt Markets in the Financial Growth Cycle. *Journal of Banking and Finance*, 22, 613-673.
- Black, J. A. & Boal, K. B. (1994). Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal*, 15, 131-148.
- Boland, R. J., Jr. & Tenkasi, R. V. (1995). Perspective making and perspective taking in communities of knowing. *Organization Science*, 6(4), 350-372.
- Bolino, A. V. (2001). A Model of Inter subsidiary Knowledge Transfer Effectiveness. *Midwest Academy of Management Annual Conference*. Lincoln, NE.
- Bresman, H., Birkinshaw, J., & Nobel, R. (1999). Knowledge transfer in international acquisitions. *Journal of International Business Studies*, 30(3), 439-460.
- Brooking, A. (1996). *Intellectual Capital: Core Asset for the Third Millennium Enterprise*. London, UK: International Thomson Business Press.
- Brown, S. L. & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42, 1-34.
- Buckley, Peter J. and Mirza, Hafiz. (1985). The wit and wisdom of Japanese management: An iconoclastic analysis. *Management International Review*, 25(3), 16-30.
- Cantwell, J. (1987). Historical trends in international patterns of technological innovation. University of Reading. *Discussion Paper in Economics, Series A*, no. 191.
- Carneiro, A. (2000). How Does Knowledge Management Influence Innovation and Competitiveness? *Journal of Knowledge Management*, 4(2), 87-98.
- Chaston, I., Mangles, T. (1997). Core capabilities as predictors of growth potential in small manufacturing firms. *Journal of Small Business Management*, 35(1), 47–57.
- Chawla, S.K., Pullig, C., Alexander, F.D. (1997). Critical success factors from an organizational life cycle perspective: perceptions of small business owners from different business environments. *Journal of Business Entrepreneurship*, 9(1), 47–58
- Churchill, N.C., Lewis, V.L. (1983). The five stages of small business growth. *Harvard Business Review*, 61(3), 1–12.
- Cohen, W. M. and Levinthal, D.A. (1990). Absorptive Capacity : A New Perspective On Learning Innovation. *Administrative Science Quarterly*, 35(1), 128- 152.

- Cohen, W., & Levinthal, D. (1989). Innovation and learning: The two faces of R & D. *Economic Journal*, 99, 569-596.
- Corbett C and L Wassenhove. (1983). Trade Offs? What Trade-offs? Competence and Competitiveness in Manufacturing. *California Management Review*, 35(4), 107-122.
- Cyert, R. M. & March, J. G. 1963. A behavioral theory of the firm. Englewood Cliffs, N.J.: Prentice-Hall.
- D’Cruz J and A Rugman. (1992). New Concepts for Canadian Competitiveness, Kodak, Canada.
- Darr, E. D., Argote, L. and Epple, D. (1995). The Acquisition, Transfer and Depreciation of Knowledge in Service Organizations: Productivity In Franchises. *Management Science*, 41(11), 1750 – 1762.
- D’Aveni, R. A. (1994). *Hypercompetition: managing the dynamics of strategic maneuvering*. New York, NY: The Free Press.
- Davenport, T. H., Prusak, L. (1998). Working Knowledge: How Organizations Manage What They Know. *Development Management*, 16(1), 3-19.
- Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. *Management Science*, 32(11), 1422-1433.
- D. Miller. (1988). Relating Porter’s Business Strategies to Environment and Structure: Analysis and Performance Implications. *Academy of Management Journal*, 31, 280-308.
- Doz YL and CK Prahalad. (1987). *The Multinational Mission*. New York, NY: The Free Press.
- Eisenhardt, K. M. & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21, 1105-1122.
- European Commission. (1999). Industrial Districts and Localized Technology Knowledge: The Dynamics of Clustering.
- Feurer, R. and Chaharbaghi, K. (1994). Defining Competitiveness: A Holistic Approach. *Management Decision*, 32(2), 49-58.
- Fiol, C. M. (1994). Consensus, diversity, and learning in organizations. *Organization Science*, 5(3), 403-421.
- Fiol, C. M. (2001). Revisiting an identity-based view of sustainable competitive advantage. *Journal of Management*, 27(6), 691-699.
- Galunic and Eisenhardt. (1978). Organizational Strategy, Structure, and Process. New York, NY: McGraw-Hill.
- Galunic, D. C. & Rodan, S. (1998). Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation. *Strategic Management Journal*, 19, 1193-1201.
- Garvin, D. A. (1993). Building a Learning Organization. *Harvard Business Review* (July- August), 78-91.
- Gatignon, H. and Robertson, T.S. (1993). The impact of risk and competition on choice of innovations. *Marketing Letters*, 4(July), 191-204.
- Ghoshal, S. & Barlett, C. A. (1990). The multinational corporation as an inter organizational network. *Academy of Management Review*, 15(4), 603-625.
- Ghoshal, S. & Moran, P. (1996). Bad for practice: A critique of the transaction cost theory. *Academy of Management Review*, 21(1), 13-47.
- Goh, S.C. (2002). Managing Effective Knowledge Transfer: An Integrative Framework And Some Practical Implications. *Journal of Knowledge Management* 6(1), 23- 30.

- Grant, R. M. (1996a). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science*, 7(4), 375-387.
- Grant, R. M. (1996b). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(Winter Special Issue), 109-122.
- Grant RM. (1991). *Contemporary Strategy Analysis: Concepts, Techniques and Applications*. Ambridge, MA: Blackwell Ltd.
- Grupp H. (1997). The Links Between Competitiveness, Firm Innovative Activities and Public R&D Support in Germany: An Empirical Analysis. *Technology Analysis and Strategic Management*, 9 (1), 19-33.
- Gupta, A. K. & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal*, 21, 473-496.
- Hallberg, K. (2000). *A Market-Oriented Strategy for Small and Medium-Scale Enterprises* (IFC Discussion Paper 40). <http://www.ifc.org>.
- Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal*, 12, 83-103.
- Hammer M and J Champy. (1993). *Re-engineering the Corporation*. New York, NY: Harper Business.
- Hansen, M. T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44(1), 82-112.
- Hayek, F. A. (1945). The use of knowledge in society. *The American Economic Review*, 35(4), 521-530.
- Hoopes, D. G. & Postrel, S. (1999). Shared knowledge, "glitches," and product development performance. *Strategic Management Journal*, 20, 837-865.
- Horne, M., Lloyd, P., Pay, J., Roe, P. (1992). Understanding the competitive process: a guide to effective intervention in the small firms sector. *European Journal of Operational Research*, 56(1), 54-66.
- Hu, Y.-S. (1995). The international transferability of the firm's advantage. *California Management Review*, 37(4), 73-88.
- Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science*, 2(1), 88-115.
- Inkpen, A. C. & Dinur, A. (1998). Knowledge management processes and international joint ventures. *Organization Science*, 9(4), 454-468.
- Jensen, M. C. & Meckling, W. H. (1995). Specific and general knowledge, and organizational structure. *Journal of Applied Corporate Finance*, 8(2), 4-18.
- Joglekar, P., Bohl, A. H., & Hamburg, M. (1997). Comments on "Fortune Favors the Prepared Firm." *Management Science*, 43, 1455-1468.
- Johnson HT. (1992). *Relevance Regained*. New York, NY: The Free Press.
- Kim, W. C. & Mauborgne, R. (1998). Procedural justice, strategic decision making, and the knowledge economy. *Strategic Management Journal*, 19, 323-338.
- Kogut, B. & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-397.
- Kogut, B. & Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24(4), 625-645.

- Kogut, B. & Zander, U. (1996). What firms do? Coordination, identity, and learning. *Organization Science*, 7(5), 502-518.
- Kostova, T. (1999). Transnational transfer of strategic organizational practices: A contextual perspective. *Academy of Management Review*, 24(2), 308-324.
- Kravis, I.B. and Lipsey, R.e. (1992). Sources of competitiveness of the United States and of its multinational firms. *The Review of Economics and Statistics* 74(2), 193- 201.
- Krugman, P. (1997). *Pop Internationalism*. Cambridge, MA: MIT Press.
- Kumar, A . Motwani, J. and Douglas,C. (1999). A Quality Competitiveness Index for Benchmarking. *Benchmarking: an International Journal*, 6(1), 12- 21.
- Lane, P. J. & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*, 19(5), 461-477.
- Leonard-Barton, D. (1992). Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development. *Strategic Management Journal*, 13, 111-125.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14, 95-112.
- Levitt, B. & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, 14, 319- 340.
- Lord, M. D. & Ranft, A. L. (2000). Organizational learning about new international markets: Exploring the internal transfer of local market knowledge. *Journal of International Business Studies*, 31(4), 573-589.
- Lubit, R. (2001). Tacit Knowledge and Knowledge Management: The Keys to Sustainable Competitive Advantage. *Organizational Dynamics*, 29(3), 164 – 178.
- Lundvall, B. (1992). *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London, UK: Pinter Publishers.
- Lundvall, B. and Johnson, B. (1994). The Learning Economy. *Journal of Industry Studies*, 1, 23-42.
- Lyles, M. A.,&Schwenk, C. R. (1992). Top management, strategy, and organizational knowledge structures. *Journal of Management Studies*, 29, 155-174.
- Malecki, E.J., Tootle, D.M. (1996). The role of networks in small firm competitiveness. *International Journal of Technology Management*, 11(1,2), 43–57.
- Man TWY et al. (1998). *Conceptualization of SMEs Competitiveness: A Focus on Entrepreneurial Comptencies* (Working Paper) .Department of Management, Hong Kong Polytechnic University.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- Matusik, S. F.,& Hill, C.W. L. (1998). The utilization of contingentwork, knowledge creation, and competitive advantage. *Academy of Management Review*, 23, 680-697.
- McDonough, E. and Griffin, A. (2000). Creating Systemic Capability for Consistent High Performance New Product Development. In U. Jurgens (ed), *New Product Development and Production Networks: Learning from Experience in Different Industries and Countries*. New York, NY: Springer Verlag.
- McGhan AM. (1999). Competition, Strategy and Business Performance. *CaliforniaManagement Review*, 41(3), 74–101, McGraw-Hill, 268–274.
- McKee K and C Sessions-Robinson. (1989). Manufacturing Productivity andCompetitiveness. *Journal of Manufacturing*, 3, 35–39.

- Miller, D. & Shamsie, J. (1996). The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. *Academy of Management Journal*, 39(3), 519-543.
- Miller, D. (1996). A preliminary typology of organizational learning: Synthesizing the literature. *Journal of Management*, 22(3), 485-505.
- Milne, T. and Thompson, M. (1986). The Infant Business Development Process. In M.Scott et al (eds.), *Small Firms Growth and Development*. Farnham, England: Gower Publishing Company Limited.
- Mitchell, W., & Singh, K. (1996). Survival of businesses using collaborative relationships to commercialize complex goods. *Strategic Management Journal*, 17, 169-195.
- Moenart, R. K., & Souder, W. E. (1990). An information transfer model for integrating marketing and R&D personnel in new product development projects. *Journal of Product Innovation Management*, 7(2), 91-107.
- Momaya K. (2000). *International Competitiveness*. New Delhi, India: Hindustan Publishing Co.
- Mowery, D. (1983). The relationships between intra firm and contractual forms of industrial research in American manufacturing, 1900-1940. *Explorations in Economic History*, 20(4), 351-374.
- Mowery, D. C., Oxley, J. E., & Silverman, B. S. (1996). Strategic alliances and inter firm knowledge transfer. *Strategic Management Journal*, 17, 77-91.
- Murths TP et al. (1998). Country Capabilities and the Strategic State: How National Political Institutions Affect MNC Strategies. *Strategic Management Journal*, 15, 113-129.
- Nahapiet, J. & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23, 242-266.
- Nelson, R. R. & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, Massachusetts: Belknap Press of Harvard University Press.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., Takeuchi, H. (1995). *The Knowledge Creating Company - How Japanese Companies Create the Dynamics of Innovation*. Oxford, UK: Oxford University Press.
- O' Farrell, P.N. and Hitchens, D.M.W.N. (1993). The competitiveness and performance of small manufacturing firms: an analysis of matched pairs in Scotland and England, *Environment and planning*, 21(9).
- O'Farrell and DWN Hitchens. (1988). The Relative Competitiveness and Performance of Small Manufacturing Firms in Scotland and the Mid-west Ireland: An Analysis of Matched Pairs. *Regional Studies*, 22, 399-416.
- O'Farrell et al. (1992). The Competitiveness of Business Services Firm: A Matched Comparison between Scotland and the SE of England. *Regional Studies*, 26(6), 519-533.
- O'Farrell, P.N., Hitchens, D.M.W.N. (1988). The relative competitiveness and performance of small manufacturing firms in Scotland and the Mid-West of Ireland: an analysis of matched pairs. *Regional Studies*, 25(5), 399-416.
- O'Farrell, P.N., Hitchens, D.M.W.N. (1989). The competitiveness and performance of small manufacturing firms: an analysis of matched pairs in Scotland and England. *Environmental Planning*, 21(9), 1241-1263.

- O'Farrell, P.N., Hitchens, D.M.W.N., Moffat, L.A.R. (1992). The competitiveness of business services firms: a matched comparison between Scotland and the South East of England. *Regional Studies*, 26(6), 519–533.
- Osterloh, M. & Frey, B. S. (2000). Motivation, knowledge transfer, and organizational forms. *Organization Science*, 11(5), 538.
- Pascale, Tanner Richard and Athos, Anthony G. (1982), *The Art of Japanese Management*, Penguin, Harmondsworth.
- Patel, P. and Pavitt, K. (1987). The elements of British technological competitiveness. *National Institute Economic Review*, November, 72—83.
- Pavitt, K. (1984). Sectoral patterns of technical change; Towards taxonomy and a theory. *Research Policy*, 13.
- Peteraf MA. (1983). The Cornerstones of Competitive Advantage: A Resource-based View. *Strategic Management Journal*, 14, 179–191.
- Piore, M.J., Sabel, C.F. (1990). *The Second Industrial Divide: Possibilities for Prosperity*. New York, NY: Basic Books.
- Polanyi, M. (1962). *Personal Knowledge: Toward a Post – Critical Philosophy*. New York, NY: Harper Torch books.
- Polanyi, M. (1966). *The Tacit dimension*. London, UK: Routledge & Kegan Paul.
- Porter, M. (1985). *Competitive Advantage: Creating and Sustaining Performance*. New York, NY: The Free Press.
- Powell, W.W. (1987). Hybrid organizational arrangements: new form or transitional arrangements. *California Management Review*, 30(1), 67–87.
- Porter M. (1998). *The Competitive Advantage of Nations*. Macmillan Business, 33.
- Prahalad CK and G Hamel. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 68, 79–91.
- Pratten, C. (1991). *The competitiveness of small firms*. Occasional Paper 57, Department of Applied Economics, University of Cambridge. Cambridge, UK: Cambridge Univ. Press.
- Putman, R. D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy*, 61(1): 65-78.
- Ranft, A. L. (1997). *Preserving and transferring knowledge-based resources during post acquisition implementation* (Unpublished Dissertation). The University of North Carolina, Chapel Hill.
- Rivera, M., Dussauge, P. and Mitchell, W. (2001). *Coordination, Creation and Protection: Micro-Mechanisms For Learning From An Alliance*. Jouy- en- Joas, France, HEC Graduate School of Management, 1-34.
- Ross JW et al. (1996). Developing Long-term Competitiveness through IT Assets. *Sloan Management Review*, 38(1): 31-42.
- Schulz, M. (2003). Pathways Of Relevance: Exploring Inflows Of Knowledge Into Subunits Of MNCs. *Organization Science*, 14(4), 440-459.
- Sciberras, E. (1986). Indicators of technical intensity and international competitiveness: A case for supplementing quantitative data with qualitative studies in research. *Research and Development Management*, 16(1).

- Scott, B. R. and Lodge, G. C. (Eds.) (1985). *US Competitiveness in the World Economy*. Boston, Mass: Harvard Business School Press.
- Sharma, B. and Fisher, T. (1997). Functional Strategies and Competitiveness: An Empirical Analysis Using Data from Austrian Manufacturing. *Benchmarking for Quality Management and Technology* 4(4), 286-294.
- Shepherd, D., Silberston, A, and Sirange R. (1987). *British Manufacturing Investment Overseas*. London, UK: Methuen.
- Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic Management Journal*, 20, 595-623.
- Slevin, D.P., Covin, J.G. (1995). New ventures and total competitiveness: a conceptual model, empirical results, and case study examples. *Frontiers of Entrepreneurship Research*, 574-588.
- SME Networking (INLOCO). *Final Report Contract SOE1-CT97-1058* available on www.cordis.lu/improving/socioeconomic.
- Smith S. (1995). World Class Competitiveness. *Managing Service Quality*, 5(5), 36-42.
- Snow, C. C. & Hambrick, D. C. (1980). Measuring organizational strategies: Some theoretical and methodological problems. *Academy of Management Review*, 5(4), 527-538.
- Stoner, C.R. (1987). Distinctive competence and competitive advantage. *Journal of Small Business Management*, 25(2), 33-39.
- Subramaniam, M. & Venkatraman, N. (2001). Determinants of transnational new product development capability: Testing the influence of transferring and deploying tacit overseas knowledge. *Strategic Management Journal*, 22, 359-378.
- Sushil. (2000). *Flexibility in Management*. New Delhi, India: Vikas Publishing House.
- Swann P and M Taghave. (1994). *Measuring Price and Quality Competitiveness—A Study of 18 British Product Markets*. Brookfield, Vermont: Ashgate Publishing C.
- Szulanski, G. (2000). The process of Knowledge Transfer: A Diachronic Analysis of Stickiness. *Organizational Behavior and Human Decision Processes*, 82(1), 9 – 27.
- Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal*, 17, 27-43.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Toletino, A. (2000). *Guidelines for the Analysis of policies and Programmes for Small and Medium Enterprise Development* (ILO Enterprise and Management Development Working Paper –EMD/13/E). <http://www.ilo.org>.
- Tsai, W. & Ghoshal, S. (1998). Social Capital and Value Creation: the Role of Inter-firm Networks. *Academy of Management Journal*, 41(4), 464-476.
- Tsai, W. (2000). Social capital, strategic relatedness and the formation of inter organizational linkages. *Strategic Management Journal*, 21, 925-939.
- Tsai, W. (2001). Knowledge transfer in intra organizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, 44(5), 996-1004.
- Tulving, E. (1985). How Many Memory Systems Are There? *American Psychologist*, 40(4), 385- 398.

- Ulrich, D. (1993). Profiling organizational competitiveness: cultivating capabilities. *Human Resource Planning*, 16(3), 1- 17.
- Van den Bosch, F. A. J., Volberda, H. W., & Boer, M. d. (1999). Coevolution of Firm Absorptive Capacity and Knowledge Environment: Organizational Forms and Combinative Capabilities. *Organization Science*, 10(5), 551-568.
- Verkasslo, M. and Lappalainen, P. (1998). A Method Of Measuring The Efficiency Of The Knowledge Utilization Process. *IEEE Transactions on Engineering Management*, 45(4), 414- 423.
- Von Krogh, G. and Grand, S. (2002). From Economic Theory Toward a Knowledge – Based Theory of the Firm. In N. Bontic and C.W. Choo, *The Strategic Management of Intellectual Capital and Organizational Knowledge*. New York, NY: Oxford university Press.
- WCY. (2002). World Competitiveness Yearbook, IMD Lausanne, Switzerland.
- Weick, K. E. (1991). The nontraditional quality of organizational learning. *Organization Science*, 2(1), 116-124.
- White, D and Griffith, D. (1997). Combining Corporate and Marketing Strategy for Global Competitiveness. *Marketing Intelligence and Planning*, 15(4), 173-178.
- Wiig, K. (1997). Knowledge Management: An Introduction and Perspective. *Journal of Knowledge Management*, 1(1), 6- 14.
- Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisitions, and knowledge exploitation in young technology-based firms. *Strategic Management Journal*, 22(6/7), 587-613.
- Zack, M. (1999). Managing Codified Knowledge. *Sloan Management Review*, 40(4), 45- 58.
- Zahra, S. A. & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-230.
- Zairi, M. (1996). Competition: What Does It Mean? *The TQM Magazine*, 8(1), 54-59.
- Zander, U. & Kogut, B. (1995). Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organization Science*, 6(1), 76-92.