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**STREAM: GENERAL MANAGEMENT**

**MANAGING IN KNOWLEDGE BASED ECONOMIES: MANAGING FOR  
KNOWLEDGE, ABSORPTIVE CAPACITY AND INNOVATION**

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## **MANAGING IN KNOWLEDGE BASED ECONOMIES: MANAGING FOR KNOWLEDGE, ABSORPTIVE CAPACITY AND INNOVATION**

Management processes have evolved to meet changing internal and external environments through different organisational forms, systems and processes. The emerging phenomena of the knowledge-based economy challenges not only the strategic management of a firm but also the understandings and competencies of managers, both individually and collectively.

This paper examines the challenge of managing in the global networked context of the knowledge economy. Using the knowledge based view of the firm and knowledge of management processes, we argue that management in the twenty-first century involves not only the familiar processes of managing tasks, managing others and managing change, but also requires a strategic approach to managing for knowledge, absorptive capacity and innovation.

Key Words: knowledge-based economy, innovation, absorptive capacity

## MANAGING IN KNOWLEDGE BASED ECONOMIES: MANAGING FOR KNOWLEDGE, ABSORPTIVE CAPACITY AND INNOVATION

Increased globalisation and the increasing knowledge intensity of economic activities are giving rise to the knowledge economy (Houghton & Sheehan, 2000). In the trade of both goods and services, it is the relatively knowledge intensive exports that are growing most rapidly. World exports of high technology products grew by 15 per cent per annum between 1985 and 1995, compared to less than 10 per cent for all other goods (Houghton & Sheehan, 2000). The last decade has shown that nations which promote innovation have demonstrated more success than in wealth creation, productivity increases and standard of living than those that don't (West, 2001).

Winning companies have been found to share a set of common characteristics. They operate in fields characterised by high returns, they have demonstrated a high capacity for innovation, they rely on technology and 'brainpower' as a source of competitiveness; and they have shown that they can succeed in global and regional markets (Charles, 1997). Innovative firms develop more extensive external relations with foreign technology suppliers, buyers, local universities and public research institutions than less innovative firms in western economies, and also in Korea (Kim, 1999).

The emergence of the knowledge economy and the competitive performance of innovative firms are central focus for management and this paper is structured as follows. First we outline the knowledge economy and its implications. Second we briefly review literature on managing knowledge, innovation and the absorptive capacity of firms. Finally we offer some broad suggestions for managing in a global world.

### KNOWLEDGE-BASED ECONOMY

Global competition in all major markets between competitors from all major countries is growing. The transformation of the global economy is being shaped by the increasing multinational origin of the inputs to production of goods and services, the growing intra-industry and intra-product nature of world trade and the interdependencies between these elements (Houghton & Sheehan, 2000).

There is general acceptance that the resources of land, labour and money are no longer the decisive forms of resources (Savage, 1996; Sveiby, 1998). Knowledge and the generation of knowledge play critical roles in a firm's competitive advantage and economic performance (Barney, 1991; Grant, 1996; OECD, 1996; Spender, 1996). The focus on the knowledge of a firm applies particularly to the coordination of the firm, where the fundamental task of an organisation is to coordinate the efforts of many specialists and to integrate the knowledge of many different individuals (Grant, 1996).

The knowledge economy is influenced by the diffusion and use of knowledge, as well as its creation. Hence the success of enterprises, and of national economies as a whole will become more reliant upon their effectiveness in gathering, absorbing and utilising knowledge, as well as in its creation. A knowledge economy can be described as a hierarchy of networks, where the

opportunity and capability to get access to and join knowledge-intensive and learning-intensive relations is critical (Houghton & Sheehan, 2000).

The interconnectedness of the knowledge economy provides opportunities for firms to develop linkages to promote inter-firm interactive learning, and for outside partners and networks to provide complementary assets. These linkages provide channels for communication and also new valuable sources of knowledge and increase the potential for innovation. “Relationships help firms spread the costs and risks associated with innovation, gain access to new research results, acquire key technological components, and share assets in manufacturing, marketing and distribution. As they develop new products and processes, firms determine which activities they will undertake individually, which in collaboration with other firms, which in collaboration with universities or research institutions, and which with the support of government” (Houghton & Sheehan, 2000).

The world economy is also comprised of new and different forms of capitalism and companies with international alliances and mergers need strategies for managing across the variety of cultures and institutions. These include the challenges of managing a diverse workforce, with diverse and multiple workplace cultures, in organisational structures that are often project-based or virtual in form. While managers are faced with multiple managerial challenges, we shall limit this paper to focus on some of the strategic issues that managers will face.

Managers and Performance.

“Good managers are the key to a competitive economy” (Karpin, 1995: 10). Managers need to be focused on the businesses, to ensure the firm can sustain its competitive advantage in fast changing environments (Barney, 1991). The firms that seem likely to succeed over time are those that manage the intangible as well as the tangible assets. Managers are the shapers of organisation’s context (Ghoshal & Bartlett, 1994:108) Broadly speaking, managers are expected to manage the tasks, manage others and manage themselves (Wagner & Sternberg 1987) and manage change (Dunphy & Stace, 2000).

The fundamental skill of the manager is to create an exciting and demanding work environment (Bartlett & Ghoshal, 1997, 113), as well as develop values and create an environment of mutual cooperation and trust. The roles of managers at all levels of the organisation have changed.

“At the operating level, managers had to evolve from their traditional role as front-line implementer to innovative entrepreneurs; senior level managers had to redefine their primary role from administrative controllers to developmental coaches, and top-level executives were forced to see themselves less as the company’s strategic architects, and more as their organizational leaders” (Bartlett & Ghoshal, 1997: 95)

Such managers make a difference to organisational strategy as well as implementation. The strategic focus of organisations deals with the use of their internal resources and capabilities as well as their strategic positioning and the resource based view of the firm has largely developed our understanding here. The resource-based approach suggests that firms should position themselves based on their unique, valuable and inimitable resources and capabilities rather than the products and services derived from those capabilities. Competitive advantage based on

resources and capabilities, is potentially more sustainable than that based solely on products and market positioning.

However in a knowledge based economy, knowledge is a source of competitive sustainable advantage. Of particular importance then, is the strategy that firms develop in managing for knowledge and innovation. For the purposes of definition we will discuss these processes separately although in reality, there is a large degree of overlap. The focus on innovative and entrepreneurial behaviour and organizational leadership requires competencies in managing for innovation, commitment and knowledge generation. We first discuss approaches to managing for knowledge generation followed by managing for innovation.

### MANAGING FOR KNOWLEDGE

Knowledge can be defined broadly or narrowly. We use a broad definition, where *“Knowledge is a mix of experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It often becomes embedded in documents, organizational routines, processes, practices and norms”* (Davenport & Prusak, 2000: 5).

The challenges and possibilities of knowledge vary with the firm and its strategic position as well as the industry sector. Knowledge as a sustainable competitive advantage or the way an organisation manages its knowledge is strongly related to its business strategy (Zack, 1999). Organisations may have a range of knowledge processes that they use both to exploit their knowledge and to explore and extend their knowledge. Beginning with knowledge mapping exercises, how an organisation approaches its knowledge processes can be described as exploitation, such as benefiting from existing knowledge and exploration, in terms of generating and creating new knowledge. The primary sources of knowledge can also be examined as both internal and external sources (Zack, 1999).

Knowledge management is not a new process for many firms. Practices such as passing on information to others, sharing their insights with others for the mutual benefit of their co-workers, learning to apply new technologies, and ongoing skill development through apprenticeships has been the backbone of many organisations. What has changed has been a conscious approach to knowledge management by the CEO. *“The need to examine the knowledge underlying their businesses and how that knowledge is used and the rise of networked computers has made it possible to codify, store, and share certain kinds of knowledge more easily and cheaply than before”* (Hansen, Nohria and Tierney, 1999).

Firms use different strategies for managing knowledge and many use a combination of strategies. Some professional services firms use *“a codification strategy, focusing on the computer, where knowledge can be carefully codified and stored in databases where anyone in the company can use it. Others have a personalised strategy, where knowledge is closely tied to the person who developed it and is shared mainly through direct person to person contacts, where the chief purpose is to communicate knowledge not to store it”* (Hansen, Nohria and Tierney, 1999:107).

The importance of managing for knowledge is well known where, 'dealing with knowledge creation transfer and exploitation will be increasingly critical to the survival and success of corporations and societies' (Hedlund & Nonaka, 1993). The ability of an organisation to make available knowledge from one unit to another and the take up of knowledge has been found to contribute to organizational performance although the effectiveness of this varies among organisations (Szulanski, 1996). Researchers in one R&D organisation of argue that an organisation's innovative advantage lies in its ability to manage the flow of knowledge across its constituent communities (Brown & Duigood, 1999).

Many large companies such as General Motors Corporation, Citicorp, Intel and US Airways expect to achieve tremendous benefits by transferring knowledge acquired at one establishment to another (Argote, 1999). Effective sharing within organisation has been researched in areas of product development and joint ventures and alliances (Powell, Koput, Smith-Doer, 1996) and the most common description is the transfer of knowledge between individual business units. Much of the research concerning knowledge transfer has been carried out in organisations that make things, or in production settings (Argote, 1999). However it is generally assumed that the 'transfer of knowledge' is important in all organisations concerned with the generation of knowledge and the application of new knowledge in all sectors of a knowledge society.

Organizing for knowledge in new areas requires teams that are adequately prepared for the tasks, framing of the problem and help for people to organize themselves to answer the critical questions they have identified. Organisational design for knowledge implies the design of organizations must be non-hierarchical; the people must be capable of working with others who need that knowledge in order to complete their thinking about an interdependent task. Knowledge must be widely shared and accessible; organization must involve people with knowledge in goal setting and integration activities. Organizations must be designed to encourage, support and reward learning (Katz, 1997).

The best outcome for managing knowledge is the *embeddedness of knowledge processes*. "Knowledge management should become part of everything an organisations does and it should be everyone's job" (Davenport & Prusak, 2000). What needs to happen at the organisational level is the monitoring of knowledge strategy with business strategy with checks on both internal and external knowledge processes. In essence, a firm's knowledge management strategy should reflect the company's competitive strategy with an understanding of what customers expect from the company and how the knowledge that resides in that company adds value for its customers (Hansen et al., 1999).

## MANAGING FOR INNOVATION

Organizational innovation is not a straightforward process, although there are some known processes that may be useful. The relationship between an organisation's management and its performance on innovation is complex. There are conflicting perspectives on what is required, few prescriptions for organizational innovation and as yet, no cookbook approach.

Innovation is variously defined as ‘new products, new processes, new services’ and new organisational structures. Innovation is differentiated from invention and involves application or commercialisation of the created product or process or production on larger scale than one item. Managing for innovation is not an extra to an organisation’s strategy. Instead it is intrinsic to the strategy, positioning and competitiveness of the organisation. The strategic intent of the organisation and its value proposition are centrally important and shape the focus. For example, is the organisational objective to produce reliable products at reasonable prices? Or does it to provide customised products or services to meet specific needs?

From a review of the literature on innovation, it is generally agreed that a first step is to create an environment where innovation is valued and required. Previous research suggests that innovation can flourish through creating a climate for experimentation and an atmosphere of continuous renewal (Leonard Barton, 1995). Other factors include an ability to create a community in the workplace with a clear common purpose vision of where the organisation is going, with articulation of values.

The changing nature of the market and the notion of ongoing change, and the creation of a knowledge society requires an ongoing focus on innovation. “We have learned to innovate because we cannot expect that the accumulated competence, skills knowledge, product services and structure of the present will be adequate for very long” (Drucker, 1992: 273). Innovation implies improving on existing products and processes, finding new ways and also means abandoning the old. Drucker suggests that organisations should conduct a ‘zero-based audit’ and every three years systematically put every aspect of the company on trial: every product, service, technology, market, and distribution channel. He suggests this is particularly important in the service sector (Drucker 1992).

Specifically, organizations need to create and sustain conditions so that people want to innovate and so that people can innovate. Both components are necessary and “organizations that neglect either aspect place their innovative capacity at risk” (Angle, 1989:165). There are two broad classes of conditions relevant to innovation: *facilitating conditions* (so that people can innovate) and *motivating conditions* (so that they are willing to try to innovate) (Angle, 1989). Ability like motivation may reside partly in persons and partly in contexts: the ability to create and to innovate can result both from what the person brings to the situation and what he or she encounters there.

Factors facilitating or inhibiting the occurrence of innovation and process research can be found in the sequence of events and decisions in groups (King & Anderson, 1990). The social psychology of innovation literature identifies the antecedents of innovation as (1) vision, an idea of a valued outcome which represents a higher order goal and motivating force at work, and it is important to be negotiated and shared and valued; (2) participative safety such that involvement in decision making is motivated and reinforced while occurring in an environment which is perceived as interpersonally non-threatening; (3) climate for excellence; (4) norms of and support for innovation (West & Farr, 1990).

Managers have particular roles in encouraging innovation. In *Managing for the Future*, Drucker (1992) suggests that managers require three key skills to increase innovation in firms: (1) Management by going outside, perhaps an extension of management by walking around, but not



limited to inside the company; (2) find out what information you need to do your job - people must learn to take responsibility for their own information needs; (3) build learning into the system - learning must be continuous. "The knowledge of those who are five years out of school is by definition obsolescent. Every manager needs to go back to school be confronted with diversity and challenge" (Drucker 1992: 280).

Certain factors which enhance innovation have been identified. A key differentiating factor of highly innovative firms was their ability to create a sense of community in the workplace with a family feeling, a sense of trust and caring (Judge, Fryxell & Dooley, 1997). Highly innovative units behaved as focused communities while less innovative units behaved more like traditional bureaucratic departments.

Within each firm, critical work functions in the innovation process include idea generation, entrepreneuring or championing, project leading, gatekeeping, sponsoring or coaching (Roberts and Fusfeld, 1997). While 70 to 80% of technical effort is routine problem solving about 20 to 30% is unique and critical (Roberts & Fusfeld, 1997: 277). These critical functions in the innovation process have been mapped for personal characteristics and organisational activities.

Four types of activities that create and sustain capabilities include creative problem solving, implementing innovative methodologies and operational tools, experimentation, and importing knowledge (Leonard-Barton, 1995: 261). Diversity of disciplines and backgrounds are valued where "the innovation occurs at the boundaries between mind sets, not within the provincial territory of one knowledge and skill base" (Leonard-Barton, 1995: 64). Creating a climate for experimentation can be enhanced through separating 'intelligent failure' from unnecessary failure in both language and managerial response and recognising the role of failure in building knowledge (Leonard-Barton, 1995).

Managers need to adapt their approaches to promoting innovation to different cultures (Shane, 1997: 296). "Managers who seek to promote innovation within culturally diverse forces within a single country promote innovation in ways that conform to the preferences of the people they are trying to persuade" (Shane, 1997: 302).

In summary, innovation cannot be directly created. Indeed if it could, it may appear that all our problems would be solved, when in fact, if creating innovation was so simple we would be much better at it. We do know some of the important common ingredients in the development of innovations – individuals, teams and organisations. We need to recruit motivated individuals, provide some direction, space, and some competition and assist them form constructive ways of working with others.

We need to create an environment in which innovation is likely to occur with an atmosphere of continuous renewal and a climate for experimentation. Organisations that find ways of preventing their core competencies from becoming core rigidities and promote continuous learning from successes as well as failures.

## ABSORPTIVE CAPACITY

Critical to both innovation and knowledge generation is the notion of absorptive capacity, not of individuals, but of organisations and their sub-units. This notion describes the ability of organisations to recognise the significance of new opportunities (Cohen & Levinthal 1990). Absorptive capacity enables firms to recognise the value of new external information, assimilate it, and apply it to commercial ends. It makes the organisation more proactive, with a high sensitivity to emerging technological opportunities, seeking out new opportunities to exploit and develop its technological capability. Absorptive capacity also enables the firm to predict more accurately the nature and commercial potential of technological progress (Cohen & Levinthal, 1990).

Absorptive capacity is composed of relevant prior knowledge related to the task at hand, and intensity of efforts (Kim, 1999). Accumulated prior knowledge increases the ability to make sense of, to assimilate and to use prior knowledge. Absorptive capacity is acquired and accumulated through interactive mechanisms, externally by 'boundary spanning' and internally by learning from experience (Kim, 1999). Kim contends that boundary spanning shows how existing absorptive capability enables firms to exploit external information, including substantive technical knowledge, and awareness of where useful complementary expertise is available outside the organisation. Organisations are located within a context of a larger network of firms where inter-firm relationships often based on relationships between individuals are crucial to success (Hage, 1999).

**Conclusions and Future Work.** Organisations in the western world are being destructured and delayed into hubs and webs, and increasingly using projects to maintain flexibility and accountability. Managing in this global context requires managing across national as well as professional boundaries, and management of the networks and interconnected elements of the knowledge economy. Managers need multiple perspectives and competencies to manage the change, innovation and knowledge generation of individuals and teams that shape the firm's absorptive capacity and dynamic capabilities.

Future work will discuss the specifics of organisation systems and human resource management practices to facilitate the management of knowledge, innovation and absorptive capacity necessary for sustainable competitive advantage in a knowledge economy.

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