The knowledge needs of innovating organisations.

Abstract

The sustainable management of innovation is perhaps the single most vital element of executive work in today's business environment. This has driven knowledge management theorists to revitalise interest in the concept of 'competency'. However, this theoretical domain continues to be fragmented by definitional debate. At a micro-level of analysis, Human Resources Management theorists have embraced the idea of managerial competencies, resulting in the elaboration of frameworks and standards of performance for the targeted development of individual knowledge. By contrast, at the macrolevel the Strategic Management literature has focussed on developing new concepts of competition and cooperation that emphasise organisational knowledge as the driver of strategic change. In this context, competence-based competition implies that competitive advantage is bestowed by an organisation's unique combination of core competencies.

This definitional debate is a major obstacle to the development of an integrated perspective on competency and the knowledge needs of innovating organisations. This conceptual article asserts that, since innovation involves a learning process, it is necessary to develop process-based theory rather than the static categorisations that currently dominate thinking in this area. Drawing on theories from the field of learning, the article proposes a three-dimensional framework of knowledge-based competencies that are interlinked and meaningful across levels of analysis.

Introduction

Innovation has always been a defining feature of human society, never more so than today when the creation and commercialisation of new knowledge provides the vital underpinnings of the emergent knowledge society. But innovation, especially if it is to be sustained over time, is an extraordinarily complex, even chaotic, process that has taxed the thinking power of scholars and practitioners alike (for example, Quinn, 1992; Cheng & Van de Ven, 1996). The field of knowledge management, which is broadly concerned with the competencies, capabilities and learning processes that comprise an organisation's knowledge assets, takes a keen interest in sustainable innovation. In this context, competency is recognised as a key component of the intangible value of any knowledge-based company as well as being the means of building intellectual capital (Teece, 2000). So the reasons for gaining a greater understanding of the competencies associated with innovation are manifold and pressing, but progress in the development of new theories and practices is disappointingly slow.

This article is a conceptual piece that endeavours to raise some issues for further consideration. It argues that the fragmented thinking that dominates contemporary theorising presents a major obstacle to grappling with the complexities of innovation. By focussing on static categories of knowledge and skill, we are missing dynamic details of the unfolding processes of innovation and learning. The discussion begins with a critical analysis of the literature on competency that demonstrates the effects of fragmentation. The literature in this area is split between the human resource management view, which is motivated by the desire to improve individual skills through training, and the strategic management view, which seeks to enhance the competitive advantages of organisations. This separation between micro- and macro-levels of analysis is not helpful in trying to understand the knowledge needs and learning behaviours of organisations because it cuts across the process of knowledge construction, eliminating th e potential for dynamism. In response to this deficiency, the article proceeds to define a dynamic model of knowing that is capable of integration across levels of analysis.

The Concepts of 'Competency

'Competency' as a technical term was probably first introduced to the psychology literature when McClelland published an article in 1973 entitled "Testing for competence rather than for intelligence". In it he argued that traditional tests of academic aptitude and knowledge content in fact predict neitherjob performance nor success in life (McClelland, 1973). Thus began the quest for theory and tools that could reliably predict effectiveness in the workplace. It was Boyatzis (1982) who first drew together a comprehensive array of data that had been collected in the USA using the McBer and Company 'Job Competence Assessment' method. He ultimately identified 21 generic characteristics of effective managerial performance which were clustered as follows:

* Goal and Action Management Cluster efficiency orientation; proactivity; diagnostic use of concepts; concern with impact.

* Leadership Cluster self-confidence; use of oral presentations; logical thought; conceptualisation.

* Human Resource Management Cluster use of socialised power; positive regard; managing group processes; accurate self-assessment.

* Directing Subordinates Cluster developing others; use of unilateral power; spontaneity.

* Focus on Others Cluster self-control; perceptual objectivity; stamina and adaptability; concern with close relationships.

* Specialised knowledge; memory.

Spencer & Spencer (1993) subsequently extended Boyatzis' work by defining generic competency models for technicians and professionals, salespeople, helping and human service workers, managers, and entrepreneurs. Competency modelling became widely used as an analytical tool (for example, Dalton, 1997; Mirabile, 1997),

particularly in the UK, where mounting evidence pointed to the inadequate quality and quantity of management education (Holman & Hall, 1996). Indeed, the popularity of these models was such that, during the 1980s, no self-respecting management consultant could afford to exclude competency analysis from his or her toolbox.

During the 1990s, however, enthusiasm for this approach to competency has waned somewhat, due in large part to the growing confusion about what the word actually means. Boyatzis originally defined competency as:

"an underlying characteristic of a person ... [that] may be a motive, trait, skill, aspect of one's self-image or social role, or a body of knowledge which he or she uses. The existence and possession of these characteristics may or may not be known to the person." (1982: 21)

But the all-encompassing nature of this definition provides little in the way of discrimination and leaves great potential for confusion with already ambiguous concepts such as traits or skills. To further confound the issue, a variety of terms are used to express the same, or a very similar concept (for example, Kochanski, 1997), leading to the criticism that 'competency' is simply unnecessary jargon (for example, Randell, 1989). Little wonder then, that commentators have been scuttling for their dictionaries in order to gain further insight.

Semantic ambiguity is not the only source of criticism levelled at the micro approach to competency. It will be obvious from the list (above) of Boyatzis' competencies that they are very much open to different interpretations depending on the style of language that is used within an organisation. For instance, in a hospital case study Holman & Hall reported that:

"All of the participants initially found the [instrument] language difficult to interpret, understand and make meaningful to themselves. In their view the language used appeared alien and words such as operations, customer and subordinate were marked out as being clearly inappropriate." (1996: 195)

An even more glaring example is offered by Martin (2000), who points out that Eastern and Western management practices tend to interpret the meaning of competency quite differently. In fact, the quest for a 'universal' or generic set of individual competencies has been largely abandoned because of the perceived narrowness and inflexibility of this approach; an approach that encourages the ticking of boxes in order to 'prove' competence, rather than providing a tool for self-development and learning. Hamlin & Stewart (1990:27) quote John Burgoyne and others at the Centre for the Study of Management Learning at the University of Lancaster who say that this approach is "misconceived" because the "listing of separate competences at best can only simply illuminate different facets of what is at the end of the day a complex whole".

Perhaps the most profound criticism, however, is that the whole micro-level concept of competency is only relatively weakly theorised. Although there is an abundance of empirical data showing correlations between competencies and effectiveness, there is a dearth of theory to predict these relationships. Furthermore, fundamental concepts such as 'effectiveness' and even 'management' are only vaguely defined and there is

certainly little consensus as to their meaning. There can be little hope that this definitional miasma will ever provide the necessary conditions for the development of good theory and practice.

By contrast, the macro-level perspective on competency is conceptually and theoretically rich. The theoretical foundations for this approach lie within the resource- based view of strategic management (for example, Barney, 1991, 2001), which argues that competitive advantage is a function of the resources that an organisation can marshal. Prahalad & Hamel (1990) coined the term 'core competence' to define a critical resource that reflects the collective learning and embedded knowledge in an organisation. They suggest that, by definition, a company should be able to apply its core competences across a widely diverse set of markets; that core competences should contribute significantly to the benefits perceived by customers when they buy the final product (or service); and that core competences should be difficult for competitors to imitate. The core competence concept can also be linked to other contemporary ideas in the organisational literature including the learning organisation (Senge, 1992), intelligent e nterprises (Quinn, 1992), strategic intent and stretch (Hamel & Prahalad, 1989), and the knowledge-creating organisation (Nonaka, 1991).

This macro approach has struck a chord with many academics and practitioners who, in the face of new and evolving industry and organisational forms, have become frustrated by the limited explanatory power of conventional strategic management theory. The major criticisms of the macro-view of competence relate primarily to the fact that this is still a developing field of scholarship and there is only limited empirical support. While conceptually rich, a number of scholars have pointed out the underlying circular reasoning contained in the resource-based view (Mosakowski and MacKelvey, 1997; Hubler, 1998; Priem and Butler, 2001), namely that successful firms flourish because they have unique resources, where resources are defined as strategic strengths. Thus a firm has strategic resources because it is successful and is successful because it has strategic resources.

These criticisms aside, Sanchez & Heene (1997) have built upon the Prahalad & Hamel concept of core competence by integrating internal organisational and external competitive dynamics. In stark contrast to the micro-level competence approach described above, these writers have put enormous effort into the development of a conceptually grounded, logically consistent vocabulary to define the relevant concepts. They define organisational competence as:

"an ability to sustain coordinated deployments of resources in ways that contribute to achieving organisational goals" (Sanchez, Heene & Thomas, 1996: 8).

This definition necessarily locates knowledge as the primary driver of organisational competence (Magalhaes, 1998). Building from this position, von Krogh & Roos (1995) suggest that the two key components of competence are knowledge of a specific nature, and a particular task to be achieved. Consequently, in their view competence can be meaningful only in a "specific knowledge-task context". Interestingly, Hamlin & Stewart (1990), although they were working from the assumptions of the micro-level of competency analysis, also found that the ma of identifiable managerial competencies are task specific rather than universal. This,

then, suggests that a more holistic definition of competency might be derived from a focus on the actions associated with specific tasks.

Table 1 summarises my argument so far. The issue is that the notion of 'competency' has been appropriated and given different meanings by two quite distinct disciplinary areas, namely human resource management and strategic management. These disciplines are separated not only by the level of analysis at which each operates, but also by their distinct theoretical and methodological foundations. Each discipline offers valuable insights, but the differences between them create definitional confusion as well as barriers to the development of a truly integrated understanding of competency. However, both approaches share a common focus on process, which may provide a foundation for theoretical integration. I explore this possibility further in the following sections.

Relating Competency to Knowledge Management

Competency lies at the very heart of knowledge management, so it is hardly surprising that the definitional debates described above are still very much in evidence in the knowledge management literature. On one hand, writers working at the micro-level are concerned with individual skills and experience in the context of the human resource issues that arise in knowledge management (for example, Martin, 2000; Nadler and Shaw, 1995). On the other hand, there is a burgeoning macro-level literature, called the knowledge-based view of the firm, that locates knowledge as the primary organisational resource determining strategic advantage (for example, Conner and Prahalad, 1996; Grant, 1996; Kogut and Zander, 1996). The recently emerging notion of dynamic capability (for example, Zollo & Winter, 2002; Eisenhardt & Martin, 2000) does little to alleviate this tension, grounded as it is in the macro-level, Strategic Management literature.

Bridging between the micro and macro levels of analysis is clearly essential if we are to advance our thinking about knowledge management. In my view, the principal obstacle that must be overcome in order to bring about such an integration is our preference for thinking in terms of fixed categories of knowledge rather than dynamic processes of learning. So for instance, we frame competency as knowledge, skills and resources rather than knowing, skilling and resourcing. And yet we readily acknowledge that competence is an evolving phenomenon that is constantly under construction by individual players who interact within ever-changing contexts. Recognising this, an organisation's strategic positioning then becomes a matter of continuously honing its technological, organisational and managerial processes (for example, Teece, Pisano and Shuen, 1997). On the basis that competency implies both knowledge and task specificity (von Krogh & Roos, 1995), competencies must evolve through the complex interaction between i ndividual knowledge and task context. This dynamic perspective provides a new process-based way of exploring the competencies associated with knowledge management.

A Competency Framework for Knowledge Management

To better understand knowledge management competencies it is helpful to make some distinctions between different ways of knowing. Kim (1993) draws on experiential learning theory to suggest that learning encompasses 'knowing how', which is about

skills and job related knowledge, and 'knowing why', which is knowledge of the beliefs and values that shape identity. He argues that the interaction of both forms of knowing provides the essential connection between thought and action. Kim's two-dimensional model may be further extended by drawing on the notion of socially situated learning (Brown & Duguid, 1991; Lave & Wenger, 1991). From this perspective, learning is a social activity that takes place within a participative environment. Thus the interaction between people leads us to a third knowing dimension, 'knowing whom'. Each of these three dimensions, knowing why, knowing how and knowing whom, may be seen as a competency that can be elaborated across multiple levels of analysis. Together they provide a compr ehensive framework to guide understanding and development of the learning competencies that contribute to sustainable innovation. Similar models have also been applied in other knowledge domains (for example, Defillippi and Arthur (1994) on careers; Quinn, Anderson and Finkelstein (1996) on organisational intellect).

The dimensions of this framework are concerned with distinct, but interdependent aspects of knowing. Knowing why is potentially the most complex of these three dimensions because it is concerned with the underlying values that shape individual and organisational identity. More often that not, these values are unconsciously held, and therefore difficult to surface for analytical purposes. A further complication is that, because of their socially constructed nature, individual values are inevitably influenced by organisational values, which in turn are a reflection of, amongst other things, the values of some, often specific, individuals (for example, leaders).

The features of the knowing why dimension include considerations of purpose, direction and vision. These value-based issues are reflected in leadership/followership styles and also the creativity of individuals. In terms of Boyatzis' (1982) characteristics, knowing why is most strongly represented by the Goal and Action Management, and Leadership Clusters. At the macro-level, knowing why is concerned with the governance processes and culture of organisations. The wider environment within which a company operates will also have an impact on the values espoused by its members. For instance government policies inevitably influence the business culture of a nation.

Knowing how is the dimension that fits most readily into the existing competency literature. For example, it is a consistent thread running through all of the characteristics identified by Boyatzis (1982). Knowing how is concerned with the knowledge, expressed as skills and experience, that is relevant to an organisation's goals, where relevance is determined by the related knowing why dimension. Skill is very much associated with the micro-level of analysis, but equally, at the macro-level this dimension is reflected in the processes and routines that have become embedded as organisational systems. Knowing how is also linked to the what, when and where of resources management. Having, or being able to access, the right material, financial, knowledge and people resources at the right time is a critical competency for effective innovation.

The final dimension, knowing whom, is closely associated with the literature on networking (for example, Nohria & Eccles, 1992) in that it is related to the inter-connections between people. These connections may be intra-firm, as represented by team dynamics, or extra-firm in the form of market or other external interactions.

Networking involves individual skills in relationships and inter-personal communication as reflected especially in Boyatzis' (1982) Human Resources Management and Focus on Others Clusters. At the organisational level, the knowing whom competency is represented by information systems for sharing knowledge about network connections.

These three processes of knowing provide a potentially much richer means of exploring the competencies required for sustainable innovation. Knowing why guides us to identify the relevant knowing how, that is, the skills that we require. This in turn directs us towards the appropriate knowing whom, where communities of learning act to socialise us and shape the reasons (knowing why) for our quest for knowledge. Knowing why, knowing how and knowing whom are, therefore, interdependent and together they create a balanced model of the learning competencies needed by innovating organisations (see Figure 1). If organisational analysis identifies a deficiency in one or more of these knowing dimensions, this then points to the need for further learning.

Discussion and Implications for Knowledge Management

The knowing why, knowing how, knowing whom framework has several advantages for the analysis and development of innovation competencies. Firstly, it effectively accommodates both the micro-and macro-levels of analysis as they are reflected respectively in the human resource management and strategic management literatures. The theme that integrates these levels is learning, which on one hand is resident within the minds of individuals, but on the other hand is embedded in organisational routines and systems. Thus knowledge can be seen to exist at personal, inter-personal, group, organisational and societal levels, so any theoretical perspective that explicitly eliminates any of these levels of analysis will inevitably be limited.

The second advantage of the framework is that the three dimensions are interdependent, and together they provide a much more holistic view of competency than the current fragmented literature. Quinn et al (1996) note with alarm that the primary focus of most occupational training expenditures is in the area of facts (know-what), whereas it is the skill in applying these facts (know-how) that is all important for a sustainable future. The same predicament is equally evident in knowledge management. Unless knowledge management systems can move towards providing an appropriately balanced view of all three knowing dimensions, then the result will be nothing more than a predictable mediocrity that fails to address the real needs of innovation and knowledge management.

Finally, the framework has simplicity and elegance in its favour. The concepts of knowing why, knowing how and knowing whom are already in common use, and as such, have immediate application in practical situations. However, it would be fallacious to assume that the framework is trivial. By weaving the three threads together, a comprehensive tool is defined for the exploration and analysis of innovation competencies.

In conclusion, this triptych of learning competencies offers a new perspective that has the potential to overcome the dysfunctional divisions that currently fragment the knowledge management field. It reframes competency as a dynamic process, of

learning rather than a static stock of knowledge. As such, it presents a radical challenge to the models that currently dominate the theorising of knowledge management.

Table 1

Summary Comparison of Two Views on Competency

	Human Resource Management	Strategic Management
Level of Analysis	Micro	Macro
Location of Knowledge	The Individual	The Organisation
Type of Knowledge	Skills & Experience	Intellectual Capital
Theoretical Objective	Workplace Effectiveness	Competitive Advantage
Development Focus	Management Education	Strategic Positioning

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