



THE KNOWLEDGE FIRM BUSINESS CASE FOR DIVERSITY MANAGEMENT

Programme for the Practice of Diversity Management

Department of Immigration and Multicultural Affairs in cooperation with the
Australian Centre for International Business

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PROGRAMME FOR THE PRACTICE OF DIVERSITY MANAGEMENT

The Programme for the Practice of Diversity Management is a collaborative arrangement between the Department of Immigration and Multicultural Affairs (DIMA) and the Australian Centre for International Business (ACIB) funded through DIMA's Productive Diversity Partnership Programme.

The mission of the Programme for the Practice of Diversity Management is to meet the practical needs of business by developing a business case for productive diversity, providing business models for diversity management, and creating toolkits and checklists for assessing diversity.

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

Firms are becoming increasingly aware of the importance of knowledge as a source of competitive advantage, and are seeking strategies and structural changes that will improve their learning and knowledge management capabilities. Work groups must generate and develop new concepts in a nurturing environment. Work groups with a greater mix of cultural backgrounds, mental models, and experience and functional levels will, when appropriately managed, generate more innovative products and services.

2.0 DEFINING AND EXPLORING THE KEY CONCEPTS

2.1 Information

Information is generally described as a flow of messages or meanings.

2.2 Knowledge

Knowledge can be categorized in a variety of ways: explicit and tacit; embrained, embodied, encoded, embedded and encultured; and conscious, automatic, objectified and collective. Knowledge may reside solely within an individual, may be shared, or may manifest itself within the organization.

2.3 Learning

Learning may occur at an individual or an organizational level. Learning is path dependent, may be incremental and cumulative, or it may involve a dramatic re-evaluation of existing knowledge and reconfiguration of underlying principles and routines. The aim of the knowledge firm is to harness employee and organisational learning such that the organisation benefits and the learning represents positive change to organisational routines and strategies.

2.4 Knowledge creation and innovation

Crucial to a firm developing a knowledge advantage is the continual expansion and improvement of its knowledge stocks. An innovating firm will develop new knowledge and ideas into marketable goods or services, or organisational changes that improve efficiency. The aim of a knowledge firm is to create and nurture an environment where innovation is expected, respected and rewarded.

2.5 Knowledge Dispersion

Crucial to effective innovation is the transition of an idea from the source individuals or group to acceptance and implementation by other members of the organisation. Appropriate mechanisms to disperse knowledge must be implemented and managed.

2.6 Conclusion – What is a Knowledge Firm?

A learning organisation or knowledge firm endeavours to find the most efficient mechanism for ensuring sufficient knowledge is shared among workers. Knowledge creation and innovation should be an explicit focus of the organisation.

3.0 THE KNOWLEDGE FIRM AND COMPETENCIES

Learning and knowledge is compatible with the underlying principles of new institutional theories of the firm.

3.1 The Strategic Management Model of the Firm

Recent research on the firm focuses on how firms continuously create and renew competencies, which in turn lead to competitive advantages. The key to firm success is the unique configuration of generic know-how into firm-specific competencies.

3.2 Core capabilities, competencies and resources

Knowledge brought to the firm by employees and managers, and the knowledge created and retained within the firm, all represent resources to the firm. Firms combine factors of production, resources and capabilities to create competencies. These competencies are key to the firm's competitive advantage over its rivals.

[3.3 The conceptualisation of learning within this framework](#)

The new institutional approach views knowledge and learning as distinguishing factors in the development of firm capabilities. The firm's administrative history creates an organisational infrastructure of processes and routines that shape the learning of the organisation. Codified and tacit routines regulating group interaction are capabilities, more or less unique to the firm and may represent competencies.

[3.4 Knowledge as a resource](#)

Knowledge is a resource for an organisation if it is difficult for other organisations to replicate or acquire. Tacit knowledge, imbedded within individuals or routines, will be harder to replicate than explicit knowledge.

[3.5 Learning and innovation as capabilities and core competencies](#)

Firms successful in generating new knowledge, learning from day-to-day experiences and developing new products, services or organisational practices may have capabilities or competencies in learning, knowledge creation or innovation. Such capabilities may represent a core competency.

[3.6 Developing a competitive advantage from knowledge and learning](#)

Some firms derive an advantage from their learning and knowledge management. Such organisations will have information processing and innovation competencies that provide them with advantages. These knowledge firms retain staff and harness their knowledge and learning capabilities more successfully than other firms in their industry.

[3.7 Diversity as a resource](#)

The demographic make-up of a firm's workforce – its diversity – if managed appropriately can also represent a resource to the firm. The employees may represent a unique combination of skills, experiences and attributes that is not easily replicable or appropriable.

[3.8 Diversity management as a core capabilities or competency](#)

Diverse work teams, when managed well, will operate at a more productive and efficient level than comparable homogenous groupings. Such diversity management capabilities are not commonplace, and must compete with many other competencies within the firm to be a core competency. Firms must identify how their diversity can feed into existing core competencies, and thus contribute to increased competitive advantage. Firms that derive a competitive advantage from their knowledge may investigate how they can better utilise their diversity to improve their knowledge resources and learning and innovation capabilities.

[3.9 Developing a competitive advantage from diversity management and knowledge](#)

Diversity in the workplace should lead to more innovative outcomes. The interaction of employees, and the associated managerial policies and practices may represent a competitive advantage for some firms.

[3.10 Summary of Conceptual Framework](#)

Firms may have core capabilities related to knowledge management and/or diversity management. All firms need capabilities in knowledge management to compete with rivals.

4.0 INTERNAL STRATEGIES AND THE KNOWLEDGE FIRM

A firm seeking to develop and maintain knowledge-related capabilities and potentially gain a competitive advantage from learning and innovation will need to adopt and implement appropriate internal strategies.

[4.1 Senge's Five Disciplines](#)

Senge (1991) identifies five disciplines that he believes can revolutionise business and provide significant competitive advantages: systems thinking, personal mastery, managing mental models, shared vision and team learning.

[4.2 Learning coordination](#)

Learning is a process that needs to be guided and coordinated. Coordination requires a clear understanding of the goals of the organisation. These goals need to be established across the organisation and communicated to all employees. The aim of coordination is to ensure that new knowledge is not lost, that there is not unnecessary duplication of learning efforts, and to direct learning towards the organisation's goals. A learning or knowledge manager will assist this process.

[4.3 Internal communications](#)

Learning is of no use to the firm if it is not communicated in some fashion. Adequate information needs to reach the appropriate parties in a useable and relevant format. Strategies include information management tools, and knowledge sharing through workshops, increased interdepartmental interaction and staff rotation.

[4.4 Resource allocation processes](#)

The availability of resources, in particular capital, has been shown to have a large influence on innovation levels. Levels of funding need to be directed towards pure research such as R&D divisions or centres, and to general learning activity. Current funding and reward methods may need to be re-evaluated.

[5.0 ORGANISATIONAL STRUCTURES AND THE KNOWLEDGE FIRM](#)

[5.1 Level of decentralisation](#)

Decentralised organisational structures, in which less authority and decision-making is concentrated at the top of the organisational hierarchy are generally seen as more effective learning and innovating environments. However, the positives of centralised knowledge and information management channels should not be ignored.

[5.2 Innovation centres or reservations](#)

Typical corporate structures, while well-suited to operational efficiency, may not be effective environments for nurturing new ideas and innovation. Firms should overlay a new organisational form - the organizing structure. This includes new roles - orchestrator, sponsor and idea generator - and the establishment of reservations. Deliberate attempts at innovation are treated differently from day-to-day operational activities.

[6.0 WORK DESIGN AND THE KNOWLEDGE FIRM](#)

[6.1 Team and group work](#)

Collaborative work groups should be embraced. Whether it be an R&D team who generate and hone an idea, the management group who chose to fund and champion the project, or the production team who implement the final innovation, the process is overwhelmingly group driven. The teams should be empowered to a level where they can develop ideas with sufficient autonomy.

[6.2 Quality circles](#)

Quality circles are an excellent example of a work team dedicated to learning and knowledge creation. Organisations with successful quality circles are on the path to successful knowledge management.

[6.3 Just-in-Time](#)

Just-in-Time (JIT) inventory management and production involves excellent knowledge management.

[7.0 DIVERSITY AND THE KNOWLEDGE FIRM](#)

The knowledge firm seeks to optimise the outcomes of internal employee interaction, particularly within workgroups. This includes diverse workgroups.

[7.1 Diversity and innovation](#)

Learning is conflictual and experiential. Dialogue between individuals or groups of individuals who have different viewpoints leads to a new understanding. A group of employees with a diverse set of experiences and mental models will positively contribute to the learning process and innovativeness. Good knowledge and diversity management will create a workplace where views are respected and considered.

[7.2 Lessons from group process models](#)

Diversity has positive and negative effects on group process and performance. The organisation must harness the benefits from informational diversity and reduce the negative impact of social categorisation on group functioning. The development of common organisational-level goals will reduce the intra-group tension caused by perceived heterogeneity. HRM strategies should re-categorise individual involvement to enhance the group's focus on common tasks and reduce the tendency to form socially irrelevant in-groups.

[7.3 Lessons from HR models](#)

The long-term benefits of effective diversity management will flow directly into improved organisational learning and knowledge creation. Decision-making, problem solving, creativity and innovation will all benefit from the perspectives that a diverse workforce can contribute. These will then translate to bottom line benefits for the organisation. HRM strategies are critical to overcoming group process problems and harnessing the bottom line benefits of diversity. Reduced employee turnover represents knowledge protection and will improve the ongoing learning and innovation process.

[7.4 The Business Case](#)

Implementing knowledge management strategies that improve the environment for and quality of learning will improve the firm's bottom line, in terms of cost efficiency and increased revenue. Managing for diversity improves individual and organisational outcomes, which flows through to the bottom line. Diverse learning environments will produce better and more lucrative outcomes.

[7.5 Strategies](#)

Communication channels must be established so that information and ideas flow freely into and around the organisation. Learning activity must be coordinated according to clearly established and articulated organisational goals. Knowledge management infrastructure must be instituted in conjunction with information systems specialists to ensure adequate and easy access to relevant data and knowledge. Resource allocation procedures, organisational structures and team management must be adapted.

1.0 INTRODUCTION

Firms are becoming increasingly aware of the importance of knowledge as a source of competitive advantage, and are seeking strategies and structural changes that will ensure they improve their learning and knowledge management capabilities. Work groups and teams must generate new concepts and develop them in a nurturing environment. Work groups with a greater mix of cultural backgrounds, mental models, and experience and functional levels will, when appropriately managed, generate more innovative products and services. Firms that are overly homogenous and those that are unaware of the management implications of diverse workplaces will fail to harness any knowledge dividend from their diversity.

The following analysis synthesises the work on *knowledge firms* and *learning organisations* that has been undertaken across a variety of academic disciplines. Disciplines such as psychology, organisational studies, economics and management theory approach these issues with different research questions and different assumptions. As such, the initial aim of this paper is to define the key concepts, investigate the relationships between the key processes, and explore the role of structures and strategies, particularly HRM strategies. As the knowledge firm case has not been clearly and consistently articulated to Australian business, a considerable portion of this report is devoted to the theoretical underpinnings and strategic implications of a greater focus on learning. While an eye is kept on diversity implications throughout, it is in Section 7 that the implications of workplace diversity for the knowledge management process are considered. Drawing on the research incorporated in *The Theory Of Diversity And Group Performance*, we argue that a workforce with a greater mix of cultural backgrounds, mental models, and experience and functional levels should, when appropriately managed, lead to more innovative product and organisational developments. These developments represent potential competitive advantages for *knowledge firms*.

The importance of the knowledge firm gains increasingly greater currency as the pace of change in technology, consumer demands, and market and industry structures continues to escalate. Firms are recognising a greater need for adaptiveness and responsiveness to such changes, and seeking the strategies that best produce such outcomes. As Dodgson (1993:376) states: "... the concept of the 'learning organization' is gaining more currency amongst large organizations as they attempt to develop structures and systems which are more adaptable and responsive to change."

2.0 Defining and exploring the key concepts

In defining the key concepts involved in knowledge creation and knowledge management, a number of distinctions need to be made. Not surprisingly, given the interest of numerous academic disciplines, as well as non-academics, in this topic, terminology is not consistently used. In fact, an alarming portion of the literature is focussed on the semantics of delineating between various terms. The definitions below do not intend to be all encompassing; rather they provide a common language for our analysis.

2.1 INFORMATION

Information is generally described as a flow of messages or meanings. It may be unprocessed data. It may serve to restructure or change current understandings, or contribute to the production of intelligence.

The relationship between *information* and *knowledge* is somewhat circular. Knowledge may be seen as a sub-set of information, in that knowledge may be information that has been *made sense of*. Nonaka (1994:15) distinguishes between information and knowledge as follows: "...information is a flow of messages, while knowledge is created and organized by the very flow of information, anchored on the commitment and beliefs of its holder." Information, as shared between parties, also represents a transferral of knowledge, and, as is outlined below, can be classified within the categories of knowledge as *codified* or *explicit*. As Nonaka (1994:16) states, "[i]nformation is a necessary medium or material for initiating and formalizing knowledge..."

These distinctions flow through to the focus of strategic management's concerns. Knowledge management is a separate, distinct and different set of tasks from information management and information systems management. Our concern is much less with flows of data and data storage, and much more with flows of ideas and generation and storage of knowledge. As Nonaka (1994:16) states in discussing the syntactic overemphasis on volumes of information,

"...any preoccupation with the formal definition will tend to lead to a disproportionate emphasis on the role of information processing, which is insensitive to the creation of organizational knowledge out of the chaotic, equivocal state of information."

2.2 Knowledge

The aim is to provide an overview of the definitions and taxonomies of knowledge used by organisational theorists and/or adopted within the strategic management literature.

Many authors take a positivist approach, taking the stance that knowledge is "*information whose validity has been established through tests of proof*" (Liebeskind 1996:94 – emphasis in original). Spender (1996:47) criticised such a position as naïve as it takes the view that "...all tenable knowledge (justified true belief) is the result of systematic (scientific) analysis of our sensory experience of a knowable external reality". He urged all to be aware of the Kantian critique of such universalistic visions of knowledge, as "...our knowledge is constructed from sense impressions and cannot, therefore, tell us anything about a reality beyond these impressions" (Spender 1996:48). Such critiques view knowledge as a relativist and constructed concept. It allows for greater examination of the way in which an individual's and a group's knowledge is developed and operationalised. Furthermore, it is more elucidatory on the issues of the role of difference in knowledge creation, problem solving, intellectual interaction and innovation, as it recognises that knowledge is an individual and social group construct.

Blackler (1995:1022) offers a useful approach to conceptualising knowledge: "[r]ather than regarding knowledge as something that people have... knowing is better regarded as something they do". Spender (1996) also chooses to focus on the action of *knowing* and the employment of knowledge. In doing so, he notes the distinction, drawn from Platonist and Aristotelian positions, between rationalism and empiricism, whereby we may "...be able to know in two ways, one based on experience, the other based on the exercise of reason" (Spender 1996:49).

Taking such an approach leads to further attempts to categorise the types of knowledge. Nonaka simply distinguishes between two forms of knowledge – *explicit* and *tacit*. Explicit or *codified* knowledge is "...transmittable in formal, systematic language" (Nonaka 1994:16). Such information can be easily communicated, shared and compiled. It may take the form of instructions, manuals, formulae or product specifications. Such knowledge may be protected as *intellectual property* via mechanisms such as patents, copyrights or trade secret protection.

Tacit knowledge is harder to formalise and communicate. Polanyi (1962,1966) describe tacit knowledge as *knowing how* rather than *knowing about*. Nonaka's (1994:16) asserts that "[k]nowledge that can be expressed in words and numbers only represents the tip of the iceberg of the entire body of possible knowledge". At an organisational level, it is often claimed that an organisation knows more than it can tell. Tacit knowledge includes individuals' cognitive methods - their *mental models*. This refers to the schemata, beliefs, viewpoints, methods of reasoning, and intuitions that an individual may use in approaching and processing information. It also involves the know-how and skills that individuals apply to tasks. The difficulty with tacit knowledge is its relative incommunicability and its encapsulation in individuals. The latter makes the knowledge difficult to store and retain. It also increases the importance of employee retention.

The distinction between explicit and tacit knowledge is not universal in the literature. For example, Tsoukas (1996) claims explicit and tacit knowledge should not be treated as distinct as they are inseparably related. He views the two forms as mutually constituted, with tacit knowledge a necessary component of all knowledge.

Blackler (1995) offers a more complex set of knowledge types: *embrained, embodied, encoded, embedded* and *encultured*. Embrained knowledge is "...knowledge that is dependent on conceptual skills and cognitive abilities" (Blackler 1995:1022). This knowledge is sometimes viewed as abstract knowledge that involves developing complex rules of understanding and causation. It would fall into the tacit classification.

Embodied knowledge is

"...action oriented and ...likely to be only partly explicit. [It] depends on peoples' physical presence, on sentient and sensory information, physical cues and face-to-face discussions, is acquired by doing, and is rooted in specific contexts." (Blackler 1995:1022)

A common example of such knowledge is workers' intimate understandings of specific pieces of machinery, equipment, databases or physical environs. As implied in the definition, much of this knowledge is tacit in nature.

Encoded knowledge is "...information conveyed by signs and symbols." (Blackler 1995:1023). This includes, books, manuals, and codes of practice, and electronic renderings of such material. This is clearly an explicit form of knowledge.

Blackler is concerned with the knowledge as it resides within organisations. As such, he delineates particular forms of knowledge that refer specifically to knowledge in its organisational context. Embedded knowledge is "...knowledge which resides in systemic routines" (Blackler 1995:1023). Such knowledge involves relationships between technologies, roles, procedures and routines. A key component of this knowledge could be described as *organisational skills*. As is discussed in Sections 3.4 and 3.5, this form of knowledge is commonly discussed within the context of firm competencies, particularly in terms of the role of relationships and the use of the organisation's resources.

Blackler's other organisational form of knowledge is encultured knowledge, which is defined as "...the process of achieved shared understanding" (Blackler 1995:1023). Through socialisation and acculturation, understandings are constructed and negotiated. This may be seen as the development of collective mental models. The nature of the shared understanding will impact on the learning process particularly as learning in itself may act to shift and transform the knowledge itself.

Spender (1996) attempts to categorise knowledge at both an organisational and individual level. He acknowledges that his categories are static in nature. His research is, again, focused on organisational analysis. As such, the definitions place the knowledge in an organisational context. Spender's four types of knowledge are: *conscious, automatic, objectified, and collective*. Conscious knowledge refers to explicit knowledge held by an individual. Automatic knowledge is also individually held but tacit or implicit. It reflects the more subconscious end of individual behaviour. Objectified knowledge is explicit

and *social*. By *social*, Spender means that the knowledge is shared and commonly understood. The final form, *collective*, is implicit and *social*, comparable to Blackler's encultured knowledge.

Tsoukas (1996:11) uses slightly different language to capture the distinctions between forms of individuals' knowledge:

"Individuals' stock of knowledge consists of (a) role-related normative expectations; (b) dispositions, which have been formed in the course of past socializations; and (c) local knowledge of particular circumstances of time and place."

Tsouka's (1996:13) position on organisational knowledge is that a "... firm's knowledge cannot be surveyed as a whole; it is not self-contained; it is inherently indeterminate and continually reconfiguring." He views an organisation or firm as a *distributed knowledge system*. The knowledge is

"...distributed in the sense that it is inherently indeterminate: nobody knows in advance what the knowledge is or need be. Firms are faced with radical uncertainty: they do not, they cannot, know what they need to know" (Tsoukas 1996:22 – emphasis in original).

The firm's knowledge is thus "...the indeterminate outcome of individuals attempting to manage the inevitable tensions between normative expectations, dispositions, and local contexts." (Tsoukas 1996:11) This definition is explored further in Section 8, as it feeds into the diversity discussion well.

Argyris and Schön (1996:12– emphasis in original) view organisations themselves as "...*holding environments for knowledge*". Knowledge may be held in the minds of individual organisational members, making it transient and losable. Alternatively it may exist in the organisation's files:

"...which record its actions, decisions, regulations, and policies as well as in the maps, formal and informal, through which organizations make themselves understandable to themselves and others." (Argyris and Schön 1996:12)

They also claim, that organisations may directly represent knowledge, in that the organisation represents a series of strategies for performing complex tasks, in that "...any given organization represents answers to a set of questions or solutions to a set of problems." (Argyris and Schön 1996:13)

Blackler (1995) prefers the use of *activity theory*, which is focussed on *knowing*. It aims to avoid false or arbitrary distinctions between learning, information, and knowledge. Knowing is seen as mediated by the organisational, communication and activity systems in which it occurs. Knowing is situated within a context that shapes individual's understandings and interpretations of their experiences and activities. Knowing is provisional in that it is subject to change, shocks and evolution. Knowing is pragmatic in that it may represent a compromise between multiple environments, value sets and goals. Finally knowing is contested in that it may occur in an environment of power play, domination and subordination.

All of these definitions of knowledge are workable within our analysis of knowledge and learning firms. The following discussion distinguishes concepts that are specifically individualistic in focus, versus those that pertain to organisations.

2.3 LEARNING

The dynamic aspect of the knowledge firm literature is the issue of learning. Rather than focussing on knowledge as a static entity, discussions of learning are concerned more with activity and change. Spender (1996:48) offers a simple definition: "Learning is the process of experiencing and analyzing, or the process of communicating the knowledge previously generated by others." Senge (1992:13) prefers the headier concept of *metanoia*, in effect a "...fundamental shift or movement of the mind." He asserts that through such learning "...we re-perceive the world and our relationship to it." (p.14)

Dodgson (1993:377) provides an organisation level definition of learning:

"...the ways firms build, supplement and organize knowledge and routines around their activities and within their cultures, and adapt and develop organizational efficiency by improving the use of the broad skills of their workforces."

There is a substantive difference between Spender and Dodgson's view of learning and that of Senge. Spender and Dodgson include the more mundane aspects of skill acquisition and the educative process, while Senge is concerned with more transcendental shifts in thought processes and philosophies. His is the world of *dialogue* in the Ancient Greek sense. He, along with others, invokes the notion of learning as a process of inherent conflict. If learning is seen in a Hegelian sense as a process of thesis-antithesis-synthesis, then adoption and adaptation of new ideas will arise in the context of, and in contrast with, existing knowledge. The inadequacies and shortcomings of existing knowledge may lead to a search for alternative ideas and processes. Likewise the introduction of new information or processes may contradict existing knowledge. Such conflict will hopefully resolve in the form of new and better knowledge.

As Dodgson (1993:377) states:

"Underpinning psychological theories of learning is the assumption that conflict (caused, for example, by error or contrary evidence) is an essential condition for learning, which acts as a motor driving the learning process."

The language of the literature on individual learning processes reflects such a state, with key concepts such as conflict, the natural tendency to conservatism, the difficulties in *unlearning*, and desire to achieve higher-level learning.

The realm of education psychology has also generated a lengthy taxonomy of learning. Bloom (1956) breaks the cognitive learning process down into six hierarchical levels from knowledge (rote learning) at the lowest rung, through comprehension, application, analysis, and synthesis and, at the top, evaluation. In brief, the passage through the hierarchy is from having the capacity to duplicate ideas, to describing, to employing, to distinguishing between ideas, to constructing new ideas, to, at the top, being able to appraise and evaluate ideas.

As with knowledge, there is no clear agreement on the distinction between individual and organisational learning. Dodgson (1993:382) observes that

"[t]hroughout the various literatures, firms' learning is commonly argued to be more than the sum of the parts of their employees' learning. Shared norms and values are agreed to be indicative of organizational rather than individual learning."

The role of socialisation in shaping the learning habits and experiences of individuals cannot be ignored:

"Durkheim argued that every person was, at one and the same time, both an independent psychological decision-making entity and a purely social being. Social entities cognise and learn only to the extent that the individuals who make up that social entity are socially defined beings." (Spender 1996:53)

Spender (1996:53) goes on to describe the process of socialisation at great length:

"Given bounded rationality, the individual may become less a principal than an agent of the institutional entity shaping his or her rationality, be that a profession's norms, an organization's or a nation's culture, a union's politics, an industry's recipes, a religion's ethics etc. Thus individual learning must always be considered in the context of the processes of the social entity that relies on that individual as its active agent."

This role of the organisation and organisational identity in shaping learning is discussed further below.

On the topic of organisational learning, Argyris and Schön (1996:11 – emphasis in original) claim an organisation can be said to learn when "...its members *learn* for it, carrying out on its behalf a process of inquiry that results in a learning product." They provide a lengthy definition of the organisational learning process:

"Organizational learning occurs when individuals within an organization experience a problematic situation and inquire into it on the organization's behalf. They experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organization or their understandings of organizational phenomena and to restructure their activities so as to bring outcomes and expectations into line, thereby changing organizational theory-in-use. In order to become organizational, the learning that results from organizational inquiry must become embedded in the images of organization held in its members' minds and/or in the epistemological artefacts (the maps, memories and programs) embedded in the organizational environment." (Argyris and Schön 1996, p.16 – emphasis in original)

This still represents a Hegelian *quest for truth* approach but argues that successful organisational learning must involve some change in the embedded and encultured knowledge.

The major contribution of Argyris and Schön to the learning literature is the concept of *single-loop* and *double-loop* learning. The loops here are feedback loops. Single-loop learning involves inquiries that add to the knowledge base or routines of the organisation without altering the nature of the organisation's values, norms or activities. This is analogous to Dodgson's supplementing of existing knowledge or the low-level learning of Bloom. Double-loop learning is more substantial and transformational, as it "...results in a change in the values of theory-in-use, as well as in its strategies and assumptions" (Argyris and Schön 1996:21). Some inconsistency in operations may lead to inquiry, but rather than a solution being found and subtle but consistent changes implemented, as occurs in single-loop learning, the inquiry leads to a change in *the way things are done*. This is much closer to Senge's metanoia.

All of these definitions treat learning as a process. As such, they acknowledge the scope for management of the learning of individuals within an organisation, and the learning of the organisation itself. Spender (1996:53) points to a role for management in shaping the learning experience:

"The social influence is clearly mediated by an irreducible or random element of individuality... organizations learn and have knowledge only to the extent that their members are malleable beings whose sense of self is influenced by the organization's evolving social identity."

As learning is dynamic, so there is a role for time in the analysis. Learning at any given time will depend on the knowledge available at that point. At an organisational level, the knowledge encompassed in formal documentation, in value sets, in routines and in strategies, reflects learning that has gone on before. Learning is path dependent in nature as knowledge is cumulative and reflective of existing knowledge.

The role of the learning organisation or knowledge firm is to utilise the way in which its employees adapt, transform and build upon their knowledge bases. The aim is to harness this learning in such a way that the organisation benefits from it and that the learning represents positive changes to organisational routines and strategies. This is discussed further below.

2.4 KNOWLEDGE CREATION AND INNOVATION

While theories of learning are useful at a general level in determining the structure and implementation of workplace training and the like, their primary application in the knowledge firm literature is with regards to knowledge creation. A subset of knowledge creation is the process of innovation.

Nonaka (1991:101) describes knowledge creation as the

"...the process by which organizations convert tacit knowledge into explicit knowledge: first, by linking contradictory things and idea through metaphor; then, by resolving these contradictions

through analogy; and, finally, by crystallizing the created concepts and embodying them in a model, which makes the knowledge available to the rest of the company."

This view clearly places greater value on knowledge that is explicit in that it can be communicated, and thus expropriated in some fashion by the organisation. Others are less reliant on the knowledge being codified but rather see changes to embedded organisational and/or individual routines, culture and strategies as knowledge creation. It can be argued that to talk of knowledge *creation* is to quantify the unquantifiable, and that the concept should be of improved or enhanced knowledge. Also knowledge in itself must be seen to manifest as activity of some kind, otherwise it merely represents an *idea*. The activity should be the generation of a new or better product, service or organisational practice - *innovation*.

Innovation is a term with a distinct meaning in economics and business strategy literature:

"... the process of applying a new idea to create a new process or product" (Galbraith 1996:357); or

"... the generation of a new idea and its implementation into a new product, process, or service...to a creation of pure profit for the innovative business enterprise" (Urabe 1988:3).

The key distinction is the development of a marketable good or service, or an organisational change that improves efficiency. As Urabe (1988:3), explains

"...innovation is... an economic concept rather than a technological one. However marvellous technological invention may be, it does not constitute innovation if it creates no growth or pure profit..."

Innovations have been compartmentalised into a variety of types. Fairtlough (1994:325) distinguishes between *radical* or *revolutionary* innovation and *incremental* or *evolutionary* innovation. The former results from "individual inventions and usually requires new production techniques and organizational changes, as well as technical breakthrough, if it is to be industrially useful". The latter is described as the kind of innovation that "...goes on continuously in any industry, much of it through learning by doing." Daft and Becker (1978) make a distinction between technical innovations that involve new technologies, products or services, and administrative innovations that see the implementation of new policies, procedures or organisational forms. Van de Ven (1986) claims such a distinction is unnecessary and misleading, as most innovations will involve technical and administrative components.

The aim of innovating is to generate a competitive advantage. Innovation is the key to growth and dynamism in the business world. The aim of a knowledge firm is to create and nurture an environment where innovation is expected, respected and rewarded. Ideally a knowledge firm will develop capabilities in innovation in various chosen areas. This is discussed at greater length in Section 3 below.

The innovation process has been examined at length. Researchers examining innovation recognise that idea generation is only one stage of a multistage innovation process (Kanter 1988; Galbraith 1996; Van deVen, Polley et al. 1999).

Kanter (1988) sees individual innovation beginning with problem recognition and the generation of ideas or solutions, novel or adopted. Next, the innovative individual seeks sponsorship for their idea and seeks support from co-workers and superiors for the necessary changes. Finally, the innovation is operationalised, tested, produced and, if successful, adopted and "...institutionalised" (Kanter 1988: 191).

Galbraith's (1996:157) focus is on the implementation of inventions "...that are good ideas but do not quite fit into the organization's current mould." Galbraith (1996:160-1) is keen to emphasise that innovation is not an individual phenomenon, but rather "...brought about by people who interact in a combination of roles." He offers a similar model to Kanter, with three key players. An *idea generator* is often a low-level person who experiences a problem and develops a new response to it. They must then find a *sponsor* to promote the idea, to lend his or her authority and resources to an idea so as to carry the idea closer to commercialisation. The sponsor will presumably be higher up in the organisation, or at

least have the capacity to direct resources towards implementation. King (1990:29-30) refers to such individuals as *idea champions* or *change agents*. Finally, an *orchestrator* is needed to represent the idea in the inevitable political struggle so as

"...to give the new idea a chance to be tested in the face of a negative establishment. The orchestrator must protect idea people, promote the opportunity to try out new ideas, and back those whose ideas prove effective" (Galbraith 1996:162)

Van de Ven *et.al.* (1999:3) describe innovation as a journey that is undertaken "...each time [organisations] invent, develop, and implement new products, programs, services or administrative arrangements." They believe this journey is neither orderly nor entirely random:

"...the innovation journey is neither stable and predictable nor stochastic and random, ...unpredictable behaviour does not imply randomness,...[and] the innovation journey may be extremely sensitive to different initial conditions (path dependence)." (Van de Ven *et.al.* 1999:6)

They see the management of the journey as a complex task.

Much has been written on the failures of many organisations to encourage innovation. Galbraith (1996) contends that the typical business firm, while suited to efficient production of current products and services and internal organisation, is poorly equipped to deal with the uncertainty and upheaval of innovation. Dodgson (1993) views the process of innovation as conflictual as it may see conflict between innovation and productivity, between dynamic and allocative efficiencies, or between exploration and exploitation.

Kanter (1988:172 – emphasis in original) describes innovation as often..."*uncertain, fragile, political and imperialistic* (reaching out to embrace other territories [of the organisation]", and that, as such, it is

"...likely to flourish where conditions allow flexibility, quick action and intensive care, coalition formation, and connectedness... in organizations that have integrative structures and cultures emphasizing diversity, multiple structural linkages both inside and outside the organization, intersecting territories, collective pride and faith in people's talents, collaboration, and teamwork."

Galbraith offers a design for an *innovating organisation*, in which the roles of sponsors and orchestrators are explicitly recognised and reflected in lines of reporting and resource allocation. *Reservations*, work groups "...totally devoted to creating new ideas for future business" and havens for *safe learning* are established (Galbraith's 1996:166). These groups will be less constrained by pressures for operational efficiency. He suggests firms endeavour to rotate as many workers as possible through these reservations. As discussed in Sections 5.1 and 5.2, a key task for management is to integrate the flow of innovations into the *operating* part of the organisation.

Given the desire of knowledge firms to be more innovative, a key research question is "what factors increase the levels of innovation?" Such a question leads to investigations of the traits that innovative individuals might display, the environmental influences that may encourage greater innovation and the organisational structures most conducive to innovation.

The psychological literature on the individual traits conducive to innovation focuses primarily on creativity, rather than innovativeness *per se*. Creativity and innovation are not the same thing. As defined by (Rosenfeld and Servo 1990:252), "[c]reativity refers to the generation of novel ideas – innovation to making money from them." (West and Farr 1990) :10) describe creativity as "ideation component of innovation". Several traits have been found to be associated with creative achievement, such as autonomy, social independence, high tolerance for ambiguity, a propensity for risk-taking and anxiety ((King 1990:17). Barnett (1953) and Herbig and Miller (1992) argue that higher individualism is positively related to innovativeness. Rothwell and Wissema (1986) find that a willingness to take risks, readiness to accept change and a long-term orientation promote higher innovation capacity. King (1990) questions the validity of many of these findings as almost all use cross-sectional data and thus fail to

establish causality, for example whether independence increases creativity or whether creative individuals are granted greater independence.

Scott and Bruce (1994) study of a 172 engineers and scientists in an US R&D organisation, found support for a hypotheses that individuals with a more systematic, as opposed to an intuitive, problem-solving style will find their innovativeness inhibited. They are careful to point out, however, that it may be the case that the most innovative individuals know when best to be intuitive and when best to be systematic. Unfortunately they say little about the impact of coupling intuitive and systematic thinkers in work teams.

Galbraith (1996:176) claims "...prospective innovators have an irreverence for the status quo. They often come from outcast groups or are newcomers to the company; they are less satisfied with the way things are and less to lose if there is a change." This finding is very relevant for a discussion of diversity, and is expanded upon in Section 8. Further findings regarding demographic differences in innovativeness are also explored in Section 8.

The environment in which individuals find themselves has been shown to influence innovation outcomes. King (1990:18-19) cites a number of studies that greater individual discretion induces greater innovation, as does participative and collaborative leadership, feedback and recognition from leaders and a more decentralised organisational structure. Scott and Bruce (1994) present evidence in support of the role of leadership and managerial role expectations. This is discussed at greater length in Sections 5.1 and 5.2.

Kanter (1988:205) perhaps best describes the thrust of the innovation findings:

"...innovation stems from individual talent and creativity. But whether or not individual skills are activated, exercised, supported, and channelled into the production of a new model that can be used, is a function of the organizational and interorganisational context."

2.5 Knowledge dispersion

A crucial strand of the innovation story was the transition from the individuals or group with an idea to the acceptance and implementation of that idea by other members of the organisation. The key to such a process is the ability within the organisation for *knowledge dispersion*. Another term used by authors such as Grant (1996) is *knowledge integration*. In fact, Grant presents a theory of firm that views knowledge integration as a prime rationale for the existence of firms. Knowledge integration is, in essence, an issue of coordination. As with Coase (1937), Eggertsson (1990), and others, Grant sees the firm as a coordinating mechanism.

Grant argued that knowledge resides predominantly within individuals. The firm, however, engages these individuals in a variety of tasks, most of which are interdependent (if they were not, the firm would not be necessary or efficient). Drawing strongly on the work of Thompson (1967) and Van de Ven, Delbecq et al. (1976), Grant (1996) identifies four different types of interdependence: *pooled*; *sequential*; *reciprocal* and *team*. Each of those types of interdependence has a corresponding mode of coordination, or knowledge integration, that should prove most efficient.

Pooled interdependence refers to situations where specialist knowledge is used by a large group of workers. For examples engineers may have an understanding of a production method that will be adopted by the operatives. The aim is convert tacit knowledge into "...readily comprehensible explicit knowledge" (Grant 1996:115). Grant identifies *rules* as the most effective means of integrating such knowledge. The operatives develop a common understanding of the production method via manuals and common training, which is much more effective than the engineer(s) individually explaining the method to each individual. Nonaka (1994:19) refers to such a shift, from tacit to explicit knowledge, as *externalisation*.

Sequential interdependence is a scenario where knowledge needs to be contributed in a particular order. For example "...each specialist's input occurs independently through being assigned a separate time slot" (Grant 1996:115). In such a situation, the coordinating mechanism most useful is one of *planning*. The key role here is that of the manager, as they will need to gather sufficient knowledge from each individual so as to understand and evaluate the logic of the sequence.

A significant proportion of the work process is neither so linear nor unidirectional. Co-workers exchange views, cooperate and interact, often simultaneously. Grant describes this as reciprocal interdependence. Some examples given include navigation of ship, surgical operating teams and pit crews. In these instances, knowledge integration is coordinated by *routine* and *mutual adjustment*. Routines are described as "...simple sequences [with an] ability to support complex patterns of interaction between individuals in the absence of rules, directives, or even significant verbal communication" (Grant 1996:115). Routines can be seen as the mechanism by which individually held tacit knowledge can be communicated and transformed into some sort of collective tacit knowledge. Nonaka (1994:19) refers to such a shift, from tacit to explicit knowledge, as *socialization*.

A further form of collective team interdependence is the team. Grant sees tasks allocated to teams as those that cannot be adequately handled by individuals or sequential interdependence. Routines may be developed to coordinate commonly arising processes, but the sole mechanism for unusual or complex tasks must be through group coordination in workshops and formalised meetings. Such coordination is discussed further in Section 6.

2.6 Conclusion – What is a Knowledge Firm?

There is no shortage of elaborate definitions of the knowledge firm or learning organisation. Senge (1992) describes the learning organisation as "...an organisation that is continually expanding its capacity to create its future." Nonaka (1991:96) refers to "...the "knowledge-creating" company, whose sole business is continuous innovation". Galbraith (1996:156) refers to "...an organization geared to producing innovative ideas".

The knowledge firm encompasses a series of issues. These issues reflect the nature of knowledge and learning, and the processes involved in knowing and learning. Knowledge takes a variety of different forms and these forms in turn require alternate forms of communication and integration of this knowledge. A learning organisation or knowledge firm endeavours to find the most efficient mechanism for ensuring sufficient knowledge is shared among workers. Knowledge creation and thus innovation should be an explicit focus of the organisation. This requires appropriate strategies, structures and work processes as outlined in Sections 4, 5 and 6.

The aim of the knowledge firm is to profit from the pooled knowledge of its workers, the organisational knowledge that is developed and from the learning and innovation that results. This process is discussed at length in Section 3 in terms of the conceptualisation of knowledge management and learning as resources, competencies, and capabilities.

3.0 THE KNOWLEDGE FIRM AND COMPETENCIES

The knowledge firm literature intersects with the strategic management literature as it presents knowledge and learning as a source of competitive advantage for modern business enterprises. Many of the authors above offer *knowledge-based theories of the firm*. For example, Spender and Grant (1996) claim their

"...knowledge-based theory of firm is a paradigmatic gateway, the point in the evolution of our field where we abandon the older concept of a theory as blueprint for creating the firm, and move towards a more agricultural notion of management as the intervention in and husbandry

of the natural knowledge-creating process of both individuals and collectivities, be they societies as they create and are reconstituted by their culture, or firms as they create and are reconstituted by their creations."

Spender (1996) draws from other major contributors to the new institutional economics approach, in particular Nelson (1991). Spender focuses on the role of knowledge in the evolutionary theory of economic change:

"Nelson and Winter move towards a theory of the firm by assuming that the firm provides that special context in which the explicit and implicit bodies of knowledge are both selected by interaction with the external economic reality and then stored in routines available to future generations of employees." (Spender 1996:50)

The synthesis of learning and knowledge into the new institutional vision of the firm requires a clear understanding of the underlying principles and concepts of the latter. This Section provides a brief but thorough summary of the new institutional economics approach, as it applies to the issue of knowledge, learning and innovation.

3.1 The Strategic Management Model of the Firm

Boundaries of the Firm, Competitive Advantage and Growth,

The new institutional economics approach to the firm (Coase 1937; Williamson 1985), draws on transaction cost (organisational) economics, dynamic capability (Prahalad and Hamel 1980; Teece, Pisano et al. 1997) evolutionary economics (Nelson and Winter 1982; David 1986) and resource-based views (Peteraf 1993) of the firm. Firms are one type of organisational arrangement that appropriates rents from ownership advantages related to product and process technology, work and managerial practices, advertising, marketing and distribution skills, brand name and parent reputation advantages. The firm is contrasted with other forms of coordination such as market contracting and other longer-term relationships.

Most large successful firms are characterised by their abundant know-how related to product and process technology, work and managerial practices, advertising, marketing and distribution skills, and brand name and parent reputation advantages. The key to firm success is the unique configuration of this generic know-how into firm-specific competencies. Such competencies lead to competitive advantages, when they are difficult to replicate by rivals (Johnson 1970; McManus 1972; Wernerfelt 1984; Barney 1991). Competencies that are mobile or imitable are competed away, and any competitive advantage is transitory (Peteraf 1993, Teece, Pisano et al. 1997, Barney 1991). These concepts are expanded upon in Section 3.2.

Firms with competencies make a *sell-use* decision. Some competencies, especially codified into blueprints, patents and copyrights can be sold in the market. The firm can license, franchise or enter into alliances where, for a fee, other firms utilise the firm's competencies. By definition, competencies, and core competencies are *sticky*, since they are difficult to replicate or sell. Firms use their sticky competencies to make goods and services in-house, which provide cost leadership or differentiation leadership in production, sales, distribution and marketing. Such cost or differentiation leadership may be a competitive advantage, creating barriers to entry for potential competitors and providing an advantage over existing rivals.

The power of the strategic management approach to firm growth is that it explains the boundaries of the firm—or how firms grow. Firms are a nexus of contracts, undertaking a range of transactions in the market, through intermediate contractual arrangements (such as subcontracting, franchising and licensing) and internally. Firms grow by re-configuring their mix of contracts, undertaking more in-house activities utilising their competencies and relying less on markets and external partners. For example, a firm diversifies using its core competencies to produce related goods and services or expands overseas, producing the same products in foreign production plants (Buckley and Casson 1976; Dunning 1977; Casson 1979; Hennart 1982). The firm's competencies are linked directly to the strategic growth options available to managers. The diversifying or internationalising firm has a competitive advantage over its rivals due to its core competencies.

3.2 Core capabilities, competencies and resources

Recent research focuses on how firms continuously create and renew competencies, which allow firms to retain their competitive advantages (Teece, Pisano et al. 1997). Firms create and renew core competencies by integrating capabilities, resources and factors of production. These terms have specific meanings, and form the building blocks to understanding competitive advantage.

Factors of Production

All firms have human capital (or labour) as a factor of production, as well as land and machinery. Factors of production are heterogeneous. For example, the firm's human capital is more or less diverse with respect to ethnicity, culture, gender, language skills, sexual preferences or religion. The firm's human capital is valuable, even when it is not diverse. But human capital is hired in the labour market and workers and managers are mobile between firms. Only when human capital is tied to the firm, is it a resource. The value of workers and managers as receptacles of knowledge is as resources. This is expanded upon in Section 3.4.

Resources

Resources are firm-specific assets that are difficult (or impossible) to replicate or acquire in the market, including trade secrets, specialised production processes, capital equipment and human capital. If competitors cannot imitate the firm's human capital, including the skills and attributes of the workforce, through hiring in the labour market, then human capital fulfils the first test of being a resource. The second resource test requires that human capital is immobile. For example, foreign exchange dealing teams are frequently treated as a resource. Each team is difficult to replicate. It is also rare (but not unheard of) for whole teams to be mobile (sometimes competitors *purchase* whole teams). For this discussion, it is clear that the knowledge brought to the firm by employees and managers, and the knowledge created and retained within the firm, may all represent resources that the firm can leverage. This is explored further in Section 3.4. Not perhaps as obviously, the diversity of a firm's workforce may also represent a resource. Specialised human capital resources would include difficult to imitate combinations of cultural, ethnic or linguistic assets that form the firm's workforce. Having a diverse workforce is not evidence that the firm's human capital is a resource. Diverse workforces can be replicated through market hiring and workers and managers are mobile between firms. This is expanded upon in Section 3.7.

Competencies and core competencies

Firms combine factors of production, resources and capabilities to create competencies. Not all competencies are core competencies. Core competencies apply across business units, products and markets; they make a significant contribution to customer benefits; they are difficult to imitate and to transfer; and they provide a competitive advantage (Prahalad and Hamel 1990, Teece, Pisano et al. 1997). Canon's core competency in optics, imaging and microprocessor controls enabled it to enter, and even dominate, seemingly diverse markets as copiers, laser printers, cameras and image scanners (Prahalad and Hamel 1990). Prahalad and Hamel (1990) warned that a company that compiles a list of 20 or 30 competencies has not produced a list of core competencies. Few companies are likely to possess more than four or five core competencies.

Core competencies and competitive advantage

Competitive advantage allows firms to position themselves in relation to existing rivals and to resist the entry of new competitors. Competitive advantage underpins the ability of firms to compete on cost or product/service differentiation, arming the firm against rivals, powerful buyers of the firm's products/services and powerful sellers of inputs to the firm. A competitive advantage allows firms to be sensitive to customer needs, deliver unique products/services and possess advantages that other firms cannot replicate.

3.3 The conceptualisation of learning within this framework

The new institutional economics framework views knowledge and learning as important and distinguishing factors in the development of firm capabilities. There is a common view understanding that knowledge and learning are organisational entities and activities.

History and sunk organisation of capital

There is a rich stream of research that identifies firm capabilities, especially the evolutionary or path dependent approaches to the firm (Nelson and Winter 1982, David 1986). There are two interlocking ideas: history and learning. The firm's administrative history creates an organisational infrastructure with processes, routines and ways of doing things (Bartlett and Ghoshal 1989). There are formal and informal channels, routines, procedures, norms and cultures that allow the firm to coordinate its activities. The firm-specific channels and codes for dealing with information represent *sunk* organisational capital. Such organisational capital includes the way the workers and managers interact, sharing common codes of communication and common understanding. Such sharing and common understanding allows joint inputs into problem solving and, as a result, collective learning.

Learning as codified and tacit know-how

Learning is encouraged when the firm's organisational design allows frequent interactions between individuals and within groups. Codified and tacit routines that regulate group interaction are capabilities, more or less unique to the firm (Kogut 1983; Itami and Roehl 1987; Huber 1991; Kogut and Zander 1993). Routines are the genetic code that uniquely defines how the firm performs its activities.

Not all capabilities are core capabilities. All firms have capabilities, since all firms have routines, procedures and ways of doing things. For example, all firms manage human resources through employment screening, compensation schemes or training programmes. Some of these capabilities are easy to replicate or transfer, especially capabilities that are codified and written in rules and manuals.

The most difficult capabilities to replicate or transfer are those, which are tacit. As stated earlier, the new institutional framework takes the position that organisational knowledge embedded in communities of workers and managers is greater than that of any individual. Knowledge that is ambiguous, difficult to communicate or idiosyncratic acts as a barrier to transferring knowledge from originator to user (Grant 1996, Kogut and Zander 1993). These barriers exist with the firm, as well as between the firm and groups external to the firm. Core capabilities are those codified and tacit routines and processes that are non-mobile and non-imitable by rivals. They span across activities, individuals and groups within the firm. Such codified and tacit learning must be managed internally to ensure its spread within the firm.

3.4 Knowledge as a resource

Knowledge will represent a resource for an organisation if it is difficult for other organisations to replicate or acquire it in the market. Tacit knowledge, imbedded within individuals or routines, will be harder to replicate than explicit knowledge. The tacit knowledge retained by individual employees will not continue to be a resource for a given firm if that individual severs their employment relationship with that firm. The firm is a bind in many ways as the temptation is to attempt to codify as much knowledge as possible. Not only is this not possible with all knowledge, it is also dangerous in that more explicit knowledge is more readily acquirable by competitors. Any such knowledge that enters the public domain, or even just the hands of select competitors, will lose its uniqueness and value as a resource.

The knowledge that resides within organisations and organisational practice, such as Blackler's (1995) *embedded* and *encultured* knowledge represents a resource. Collective mental models and knowledge that features in systemic routines is unique to a given organisation at a given point in time. Collective mental models and knowledge are not readily identified or replicated by external parties and may be combined with factors of production and capabilities to create competencies.

3.5 Learning and innovation as capabilities and core competencies

Learning, knowledge creation and innovation are processes - activities in which the firm engages. Firms that are successful in generating new knowledge, learning from day-to-day experiences and developing new products, services or organisational can be described as having developed capabilities or competencies in learning, knowledge creation or innovation. When capabilities apply across the organisational units of the firm, when they are difficult to imitate or transfer, if they make a significant contribution to customer benefits and while they provide an advantage over competitors then they represent a core competency.

Such core competencies will not be commonplace. Much of the learning in which firms engage is merely necessary to maintain the status quo in dynamic industries. Also some organisations will fail to disperse new knowledge well throughout the organisation. As discussed earlier, firms may also fail to protect their knowledge from competitors, or lose knowledge and learning capabilities with employee turnover.

3.6 Developing a competitive advantage from knowledge and learning

Some firms derive an advantage from their learning and knowledge management. Such organisations receive and process market and technological information more efficiently than their competitors. They identify new market opportunities more quickly and effectively. New products and services are successfully developed and introduced to the market. These knowledge firms retain staff and appropriate their knowledge and learning capabilities more successfully than other firms in their industry.

The issue of path dependency with such an advantage should not be ignored. As discussed in Section 2.4 learning will tend to be cumulative. Firm's who have had a poor record of knowledge creation and innovation will tend to have a poorer knowledge base to work from. Conversely firms with excellent innovative capabilities will develop a larger and larger lead. This advantage will not only manifest in the final product or service market. Employees will be attracted to environments and organisations that have a clear history of innovativeness (Galbraith 1996).

The impact of strategies, structures and work processes on the types of advantages developed by knowledge firms are explored in Sections 4, 5, 6 & 7 below.

3.7 Diversity as a resource

As with knowledge, the firm's stock of human capital may also represent a resource, and ultimately a potential source of competitive advantage. This has in many firms acted to elevate human resource management from a primarily functional to a more high-level strategic role. The attributes of the firm's workforce, whether on the *shopfloor* or in the executive suite, provide potential benefits for the firm's internal efficiency and its external growth. The demographic make-up of a firm's workforce – its diversity – if managed appropriately may also represent a resource to the firm. The employees may represent a unique combination of skills, experiences and attributes that is not easily replicable or appropriable.

3.8 Diversity management as a core capability or competency

The key qualification on the statement that diversity represents a unique resource is that the workforce must be managed appropriately. Firms have the potential to reduce the HR costs of workplace diversity through greater training and awareness and through transformations of HR practices, such that turnover and absenteeism rates are lower, and job satisfaction increases. Diverse workers bring a broader range of skills and experiences that are of value in culturally complex environments. A firm with diversity management capabilities will act to harness these benefits. As is discussed in Section 8.2 more diverse work teams, when managed well, may operate at a more productive and efficient level than comparable homogenous groupings.

As with knowledge management, such diverse capabilities are not commonplace. Furthermore, badly managed diversity is potential disastrous. Many firms have not developed sufficient practices and policies to avoid the downside risk of increased diversity. Much of the policy improvement and supposed capability development is merely that minimum necessary to maintain the status quo. The tendency to too eagerly identify diversity management as a core competency must be resisted. Diversity management must compete with many other competencies within the firm to be a core competency. There has been a tendency in the academic literature to misuse the concept of core competency and competitive advantage. The concepts are even more poorly understood by businesspeople. When other firms can replicate your human capital and human capital capabilities, then your firm has no core competency, or competitive advantage, from diversity. The requirements that diversity management is a core competency are analytically precise. Resources, core capabilities and core competencies must be unique to the firm, not replicable and not mobile. They must span business activities and bring customer value. Even if diversity management is a core competency, it is not certain that it will provide a competitive advantage.

Firms need to identify the way in which their diversity can feed into existing core competencies, and thus contribute to increased competitive advantage. For example firms who believe they derive a competitive advantage from their knowledge may investigate how they can better utilise their diversity to improve the knowledge resources and learning and innovation capabilities of the firm.

3.9 Developing a competitive advantage from diversity management and knowledge

Section 8 explores the variety of ways in which diversity management and knowledge management interact. Diversity in the workforce makes the interactions and coordination within and across teams more complex and risky. However, the payoffs are substantial as these interactions, and the associated managerial policies and practices, are potentially more unique, difficult to replicate and costly to transfer. The competitive advantage that some firms develop will be comparable to that discussed in Section 3.6. The firm will develop products and services more successfully and efficiently.

3.10 Summary of Conceptual Framework

Firms marshal a range of factors, including land, machinery and human capital to produce goods and services. Some of the firm's human capital may be a unique resource, usually comprising teams of workers and managers. The knowledge represented by the workers may also represent a unique resource, as may the organisationally embedded and encultured knowledge. These resources are not easily replicated or imitated by other firms. Similarly, these unique resources tend to be immobile between firms. The firm's resources may include its diverse workforce.

The firm also has sets of capabilities or ways of doing things. These capabilities are embedded in rules, manuals, protocols, customary behaviour and commonly shared ways of doing things. Some capabilities are codified; many of the firm's capabilities are tacit. While competitors may replicate some capabilities, core capabilities are unique to the firm and not easily replicated by rivals. Firms may have core capabilities related to knowledge management and/or diversity management. All firms need capabilities in knowledge management to compete with rivals.

Firms amalgamate factors of production, resources and capabilities to create competencies. Core competencies apply across business units, products and markets; they make a significant contribution to customer benefits; they are difficult to imitate and to transfer; and they provide a competitive advantage. Not all competencies are core competencies. Competencies that are not core are still valuable to the firm.

4.0 INTERNAL STRATEGIES AND THE KNOWLEDGE FIRM

A firm seeking to develop and maintain knowledge-related capabilities and potentially a competitive advantage from learning and innovation will need to adopt and implement appropriate internal strategies. The literature on knowledge provides a series of strategic options.

4.1 Senge's Five Disciplines

Senge (1991) has been one of the most vocal and prominent proponents of learning as the cornerstone for developing competitive advantages. He identifies five disciplines that he believes can revolutionise business and provide significant competitive advantages:

1. systems thinking
2. personal mastery

3. managing mental models
4. shared vision
5. team learning

Systems thinking is described as "...a discipline of seeing wholes...a framework for seeing interrelationships rather than things" (Senge 1992:68). Senge sees such a mindset or focus as crucial for learning to be truly valuable to an organisation. He encourages a shift away from looking for *cause* and *effect* and recognising "...circles of causality" (Senge 1992:73). He bemoans the current corporate learning disability of linear thinking – the scenario where "[l]inear thinkers are always looking for a thing or person who is responsible" (Senge 1991:7). Systems thinkers do not seek to apportion blame "...because their perspective suggests that everyone shares responsibility for problems generated by a system" (Senge 1991:7). Employees who are comfortable with such ambiguity and willing to shift to such a mindset will be better able to identify problems with current patterns of thinking. In effect, this will lead to all knowledge within the firm being re-evaluated. As is discussed in Section 8.1 and 8.4, the potential for diverse workgroups to acknowledge and embrace alternative modes of thinking may assist in achieving Senge's goals with regard to systems thinking.

Personal mastery is described by Senge (1992:7) as the "spiritual foundation" of the learning organisation. It is "the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively" (Senge 1992:7). Ignoring the overtly evangelical connotations of Senge's expression, an operationalised form of this discipline is ensuring individuals have a clear vision of their role as *learners* within the organisation. Likewise, they should have a vision of what the organisation is seeking to achieve. The tension between reality and this vision, what Senge refers to as *creative tension*, should be a driver for continued learning and innovation.

Senge supports the view that mental models of individuals, teams and the organisation can be identified and verbalised. Furthermore, mental models are dynamic and evolving and as are such manageable and leveragable. He urges the recognition of the underlying assumptions and notions that underpin such mental models, and the effect they have on perceptions and behaviour. Such an analysis allows for changes in ways of thinking and ways of doing, being a source of innovation. Such an approach is crucial to diversity management, as discussed in Sections 8.2 and 8.4.

Not only should there be an attempt to shape mental models of individuals and the organisation, but also their visions of what the organisation should be doing. This notion of shared vision feeds directly back into the notion of personal mastery, in that the creative tension is now between the commonly held vision and reality. Acknowledging Senge (1991:9) "[t]he overarching goal that the vision establishes brings about not just commitment but new ways of thinking and acting. It fosters risk-taking and experimenting. It also encourages a commitment to the long-term."

His final discipline reflects an assumption that team interaction will produce better and more creative ideas than individual activity. He acknowledges, however, that such an outcome does not occur without appropriate and effective management of group dynamics. It requires a culture that embraces and rewards critical thinking, where team members are comfortable with revealing their uncertainty and ignorance. Again, he returns to the notion of dialogue, whereby the group "...goes beyond the understanding held by each team member, and ...explore complex issues creatively from many points of view." (Senge 1991:10) Senge's argument shares a common thread with the case for balancing diversity in workgroups (see Section 8.2).

The operationalisation of Senge's disciplines is a far from easy task. He assumes a complete commitment on the part of employees and the organisation to substantial change. Not only is this assumption unrealistically unitarist, it ignores the degree of turnover in many industries and declining job security many employees may feel. Likewise, there is a significant gap between his call for such disciplines and actually generating viable and concrete internal strategies for business to implement.

4.2 Learning coordination

A lesson from all of the knowledge firm literature is that learning cannot be taken for granted. It is a process that needs to be guided and coordinated. While individuals may, almost unconsciously, learn, it is crucial that the firm creates some mechanisms whereby new knowledge and ideas are communicated and harnessed by the organisation. As Dodgson (1993:380) states:

"...the 'learning organization' can be distinguished as one that moves beyond this 'natural' learning, and whose goals are to thrive by systematically using its learning to progress beyond mere adaptation... and is reflected in strategies and structures purposefully being developed to facilitate and coordinate learning in rapidly changing and conflictual circumstance."

As discussed in Sections 2.5 and 3.1, the role, rationale and advantage of the firm are as a mechanism for coordination. Learning is one of the prime activities that needs coordination, and as Dodgson (1993:386) argues "...the mechanisms used to achieve such coordination play a central role in shaping the organizational learning process and determining its outcome."

Garvin (1993:78) sees five functions as necessary with any learning organisation: "...problem solving on a systematic basis, experimentation, using past experience to learn, learning from outside sources and the transfer of the acquired knowledge". The task of a coordination strategy would be to ensure adequate performance on all of these fronts.

Coordination requires a clear understanding of the goals of the organisation. As Senge highlights, these goals need to be established across the organisation and communicated to all employees. Coordination also requires the *coordinators* to have some understanding of the knowledge that resides with the firm and learning that is occurring. The knowledge and learning will vary dramatically across the organisation. The logic of specialisation tells us that each department and work unit will have their own unique knowledge base, and that they will be leveraging new learning of that knowledge. The aim of coordination is to ensure that new knowledge is not lost, that there is not unnecessary duplication of learning efforts, and to direct learning towards the organisation's goals.

This leads to arguments about the establishment of *learning* or *knowledge manager* positions within organisations. As Dodgson (1993:384) points out "...learning occurs in a number of functions within the firm: research, development, design, engineering, manufacturing, and marketing, and externally". The knowledge managers must ensure there are adequate knowledge storage mechanisms such as documentation, databases and intranets. They must establish knowledge portals and knowledge networks. The organisation must actively engage in a dialogue with outside sources of knowledge such as customers, suppliers, industry groups, professional organisations, and academia and other R&D professionals (Kono 1986). Internally, flows of knowledge must be facilitated so that the appropriate parties are receiving the appropriate information. This is assisted by the establishment of suitable structures, as discussed further in Section 5.2.

As has been discussed in Section 2, the process of learning and knowledge creation is not particularly straightforward, however. The rate of learning is not constant. While much learning could be described as cumulative, gradual and evolutionary, there are also watershed moments, such as those labelled by Argyris and Schon's (1978) as *double loop learning*, where existing processes are challenged. Likewise, some breakthroughs may occur away from their current application, such as input innovations that will may affect production processes, packaging or marketing techniques. It is crucial that there is a coordinating mechanism/role to ensure such learning is recognised and acted upon. Essential to this is adequate internal communications strategies.

4.3 Internal communications

The coordination strategies, as outlined above, involved, in part, clear communication of goals, along with the implementation of software and other mechanisms to capture and disseminate information. Learning is of no use to the firm if it is not communicated in some fashion. An employee who has improved the way in which they do something needs to feed that lesson back into the organisation's processes. New information, whether it be consumer sentiments as relayed to sales staff, scientific breakthroughs as published in academic journals, or legislative changes as noted by the legal fraternity, needs to reach the appropriate parties in a useable and relevant format. This is inextricably linked to coordination role as outlined above.

Ideally, such information, knowledge and learning will flow freely around the organisation. Again, the desire is to create an environment where employees and managers understand the value and role of knowledge, and that they perceive that knowledge as being of lesser value if kept private. It is commonly argued in both the strategy (Porter 1985:368), and the new institutional literature (Williamson, Wachter et al. 1975) that employees lack motivation to exchange knowledge. Szulanski (1996) study of 271 observations of 122 best practice transfers in eight companies does not support these claims. Szulanski (1996:37) claims that rather than worrying about such motivation-related impediments to internal knowledge transfer,

"...it might be more profitable to devote scarce resources and managerial attention to develop the learning capacities of organizational units, foster closer relationships between organizational units, and systematically understand and communicate practices."

Nonaka and Takeuchi (1995) list one of the key enabling conditions for organisational knowledge creation as *requisite variety* – free access to the widest possible variety of information. This can be achieved via a variety of strategies. Knowledge can be uploaded into databases and intranets that employees can access. New ideas can be canvassed and presented in regular workshops, ideally with some cross-departmental, cross-functional audience. Innovations, ideas and new learning can be disseminated via internal newsletters, noticeboards and the like. It may be appropriate to dedicate specialist staff, such as knowledge managers or officers, specifically to this task. This would also send the message that knowledge and learning are a priority within the firm. A further means to ensure knowledge is communicated is to rotate employees through other departments so that more tacit knowledge is spread. This will also facilitate new learning through the introduction of *new perspectives on old ideas*. This is discussed further in Section 5.2 below and more so in Sections 8.1 and 8.2.

4.4 Resource allocation processes

A further strategic issue for firms attempting to actively nurture and capture the learning that occurs within their organisation is the issue of resource allocation. This can be explained on two fronts. Firstly, sufficient levels of funding need to be directed towards pure research such as R&D divisions or centres, and to general learning activity. Some of these resources will be in explicit training activity, others on the communication and coordination initiatives discussed above. It has generally been found in innovation studies that availability of resources, and some *slack* within the organisation is a positive influence on innovativeness (Mohr 1969; Rogers 1983). Employees suffering under resource constraints are unlikely to feel they have the freedom to explore and pursue new ideas. Also those organisations with free cash flows, or those operating at below capacity, that is those with some slack, may actively seek new products, services and processes that may absorb these funds.

A second aspect of the resource allocation strategy is to re-evaluate current methods of allocating funding. Firms may want to embrace a policy of more explicit reward for innovation. One strategy is to have employees engage in some sort of *idea harvest* such as Galbraith (1996:169) describes at Texas Instruments, in which innovating funds are distributed to those departments or workgroups that present the most attractive new ideas. These funds are specifically earmarked for innovative projects, again sending a message to the employees (and presumably the marketplace) that the firm is serious about knowledge creation and harnessing and developing good ideas. It may also be worth considering the implementation of some sort of royalty scheme for innovators within the organisation.

Central to these strategies is the development of adequate and practical measures of innovation and learning achievements.

5.0 ORGANISATIONAL STRUCTURES AND THE KNOWLEDGE FIRM

As Chandler (1962) argues strategy and structure are interconnected in coordinating business performance. Strategy should shape the structure of an organisation, while structures themselves facilitate strategy. The failure to adapt structures will hinder the implementation of strategies and in fact many strategies will not be considered. Firms adopting the strategies outlined in Section 4 need to also evaluate the impact of their organisational structure on learning and innovation.

As discussed in Section 2.4, much of the learning and innovation literature condemns traditional organisational structures as hindering, rather than nurturing, knowledge creation. Numerous authors see the increased importance of knowledge as a potential source of competitive advantage as the death knell of rigid hierarchies and top-down management (Kanter 1983; Reich 1991; Senge 1992; Drucker 1993). Arguments are raised against confining learning and innovation to one part of the organisation. Nonaka (1991:97) asserts that “[i]n the knowledge-creating company, inventing new knowledge is not a specialized activity – the province of the R&D department or marketing or strategic planning. It is a way of behaving, indeed a way of being, in which everyone is a knowledge worker”.

Alternative to traditional structures have been offered. Reich (1991) sees a shift to network relationships as the defining structure of the internal and external relationships of a knowledge-driven firm, along with partnerships and other contractual arrangements. Drucker (1993) sees modern corporate organisations shifting towards models based around key specialist experts, as exemplified by hospitals or symphony orchestras.

Blackler (1995:1027) sees the emergence of at least four kinds of organizations, delineated by the type of knowledge they will leverage:

“... (i) expert-dependent organizations, which depend heavily on embodied knowledge; (ii) knowledge-routinized organizations, which depend heavily on embedded knowledge; (iii) symbolic-analyst dependent, which depend heavily on embrained knowledge; (iv) communication intensive organizations, which depend heavily on encultured knowledge.”

The two structural issues explored below capture the essence of these arguments and others, namely that more effective options may be available.

5.1 Level of decentralisation

Decentralised organisational structures, in which less authority and decision-making is concentrated at the top of the organisational hierarchy are generally seen as more effective learning and innovating environments (Shephard 1967; Zaltman, Duncan et al. 1973). Decentralised organisations are considered more participative, allowing for a greater mix of viewpoints. Communication flows are likely to be more horizontal rather than vertical with respect to the hierarchy, again facilitating a freer flow of ideas. This is crucial at the idea formulation stage. This needs to be weighed up against the positives of centralised knowledge and information management channels, which, as discussed in Section 4, are necessary to ensure a basis for learning. Also, an organisation cannot afford to be so decentralised that appropriate resource allocation decisions cannot be made or sufficient authority given to managers to foster new talent and ideas. Likewise, any excessive role ambiguity in a decentralised structure may act to hold back implementation of worthwhile innovations.

Highly formal structures will be equally inhibiting as rigid procedures and policies may act to stifle creativity, information flow and experimentation. As King and Anderson (1990) points out, it may be the

case that formal decrees or mandates to innovate and experiment may act as a spur to stimulate innovation.

5.2 Innovation centres or reservations

Galbraith (1996) offers a more radical set of structural changes. Typical corporate structures are ideal for achieving operating efficiency, for producing the millionth car or serving the millionth client in the most efficient fashion possible. They are not effective environments for nurturing new ideas and innovation however. The lines of command and communication are functional and/or product based, and the focus is on accounting measures of performance such as cost savings, revenues, returns to investment and the like. Galbraith does not see any role for learning or new ideas in such a structure. As such, he suggests a series of structural changes that shift firms to become *innovating organisations*.

Firstly, he seeks recognition of the roles of *orchestrator*, *sponsor* and *idea generator* discussed at greater length in Section 2.4. He suggests the re-labelling of many existing line and middle managers as sponsors and upper management as orchestrators. Fittingly for this more fluid and dynamic structure, the labels are not mutually exclusive: “[v]irtually everyone in the organization can be an idea generator, and all middle managers are potential sponsors” (Galbraith 1996, p.167). Nonaka (1994) also sees a crucial role for middle managers as *knowledge engineers*, taking on the coordinating role outlined in Section 4.2. Such activity would be written into position descriptions. Sufficient resources would be dedicated and adequate decision-making power delegated.

The second transformation in Galbraith’s innovating organisation is the notion of *differentiation*. Deliberate attempts at innovation should be treated differently from day-to-day operational activities. This may be as simple as setting different controls over activity in terms of performance measurement, evaluation and decision-making procedures. Alternatively it may be as drastic as cordoning the activity off physically and geographically from other parts of the organisation’s activity. It is made clear that increased differentiation will make any subsequent implementation more difficult, as transferral of the new knowledge back into the existing operating organisation will be hampered by the degree of differentiation itself. This highlights the need for strong coordination and communication strategies.

Galbraith’s third structural shift is the establishment of *reservations*. “Reservations are organizational units, such as R&D groups, that are totally devoted to creating new ideas for future business... havens for ‘safe learning’” (Galbraith 1996:166-7). These reservations act to separate innovating activity from operating activity. They will have a full-time manager/sponsor. The reservation may be temporary or permanent. Ideally the mix of staff will be quite fluid, with a number of employees rotating through so as refresh the knowledge base, feed in new information and provide alternative viewpoints. As is discussed in Section 7, a diverse demographic mix of employees will amplify these effects.

It should be pointed that it is not intended that all learning should occur within the reservation(s). The reservation serves only as a dedicated environment for nurturing and developing new ideas. The establishment of the orchestrator etc. roles also indicates the belief that new ideas will surface throughout the organisation, but that it may be necessary to incubate these ideas in a more supportive environment than that which typically exists in an operation-focussed firm.

The aim is not to raze the existing structures either. They certainly serve the operational goals well. As shown in Figure 2 the innovating organisation overlays the operating structure. The innovating organisation is still made up of the same parts – a task, a structure, processes, reward systems and people – it is just organised differently. The key aspects to the innovating structure are: *funding* – providing adequate funds and resources to innovation; *getting ideas* – building networks between individuals and work units; *blending ideas* – ensuring workers have both the technical knowledge and an understanding of user requirements; and, *managing programs*, to coordinate the efficient implementation of new products and processes.

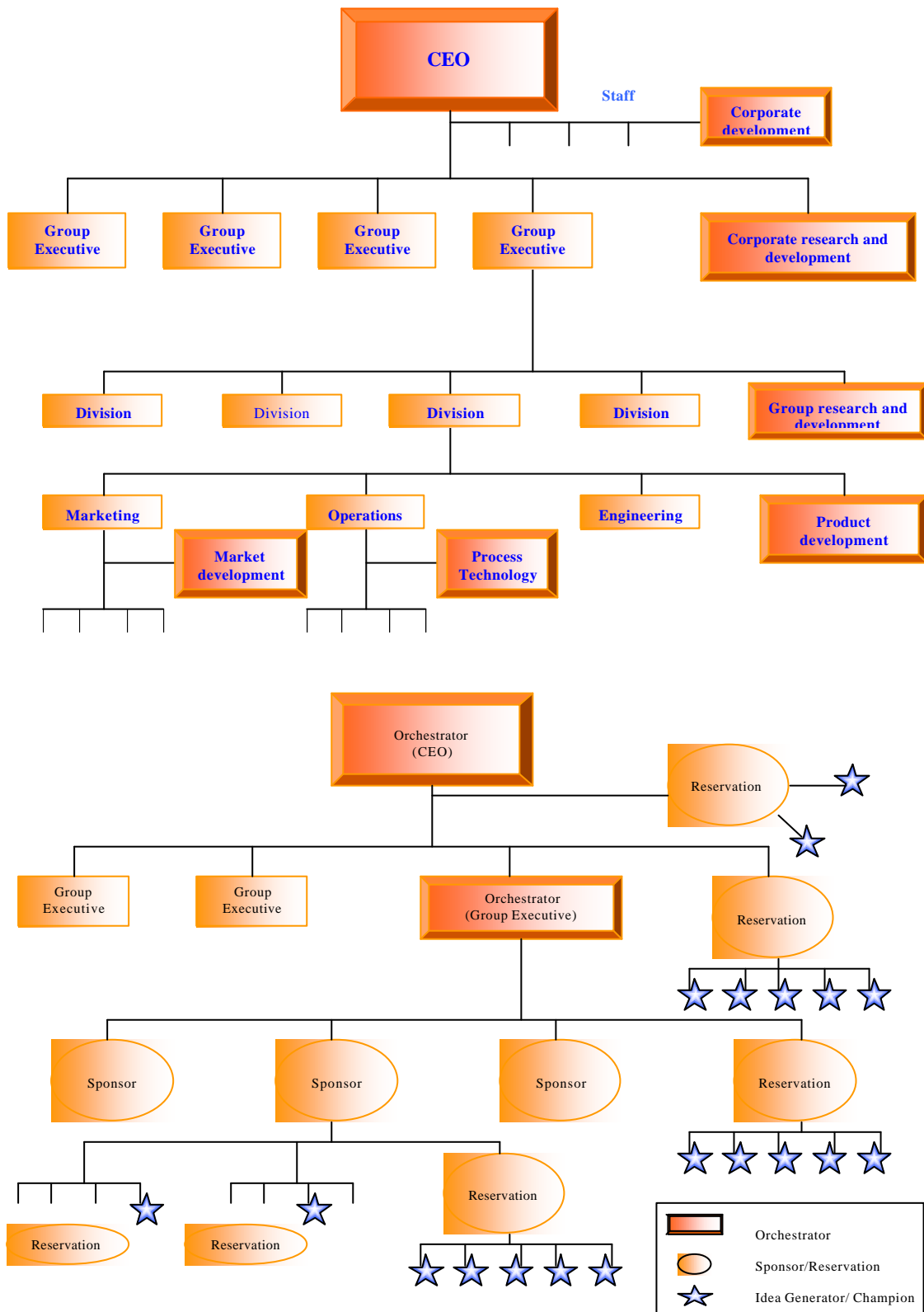


Figure 2: Galbraith's operating and innovation structures (1996, pp.164-5)

6.0 WORK DESIGN AND THE KNOWLEDGE FIRM

Employees should not be disregarded in the change process of shifting the firm's focus to knowledge creation and innovation. Employees are the agents of change within the organisation, as they generate new ideas, cultivate new knowledge and implement new strategies. The strategies and structures presented in the previous two Sections all require shifts in work design. This Section evaluates the hypothesised impact of several work design changes.

6.1 Team and group work

A key change in work-design is an increase in collaborative work groups. King and Anderson (1990) point out that the innovation process is characterised by the activity of groups. Whether it be an R&D team who generate an idea and hone it, the management group who chose to fund and champion the project, or the production team who implement the final innovation, the process is overwhelmingly group driven. This should not surprise also, as the premise for business organisation is the synergies of coordinated productive activity. The question for us, is who should work teams in a knowledge firm be managed.

The lessons are pretty straightforward and spring from the preceding sections. Communication channels should be as broad as possible. The teams should be empowered to a level where they can develop ideas with sufficient autonomy. The team should seek a group dynamic in which there is a free exchange of ideas and views. The team members should bring to the group a variety of skills and experiences. Nonaka (1994) sees the ideal as self-organising teams, cross functional, and made up of between 10 and 30 individuals, with a core of 4 to 5. These 4 or 5 core members act to coordinate the activities of other group members. As is discussed a greater length in Section 7.2 the mix of members in the group will contribute significantly to the group process and innovation outcomes. It would be expected that like the reservations in Section 5.2, most teams would be temporary in nature with group members selected according to the knowledge they could contribute.

The aim of management should be to coordinate the activity of these groups such that learning is directed towards the firm's stated knowledge goals. Managers should also look to act as *sponsors* for those ideas that show promise.

6.2 Quality circles

Quality circles are an excellent example of a work team dedicated to learning and knowledge creation. They are generally a group of staff that meet regularly to discuss quality-related work problems. Circle members are expected to identify problems with organisational and production processes and contribute to generate remedies. The circle is empowered to promote and implement the quality improvements. Typically the circle will be cross-functional in makeup. It is expected that synergies develop within quality circles over time, as consistent team membership should see exchange of tacit knowledge about work processes. Organisations that successfully operate quality circles are on the path to successful knowledge management, as the processes involved are very similar.

6.3 Just-in-Time

Similarly Just-in-Time (JIT) inventory management and production organisation draws on a similar set of principles. Employees are empowered to observe, monitor and report on the effectiveness of operational issues. Continuous improvement is also expected of suppliers, which, in effect, expands the sphere of learning activity. JIT also generates large amounts of data to be processed and hopefully interpreted in such a way that knowledge of routines and processes is improved. As Løwendahl and

Haanes (1997:40) argue, JIT "...emphasize[s] the need to focus attention on those primary activities which add value to the customer."

Finally, JIT also achieves Nonaka's (1994) aim of *redundant knowledge*, in which there is substantial doubling up knowledge bases, which allows for greater dialogue between team members. This is the case with JIT as work rotation and process understanding is encouraged such that line-workers have a good understanding of the overall production process and therefore may be able to contribute to process improvements.

7.0 DIVERSITY AND THE KNOWLEDGE FIRM

The aim of this Report has been to draw together the business case for the knowledge firm and the business case for diversity. Strong arguments have been developed elsewhere for the bottom line benefits of a well-managed diverse workforce in terms of HRM objectives, the capacity to operate in culturally complex environments such as overseas markets and the improved group process outcomes. The latter feed directly into the knowledge firm case, as much of the knowledge literature concerns optimising the outcomes of internal employee interaction, particularly within workgroups.

7.1 Diversity and innovation

Running through the knowledge literature is a common theme that learning is conflictual by its nature. Existing mindsets and beliefs are challenged by new concepts and information. Individuals are forced to re-evaluate their current *modus operandi*. Dialogue between individuals or groups of individuals who have different viewpoints leads to a new understanding.

Likewise, learning is seen as experiential. The knowledge base of a given individual (and group/organisation) reflects their history, their previous learning experiences, and their personal characteristics. This last point is crucial to the diversity case. Diversity has been defined in our paper "*The Theory of Diversity and Group Performance*" as capturing difference in observable and unobservable characteristics. These characteristics include race, ethnicity, gender, age, tenure, functional background, sexual orientation, socio-economic status, education, physical and mental ability, values, and attitudes. We argue that these characteristics shape the mental models of employees, the nature of their individual learning, and also the nature of their interaction with colleagues. This manifests as group learning outcomes.

While Section 7.2 focuses more explicitly on the relationship between diversity and group process, the knowledge and innovation literature does provide substantial evidence on the role of difference or heterogeneity in learning.

The tradeoff in innovation, as in group process generally, of homogeneity is between the positive of higher cohesiveness versus the perils of *groupthink* (Janis 1982). Groupthink can best be described as the tendency to develop a common mental model or mindset, which leads to an inability or unwillingness to question group decisions, as King and Anderson (1990:84) point out "...a focus on relationships rather than tasks".

Several authors have made the case for a positive causal link between heterogeneity and innovativeness. Kanter (1983:167) found most innovative firms formed heterogenous teams "... recognizing that a multiplicity of points of view need to be brought to bear on a problem". Nystrom (1979) argued a similar case that diverse groups generated more innovative ideas." In experiments with homogenous and heterogenous groups, Triandis, Hall and Ewen (1965) and Mcleod, Lobel and Cox (1993) have found significant advantages for the diverse teams in teams of creativity and innovation. While Galbraith (1996) stubbornly holds on the view that innovation will be individual-driven, his definition of a successful innovator could equally be applied to diverse workteams:

"Another key attribute of successful business innovators is varied experience, which creates a knowledge of means and of use in a single individual's mind." (Galbraith 1996:177)

The *innovation from diversity* argument can be expanded beyond simple group dynamics on at least two fronts: the nature of innovative individuals; and the environment for innovation. Innovative individuals are often characterised thus:

"...prospective innovators have an irreverence for the status quo. They often come from outcast groups or are newcomers to the company; they are less satisfied with the way things are and less to lose if there is a change." (Galbraith 1996:376)

Individuals in this position are more likely to exhibit *maverick* or *outsider* tendencies when they find themselves in a heterogenous group. They will challenge the views of others and be prepared to defend their own perspective.

Such behaviour needs to happen in a conducive environment however. As Section 2.2 of our paper *"The Theory of Diversity and Group Performance"* describes, there is substantial scope for those group members who may be in an *out group* to be shut out of information-sharing processes. Individuals whose views are ignored, and who feel there is no scope for real dialogue will bow either to groupthink or disassociate themselves from the learning process. Good knowledge management and good diversity management will create a workplace where views are respected and considered. A learning organisation by definition should exhibit such behaviour. Senge (1997:17) describes the learning organisation as one in which

"...cultural norms defy our business tradition. Acceptance of others as legitimate beings... replaces the traditional will toward homogeneity."

Team members (in fact all colleagues) within this organisation understand, appreciate and adapt to differences in mental models and behaviour:

"...when they encounter behaviours that they neither understand nor condone, people appreciate that such actions arise from viewpoints and forces that are, in some sense, as valid as the viewpoints and forces that influence their own behaviours." (Senge 1997:17)

It could be argued that this acceptance of alternative behavioural norms in itself represents a shift in a typical employee's mental model, and may represent the establishment of some shared culture. Dodgson (1993:382) endorses such behaviour, as "...it is the internal integration of individuals within a shared culture that facilitates learning, and this provides a major organizational challenge".

7.2 Lessons from group process models

Section 3 of our paper *"The Theory of Diversity and Group Performance"* outlines the complex interactions that influence group process outcomes in diverse workplaces. As stated above, there are substantiated and significant benefits to be gained from the learning interaction of heterogenous groups. Such groups can, however, encounter a variety of negative group processes and interpersonal conflict problems. These problems tend to spring from social categorisation and similarity and attraction issues, and be exacerbated by unwillingness or inability to adequately communicate and share information.

Diversity affects both group process and performance in positive and negative ways. The organisation must find ways to harness the benefits that can stream from informational diversity and/or reduce the negative consequences that stem from diminished group functioning through social categorisation. There is substantial scope to implement strategies to counteract such negative group processes, allowing firms to tap in the potential learning gains outlined above.

Whilst team-based structures can be detrimental if social categorisation and similarity-attraction phases are not addressed, they also hold the key to tapping into a diversity dividend. Sessa and Jackson (1995) suggest that organisations should familiarise team members with the causes and effects of status hierarchies in teams through awareness training. This should raise consciousness about why some members do not contribute their thoughts, why different members have high or low status (as social

categorisation theory predicts), and why people are constructed as qualified or unqualified. Alternative strategies include, creating situations where status hierarchies develop due to expertise (rather than irrelevant status characteristics such as gender or race). For example, teams could be constructed of members all from the same level within the organisation.

Fostering successful teams requires the development of trust and the creation of interdependence between members. Managers need to recognise, however, that this takes time. As Hickman and Creighton-Zollar (1998:191) showed in their study of diverse self-directed work teams:

"[t]he development of interdependence and trust emerged as team members spend time together. This includes collaborative work time and group social time, which provide opportunities for the development of collegial connections and friendships."

As lines of communication are opened over time, members make valuable contributions and trust and respect is gained, leading to greater openness among members to consider ideas and willingness to take risks. Much research has demonstrated the importance of providing diverse teams with time to overcome process problems so that performance improvements can emerge (Watson, Michaelsen and Sharp, 1991; Kirchmeyer et al, 1992; Williams and O'Reilly, 1998;).

As with knowledge management in general (see Section 4), the development of clear and common organisational-level goals should reduce the degree of intra-group tension caused by perceived heterogeneity. Perceived similarity based on adherence to organisational norms moderates the negative effects of diversity due to social categorisation and similarity/attraction. HRM strategies should re-categorise individual involvement in a way that enhances the group's identification with a common task and reduces the tendency to create socially irrelevant in-groups over time.

7.3 Lessons from HR models

Our paper "*HRM Business Case*" outlines a series of bottom-line benefits from the adoption of effective diversity-compatible HR policies. These HR policies and the knowledge firm goals are clearly linked. The long-term benefits of effective diversity management will flow directly into improved organisational learning and the creation of knowledge. This diversity management involves the implementation of appropriate HRM strategies, as outlined below.

Developing a workforce that is flexible and conducive to new and unique ways of thinking and doing is critical. And, having a diverse workforce should foster this, given effective diversity management policies and practices and supporting HRM strategies. Firms that can harness their diverse human resources should be better at service and product innovations and meeting the needs of a diverse marketplace.

In addition to cost reduction and minimisation benefits, there are clear performance benefits to be captured by firms that use HRM to manage diversity. Decision-making, problem solving, creativity and innovation should all benefit from the perspectives that a diverse workforce can contribute. These benefits should then translate to bottom line benefits for the organisation. However, these benefits will not emerge simply because this is diversity in a workplace. HRM strategies are critical to overcoming group process problems and harnessing the bottom line benefits of diversity.

Among the many gains from effective diversity management is the scope for reduced employee turnover. As Liebeskind (1996) argues, the reduction of employee mobility is crucial to any knowledge organisation, as it represents knowledge protection. This retained knowledge means knowledge is not lost to competitors (or just lost). Furthermore, this knowledge feeds into the ongoing learning and innovation process.

A further knowledge advantage to be gained from effective HRM strategies is reputational. Organisations with good knowledge management policies, with a clear focus on innovation, coupled

with sound HRM policies embracing diversity, will find itself attracting more and better applicants. This can only help increase the knowledge base, again improving the quality of learning and innovation.

7.4 The Business Case

for embracing knowledge firm principles is straightforward. The source of competitive advantage in the global, dynamic marketplace increasingly rests in the ability to provide new products and services more efficiently. This involves innovating both at the product/service level and also organisationally. The drivers for such innovations are inevitably the employees and managers of the organisation - the human resources – who engage in the learning activity and bring with them unique knowledge sets. Implementing knowledge management strategies that improve the environment for and quality of learning will improve the firm's bottom line, in terms of cost efficiency and increased revenue.

for managing diversity is simple: managing for diversity improves individual and organisational outcomes, which flows through to the bottom line. If human resources are now viewed as the source of an organisation's competitive advantage, then employees need to be offered the space to reach their potential. Implementing HRM strategies aimed at improving job satisfaction and organisational commitment will assist in reducing absenteeism and turnover, and improve performance. Furthermore, strategies aiming to improve intra-group relations, specifically within heterogeneous teams, and overcoming the obstacles of social categorisation and similarity-attraction will provide the platform for organisations to harness diversity to improve performance and gain competitive advantages over other firms. Diverse learning environments will produce better and more lucrative outcomes. The key is matching up the knowledge management and diversity management strategies. As has been shown in Section 7.4, the strategies are strikingly similar and compatible.

If organisations can face the challenges of diversity in the workplace and tap into the decision-making, problem solving, innovation and creativity benefits, organisational learning can be fostered as can the creation of knowledge firms.

7.5 Strategies

Sections 4, 5 and 6 outlined the key strategies firms must adopt to successfully establish some advantage from their knowledge management and learning. Communication channels must be established so that information and ideas flow freely into and around the organisation. Learning activity must be coordinated according to clearly established and articulated organisational goals. These goals must themselves be consistently communicated internally and externally. Knowledge management infrastructure must be instituted in conjunction with information systems specialists to ensure adequate and easy access to relevant data and knowledge. Resource allocation procedures must be adapted to sufficiently fund and reward the pursuit and *harvesting* of new ideas.

Organisational structures must also be assessed. The impact of existing hierarchies should be evaluated to gauge the likelihood of information loss or disempowerment of idea-generators or sponsors. Recognition of such roles as sponsors should be considered, as should the scope for designated reservations for nurturing and incubating new ideas.

The quality of teamwork processes needs also to be evaluated. Strategies to consider include training for team members and leaders in conflict resolution and negotiation skills. This should be the case irrespective of the diversity of the team. Such skills will, however, aid more effective groups processes in the face of heterogeneity, and help firms harness the full benefits of more effective problem-solving and greater creativity. Coupled with effective HRM strategies, including the communication of higher-level cultural identification and supra-group goal setting, this should ensure firms reap the bottom-line savings in terms of HR costs.

Furthermore, the organisation will achieve the ongoing benefits of increased innovativeness, improved learning and expanded knowledge, all of which may lead to a competitive advantage over their competitors.

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