

# KNOWLEDGE-INTENSIVE FIRMS

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## CHAPTER OUTLINE

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## LEARNING OUTCOMES

At the end of this chapter you should be able to:

- Understand the concept of knowledge-intensive firms and differentiate between different types of knowledge-intensive firm.
- Understand the structural and cultural conditions relevant to the management of knowledge-intensive firms.
- Understand the different ways in which these structural and cultural conditions interact to provide an enabling context for knowledge work in knowledge-intensive settings.
- Appreciate the importance of achieving a ‘fit’ between structure and cultural conditions for the successful management of knowledge workers.

## INTRODUCTION

Here we focus our attention on firms where the majority or even the entire workforce consists of knowledge workers – hence the term ‘knowledge-intensive firm’ – and consider the distinctive management challenges posed by this particular type of ‘expert’ workforce. Even today in what many refer to as the ‘knowledge based economies’ of the developed world, knowledge workers are still a relatively scarce resource within the labour market as their particular knowledge, skills and expertise are not generally

widely available (Horwitz et al., 2003). Knowledge workers therefore tend to have considerable choice and latitude regarding their place of work – particularly within knowledge-intensive firms – and management are required to find ways of attracting and perhaps more importantly, retaining an expert workforce as the costs of replacement in terms of time and money are significant.

Knowledge-intensive firms tend to be service-based organizations often competing in their respective sectors based on their ability to solve complex problems and provide solutions for clients. Law firms, accountancy practices, management consultancies, investment banks, architectural practices, advertising and public relations agencies are all good examples of knowledge-intensive firms. Many of these types of firms tend to organize in distinctive ways in order to (a) attract and retain knowledge workers and (b) promote innovation and in some instances creativity. Sustaining an expert workforce who are willing to create and share knowledge is crucial if knowledge-intensive firms are to achieve competitive advantage in the long term. Yet it is the workforce in these firms that to a large extent owns the means of production, not management. Developing and, more importantly, *sustaining* an expert workforce is therefore possibly the most important strategic issue that confronts management within these firms over time.

In this chapter we are going to consider the structural and cultural conditions which, in combination, support the management of knowledge work and promote the recruitment and retention of knowledge workers in knowledge-intensive settings. In so doing we focus on the *process* and *practice* of knowledge work. We illustrate the importance of the interaction and integration of these organizational elements through the case of ScienceCo. The distinctive organizational arrangements that developed in this firm, characterized by an atypical culture, serve as a useful example of the importance of creating an *enabling context* for the conduct of knowledge work – particularly the design of core work processes which involve creativity and innovation.

## TYPES OF KNOWLEDGE-INTENSIVE FIRM

Alvesson defines knowledge workers as ‘qualified labour’ (Alvesson, 2004, p. 8). However, this is a somewhat broad definition. Here we use the term ‘knowledge worker’ to encompass both professionals and groups with other forms of disciplined-based knowledge or more esoteric expertise and skills, for example advertising, media, whose major work tasks involve the creation of new knowledge or the application of existing knowledge in new ways. It follows then that different types of firm employ different types of knowledge workers. Lowendahl (1997), for example, suggests that the crucial strategic difference between knowledge-intensive firms is the role of the professionals employed, that is, the characteristics of the resource base and the types of project targeted. She identifies three generic types of knowledge-intensive firm premised on the firm’s strategic focus (see Table 3.1).

Alvesson (2004) distinguishes between two major types of knowledge-intensive firm; R&D companies and professional service firms. Professional service firms deal largely with intangibles and those employed often deal directly with clients while R&D companies typically produce tangible products and contact between employees and the customer are less direct. This largely concurs with Lowendahl’s typology which only differentiates further on the basis of what is produced for the client in terms of either bespoke or readily adapted solutions/products (be they tangible or intangible). The term ‘knowledge-intensive firm’ is therefore used as a generic term to encompass many different types of firm operating across sectors. Traditional professional service

**Table 3.1** – Types of knowledge-intensive firm

	<b>Strategic focus</b>	<b>Resources</b>	<b>Examples</b>
Client-based	Client relations	Individually controlled	Law and accountancy practices
Problem-solving	Creative problem-solving – innovation	Team-based	Advertising agencies, software development, web design firms
Output-based	Adaptation of ready solutions	Controlled by the organization	Some large management consultancy firms

Source: Adapted from Lowendahl (1997).

firms such as law and accountancy firms, for example, are seen as a subset of knowledge-intensive firms and have existed as long as the organized professions. These types of firm generally organize along partnership lines with recognized codes of practice and clearly defined ‘up-or-out’ career paths. Despite the changing nature of some of the established professions (Muzio and Ackroyd, 2005), the majority of professional service firms still tend to be structured and organized along similar lines – often referred to as the professional bureaucracy (Mintzberg, 1979). Professional bureaucracies are organized along traditional hierarchical lines. Legal professionals will occupy the senior positions within the firm and a range of non-legal professionals will manage discrete functions within the firm such as human resources, finance and so on. Small professional service firms tend to be organized along traditional partnership lines otherwise known as the P2 form whereby the senior partners of the firm also manage the firm (Greenwood, Hinings and Brown, 1990). Larger ones are often referred to as Managed Professional Bureaucracies (MPBs) (Cooper et al., 1996) and employ a variety of professionals as well as legal professionals and administrators to deal with the management and operation of the firm. Notably within the larger MPBs, professionals often work as part of large teams (i.e they do not necessarily individually control resources) addressing the needs of similar large, corporate clients. Professional service firms are characterized by a clear hierarchical, partnership structure and well-defined career paths, and the management of this type of firm is already well-documented in the management literature (Lowendahl, 2000).

Some knowledge-intensive firms, in particular large consultancy firms, are also often loosely referred to as professional service firms. The way in which the very large, global consultancies such as Accenture, McKinsey and Price Waterhouse Coopers organize does tend to resemble that of the traditional professional service firm (although they tend to be output-based rather than client-based). However, whilst these categories overlap, the features of knowledge-intensive firms are broader and, importantly, some of the features ascribed to the traditional professions are not necessarily apparent in all knowledge-intensive firms. For example, distinctive features of PSFs such as codes of ethics, strong professional affiliations and specific educational entry requirements leading to restricted access need not, and do not, exist in many knowledge-intensive firms.

More contemporary forms of knowledge-intensive firms emerged in the latter part of the twentieth century including media, advertising and public-relations agencies, software development companies, and many other high-tech and specialist consultancy firms. Around the start of the new millennium we also witnessed the emergence of virtual, Internet-based knowledge-intensive firms offering specialist services to both individual clients and the general public (e.g. Napster, Friends reunited). It is the issues around organizing and managing within these typically smaller,

knowledge-intensive firms operating in knowledge-based sectors that are going to be specifically addressed here in this chapter.

Not surprisingly, a precise definition of a knowledge-intensive firm is elusive and it is clear from the term itself that it is a socially constructed, broad-ranging and yet quite ambiguous concept. Alvesson (2004, p. 17) loosely defines knowledge-intensive firms as ‘organizations that offer to the market the use of knowledge or knowledge-based products . . .’. The core of activities in these companies is based on the intellectual skills of a very large proportion of the labour force deployed in development, and often also in the sale of products and in service work and he goes on to define a knowledge-intensive firm as ‘an organization broadly recognized as creating value through the use of advanced knowledge’ (p. 29). However, the term ‘advanced knowledge’ here is somewhat ambiguous. Unfortunately, because there is no precise definition there has been a proliferation of articles on the subject of knowledge workers and knowledge work in what might be considered fairly traditional work settings, which has led some commentators to suggest that all work is in fact knowledge work (Knights et al., 1993). However, in this chapter we are not using this broad definition but instead focus on those sectors in today’s knowledge-based post-industrial economy which compete on the basis of their ability to create, apply and share professional and discipline-based knowledge. This includes sectors where the skills and expertise required are not necessarily acquired through formal education and qualifications but where knowledge is still the basis for competition. For example, many skills that are applied within the field of ICT, such as software development, web page design and so on, are skills that are often largely self-taught and almost develops intuitively by those individuals with a particular interest in IT. In many instances it is not necessary to have a degree in computer science in order to become a software expert or web developer. It is therefore quite difficult to give a precise definition of a knowledge-intensive firm in terms of the particular skills and expertise required.

From a critical perspective, Alvesson (1993, 2001) suggests that knowledge-intensive firms might be more usefully seen purely as ‘systems of persuasion’ – relying primarily on their persuasive strategies (esoteric skills) rather than expert knowledge or skills *per se* to convince clients of their superior ability and expertise to satisfy client expectations. This might be the case in some service-based knowledge-intensive firms, for example, some advertising agencies, but certainly not all knowledge-intensive firms. Whilst there is therefore a lack of clarity and a degree of ambiguity around the term ‘knowledge-intensive firm’, it is a useful one with which to encapsulate a broad range of firms operating across sectors in knowledge-based, post-industrial economies. What is indisputable is that many types of knowledge-intensive firm emerged in the late twentieth and early twenty-first centuries and now such firms constitute important industry sectors within a post-industrial economy. In this chapter we address the ways in which they organize and the drivers for particular modes of organizing. We next turn to describing the distinctive characteristics of knowledge work and knowledge workers.

## THE DISTINCTIVE CHARACTERISTICS OF KNOWLEDGE WORK AND KNOWLEDGE WORKERS

### Autonomy

Generally knowledge workers expect to have considerable autonomy in their work. The nature of the work, which is often characterized by creativity and problem-solving,

demands autonomy. It is the knowledge workers themselves who tend to be the most appropriate people to decide how to initiate, plan, organize and coordinate their major work tasks. Unlike other kinds of workers, knowledge workers possess or 'own' the organization's primary means of production – that is, knowledge. They therefore expect and demand autonomy and management is not really in a position to deny them. This is not to say that knowledge workers work alone, typically they work in teams of varying sizes with varying degrees of inter-dependency. In addition, it is not always the case that management in knowledge-intensive firms shares the same levels of skills and expertise as the expert workforce they are trying to manage. Therefore, knowledge workers' demand for autonomy, in combination with an insufficient understanding of the work being conducted in some instances, means that management is typically not in a position to directly control or even manage knowledge work processes. Therefore, it is perhaps more appropriate within a knowledge-work setting to suggest that management's role is to provide the necessary *enabling context* that will *facilitate* knowledge work. Further evidence for this is provided in more recent research conducted by Amabile et al. (2004, 2005). Amabile and colleagues conducted research focused on the cognitive aspects of creativity and adopted a social psychology methodology. In total 222 knowledge workers, working in 26 teams across 7 companies and 3 industries completed a daily questionnaire which sought information to establish the relationship between positive affect (mood) and creativity. A positive mood was found to be positively associated with creativity and this lingered through to the following day (Amabile et al., 2005). Moreover leadership behaviour was found to have a significant influence on subordinates in that leader behaviours was found to precipitate subordinate perceptual and affective reactions, which in turn influenced subordinate creative performance (Amabile et al., 2004).

### **Knowledge base and working methods**

Different types of knowledge worker rely, create, share and apply different types of knowledge in their work. Thus in different knowledge work settings distinctive 'epistemic cultures' can be found (Knorr-Cetina, 1999), epistemic cultures being 'those amalgams of arrangements and mechanisms. . . – which, in a given field, *make up how we know what we know*' (Knorr-Cetina, 1999, p. 1; italics authors own). Such cultures are characterized by different social, discursive and material practices, including different levels of interaction with natural objects, sign systems and so on. When we consider the different epistemic cultures associated with different forms of knowledge work we start to appreciate the 'the complex texture of knowledge as practiced' (Knorr-Cetina, 1999, p. 2) and how this might differ across different knowledge work contexts. Robertson et al. (2003) found significant differences in knowledge creating practices across a scientific consultancy and a legal consultancy which was explained in terms of institutionally embedded means of legitimating knowledge across scientific and legal contexts. These included different emphases on experimentation versus interpretation, different forms of personal networking, and significant differences in the relative importance of codifying knowledge. In scientific professions for example, claims to knowledge are legitimized by the application of the scientific method (principally experimental) to natural and biological phenomena. Once established and replicated through the scientific method and validated by the scientific community, such knowledge claims transcend particular contexts (Collins, 1985). In contrast, 'lawyers point to the law finding of judges and the law making of legislatures' (Halliday, 1985, p. 426). Thus the knowledge claims of the legal profession extend only to particular jurisdictions and particular points

in time. It is also important to recognize that, as well as the broad epistemological differences that exist between professions, such differences are also found amongst different specialisms within a broad professional grouping (Drazin, 1990). This has implications for management inasmuch as attempts to introduce standard work practices and procedures (e.g. Knowledge Management systems and tools), may be perceived as contrary to the ongoing epistemic practices and an unnecessary distraction from core work processes.

### **Co-location**

Another distinguishing feature of the type of work conducted by knowledge workers in knowledge-intensive firms is that there is often the need to work remotely from the employing firm, typically physically located at the client firm. This physical co-location of knowledge workers can be an important management issue to be addressed. For example, client firms may well be inclined to offer permanent employment to knowledge workers who produce good results and who might prove to be a lot less expensive if employed directly by the client rather than on a consultancy basis. The client firm might therefore be in direct competition with the employing firm for the services of knowledge workers. Not only is management therefore required to focus on strategies to aid retention in relation to direct competitors to the firm, they must also consider the development of retention strategies in relation to their client firms.

In addition, knowledge workers are typically organized in teams with more or less interdependence depending on the nature of the task. Physical co-location can therefore also be problematic for team-working even when sophisticated ICT is made available. The complexity of knowledge working often makes face-to-face modes of interaction the only viable communication medium for sharing and creating knowledge at critical points in the process. Here then, management again is required to develop strategies and mechanisms that will enable the coordination and integration of knowledge work processes across the team without necessarily directly intervening in those processes.

### **'Gold collar' workers**

The distinctive characteristics of knowledge workers and knowledge work processes led to the term 'gold collar' worker being applied to knowledge workers (Kelley, 1990). This term implies that these workers need to be managed skilfully, provided with excellent working conditions and generally afforded exceptional, or at least very good, terms and conditions of employment. There are exceptions to this naturally, particularly in large knowledge-intensive firms, such as large management consultancies (cf. Alvesson and Karreman, 2007). However, in small- and medium-sized knowledge-intensive firms, leaders and managers of the firm typically offer superior employment conditions which can be viewed as providing an enabling context for knowledge work (Baron et al., 2001).

In addition to terms and conditions of employment, modes of organizing need to be developed which will be conducive to knowledge work and viewed favourable by knowledge workers. Management must therefore pay careful attention to both the structural and the cultural conditions that exist within the firm. Knowledge-intensive firms thus typically need to organize differently compared to more traditional firms where workers are not necessarily the direct productive force of the organization and, in many respects, are easy to replace. There are still relatively few in-depth empirical studies of the management of knowledge-intensive firms (though see Alvesson,

1995, 2004). Articles on the topic however continue to proliferate and many focus on what is perceived to be the major problem of motivating knowledge workers (O'Neill and Adya, 2007; Thompson and Heron, 2006). These articles are somewhat limited in their focus and do not directly address aspects of the wider organizational context. Here however we are concerned primarily with developing a more holistic account and focus on what constitutes an enabling context for knowledge work within knowledge-intensive settings. The generic structural and cultural conditions which are considered to facilitate the management of knowledge-intensive firms are considered in conjunction with some of the structural or cultural barriers that might mitigate against successful outcomes from knowledge work processes.

## **FACILITATING KNOWLEDGE WORK – ORGANIZING AS AN ADHOCRACY**

The way in which knowledge-intensive firms structure and organize internally will be crucial where innovation and creativity are the basis on which the firm competes. Whilst it will be particularly important for management to offer good terms and conditions of employment to knowledge workers, the way in which the major work processes are managed and coordinated will be equally significant. An approach to organizing needs to be developed that is synergistic with knowledge work and provides an enabling context for the practice of knowledge work.

The way in which many knowledge-intensive firms organize tends to reflect the more general trend towards flatter, less bureaucratized ways of organizing that are becoming more common across all sectors in the twenty-first century. In general terms, knowledge-intensive firms try to organize highly organically and flexibly, generally around teams. Henry Mintzberg (1979) identified five archetypal structural forms that characterize the way firms organize. He suggests that where creativity and innovation – typically in the form of developing novel solutions to client problems – are a conscious strategy, as often tends to be the case within knowledge-intensive firms, then an 'adhocracy' is the most appropriate organizational configuration. The adhocracy is almost the complete opposite of the traditional bureaucracy. An adhocracy genuinely de-emphasizes a hierarchical structure in preference to a dynamic organizational structure based on self-formed and self-managed project teams, decentralized decision-making and minimal formalization in terms of policies, rules and procedures. Within an adhocracy, Mintzberg suggests, control tends to be based on professionalism and shared, organizational values – referred to as cultural or normative control – rather than on more typical forms of direct control such as direct supervision and adherence to rules and procedures. To summarize this analysis, Table 3.2 highlights the distinctive characteristics of the adhocracy in comparison to the traditional bureaucracy.

The adhocracy can also be contrasted with traditional professional service firms where conflict can often arise between competing professional and organizational values (Raelin, 1991). For example, professionals will naturally want to complete client work to the best of their professional abilities, applying discipline-based knowledge (legal, financial, scientific) to client problems. However, time is always considered to be a precious resource in these firms and directly related to the fee structure. There can therefore, on occasion, be conflict between the professional values of the lawyer or accountant, for example, to do a 'good job' and the needs of the firm to manage the firm's resources across the client base as efficiently as possible. According to Raelin,

**Table 3.2** – The bureaucracy and the adhocracy compared

<b>Bureaucracy</b>	<b>Adhocracy</b>
Multiple level hierarchy	Minimal hierarchy
Work processes organized around functional groups	Work processes self-organized around teams
Many formal rules, policies and procedures	Few or no formal rules, policies and procedures
Direct control characterized by supervision	Normative control characterized by self-management
Centralized decision-making	Decentralized decision-making
Coordination achieved through explicit rules and procedures	Coordination achieved through mutual adjustment
Highly mechanistic form	Highly organic form

managing partners within these types of professional service firm are required to find ways of mediating these conflicting tensions.

This conflict of values, however, is not necessarily so apparent in some more contemporary types of knowledge-intensive firm where the notion of ‘professionalism’ is broader and tends to refer to general beliefs and expectations around high standards of performance and a dominant work ethic. This is explored further later in this chapter. Thus, in general, the informal, loosely coupled organizational context of the adhocracy is considered to provide the necessary autonomous working conditions in which individuals can spend time experimenting with ideas and more generally engaging in creative and innovative work. Whilst it may seem somewhat atypical for management to choose to organize in this way, this approach tends to be adopted in many contemporary knowledge-intensive sectors such as software development, new media, specialist consultancies and so on. It has been shown that any significant shift from this mode of organizing can be highly detrimental to both organizational performance and employee turnover. Baron et al. (2001), for example, conducted a large-scale, longitudinal survey of software firms in Silicon Valley over a ten-year period which focused on modes of organizing, performance, CEO and employee turnover. Baron’s team discovered that across a population of 173 software firms over time there were four dominant organizing templates. These templates were characterized by what was considered to be the primary motivation to work for the firm (attachment), the primary selection criteria and the primary means of co-ordination and control. Across the five templates the nature of the work conducted within the firm across the star, engineering and bureaucracy was considered to be the major means of attachment, attracting knowledge workers to these firms and promoting retention. The commitment template was characterized by knowledge workers’ strong emotional attachment to the firm (love) and money was the major means of attachment in firms characterized as autocracies. Typically skills were the major selection criteria applied although firms adopting the star template selected on the basis of future potential. The star template firms also relied largely on self-control and professionalism as the basis for co-ordination and control, whilst the engineering and commitment templates relied on cultural control. These are summarized in Table 3.3.

The majority of firms in the sample were identified as either Engineering (34 per cent) or Commitment (13 per cent) types and 11 per cent of the sample were also identified as Star types. Only 6 per cent organized as bureaucracies and 7 per cent

**Table 3.3** – Organizing templates that characterize high-tech knowledge-intensive firms

Type	Attachment	Selection	Co-ord/control
Star	Work	Potential	Professional
Engineering	Work	Skills	Cultural
Commitment	Love	Fit	Cultural
Bureaucracy	Work	Skills	Formal
Autocracy	Money	Skills	Direct

Source: Adapted from Baron et al., 2001, p. 968.

organized as autocracies where the CEO adopted a command and control mode of organizing. The remainder of the sample were classified as hybrids. The majority of firms therefore relied primarily on professional or cultural (normative) control (see below) rather than formal co-ordination and control mechanisms as a means to co-ordinate work. This supports the idea that an organic, informal and flexible mode of organizing is preferred in these types of knowledge-intensive firm (the notion of cultural or normative control is explored in depth later in the chapter). Notably, firms which adopted a bureaucratic or autocratic model had significantly higher employee turnover than those adopting a commitment or star model. Often over time, with a change in CEO came a change in organizing and the most de-stabilizing in terms of employee turnover, and firm performance was the shift from star or commitment types to the bureaucracy. This tended to occur when firms went public and shareholders demanded more traditional modes of management. The very few firms that shifted from a star model (arguably the template that most closely resembles the adhocracy) to bureaucracy experienced the highest employee turnover. Baron et al.'s research therefore clearly demonstrates that the majority of knowledge-intensive firms do tend to organize largely informally and traditional bureaucratic modes of organizing are not suitable if innovation is required.

More recent research by Robertson and Swan (2004) also highlighted that subtle shifts in organizing template from an adhocracy to a 'soft bureaucracy' (again largely legitimated by the public flotation of the firm onto the stock market) can also have a significant detrimental effect. Soft bureaucracy is considered to be a new, subtle form of bureaucratic control and domination characterized by 'ambivalent structures of governance, within which domination is not essentially exerted by means of, for example, violence, direct punishment or local hierarchical supervision, but through sophisticated managerial strategies' (Courpasson, 2000, p. 142). Control in 'soft bureaucracies' is thus characterized by four distinctive components: (1) a specific combination of impersonal and personal obedience; (2) centralization as a means of legitimating political decisions; (3) control based on soft coercion and protection; (4) control which fuses external and internal legitimacy. In short, the aim is to manage knowledge-intensive firms to be 'both simultaneously innovative (retaining the appearance of worker autonomy) and yet able to control innovation' (Robertson and Swan, 2004, p. 130). Ultimately however Robertson and Swan (2004) demonstrate that whilst soft bureaucracy may be one way of subtly controlling knowledge workers, the negative effect in terms of morale and subsequent performance may be significant. Their research also supports Baron et al.'s earlier research which highlighted that

going public, and the demands of the market (shareholders) for greater formalization can start to erode the enabling context for knowledge work.

## **STRUCTURAL CONSTRAINTS ON KNOWLEDGE WORK**

### **Development of organizational ‘best practice’**

Research has demonstrated that even when the structural conditions are generally supportive of knowledge work tasks, it is still very easy for creativity and innovation to be stifled (Starbuck, 1992). Firms are therefore cautioned to try and avoid the development of particular norms and practices that might constrain innovative behaviour. For example, informal routines that have developed over time can quickly start to become standardized ways of working embedded in physical capital, routines and even organizational culture. These informal routines can develop into knowledge that becomes codified into firm-specific ‘best practice’ templates, such as systematic auditing procedures and tools for project planning and development. As the usage of these tools spreads and comes to be seen as almost mandatory within the firm, then innovation can be constrained as consideration of new tools, concepts and ways of working tends to be precluded. This, however, is perhaps less likely to happen in scientific contexts where experimentation is a dominant epistemic practice and notions of ‘best practice’ are somewhat redundant.

### **Monitoring of time**

Starbuck also highlights that in many knowledge-intensive firms, such as consultancies and advertising agencies, time spent working on client projects is often monitored and rigorously accounted for, as it is billable time and needs to be carefully documented to the satisfaction of management and the client. This monitoring, however, can often inhibit innovative behaviour even when timescales have been mutually agreed between the project team and the client – as should be the case in a genuine operating adhocracy. Where this is common practice knowledge workers often reduce or ultimately fail to spend time searching for, creating or acquiring new knowledge and actively learning. This ‘redundant’ time (Nonaka, 1994) is considered to be particularly crucial for innovation and yet is simply not available within those knowledge-intensive firms that are intent upon monitoring and controlling billable time.

### **Growth**

Starbuck also emphasizes that, over time, knowledge-intensive firms often have a tendency to attempt to diversify and grow and this is not always a sensible strategic decision. Increasing growth and diversification often lead to increasing formalization, layers of hierarchy and increasing numbers of support staff which can all ultimately lead to the firm experiencing problems. As Starbuck states, ‘when support staff come to outnumber experts greatly, or when knowledge-intensive firms (KIFs) claim expertise in too many domains, KIFs lose their halos of expertise and their credibility’ (1992, p. 737). Mintzberg in fact suggests that the adhocracy is a typical organizational form only in young, start-up, entrepreneurial firms. He argues that over time adhocracies evolve into other archetypes – in the case of knowledge-intensive firms they often evolve into professional bureaucracies. The firm necessarily becomes

more formalized, introducing, for example, levels of professional management in an attempt to manage basic requirements such as efficiency improvements.

As discussed earlier in the chapter, this shift in structure and organizing may however be counterproductive where innovation is the basis on which the firm competes. Research conducted by Lowendahl (1997) demonstrated that a strategy of growth can be counterproductive, particularly for those firms that compete on the basis of their ability to solve complex problems for clients. A compromise, however, might be achieved by creating new, autonomous business units as soon as the firm reaches a particular size or introducing internal markets around a project based form of organizing. These new business units should ideally be led by those who recognize the need for an enabling context and the importance and significance of low levels of formalization and decentralized decision-making for knowledge work processes. A number of high-tech firms operating in Cambridgeshire in the United Kingdom (often referred to as 'Silicon Fen') have adopted this strategy. 'Spinning out' new firms as opposed to organizational growth is the approach these firms have adopted in order to manage the exploitation of new innovations developed in-house. These firms are therefore consciously attempting to continue to operate as adhocracies-stimulating innovation but avoiding organizational growth.

## **CULTURAL CONDITIONS IN SUPPORT OF KNOWLEDGE WORK**

Many knowledge-intensive firms do attempt to structure and organize along the lines of an adhocracy, recognizing that this approach provides an enabling context for knowledge work. However, as discussed in the previous section, this highly informal approach to organizing can often be problematic to sustain in the long run. In order for an organization to survive in the long term, it must be able to achieve and sustain a competitive level of profitability. When firms organize predominantly around self-formed and self-managed knowledge-based teams, it can be very difficult for the leaders of such firms to both develop and manage efficiency criteria even when the firm remains small.

The nature of much of the work that is carried out can be both ambiguous and intangible and is therefore difficult to measure, control or even quantify. For example, advertising agencies develop 'ideas' for clients and specialist consultancy firms develop bespoke solutions to client problems. In these cases, it is extremely difficult for managers or even knowledge workers themselves to estimate the resources required in terms of time, expertise and skills to successfully complete client projects. In addition successful outcomes cannot always be guaranteed as innovation is an inherently uncertain process. In many instances successful outcomes can only be measured by the degree to which the client is satisfied with the outcome. Rational, qualified judgements that highlight means-ends relationships are difficult or impossible to make.

Furthermore, it has already been emphasized that knowledge workers will, to a greater or lesser extent, resent any attempt to directly monitor and control their work, demanding and requiring as they do high levels of autonomy in order to carry out their major work tasks. The leaders of knowledge-intensive firms are therefore always seeking ways to manage the fundamental underlying tension that exists between efficiency and autonomy. Whilst structural conditions which emphasize flexibility and self-managed team-working are important preconditions facilitating knowledge work

tasks, the cultural conditions within the firm will be at least as important in ultimately creating an enabling context for knowledge work processes that are largely conducted autonomously. It is the cultural conditions within a knowledge-intensive firm that primarily promote 'responsible autonomy' (Friedman, 1977), where employees use their work autonomy to advance the interests of the organization and not just their own personal interests.

### **Cultural (normative) control**

Whilst leaders of knowledge-intensive firms will be keen to employ individuals with particular skills and expertise, their general requirements will be rather broad, recognizing that diversity across the workforce is considered to be a significant factor promoting innovation (see, e.g. Grant, 1996; Lowendahl, 1997; Nonaka, 1994). It was highlighted that the nature of knowledge production is changing and increasingly knowledge production relies on the combination of knowledge from a variety of fields and disciplines. Not only does this create a challenging environment in which to work from the perspective of the individual knowledge worker, diversity also generates significant management challenges in a very loosely organized environment. A form of management grounded in cultural or normative control has been suggested to be an appropriate approach to adopt within these organizational environments. The suggestion is that leaders of these types of firm are in a position to create and develop a corporate culture which workers will want and choose to identify with. By identifying with the organization it is assumed that workers internalize the dominant organizational ideology – values, beliefs and norms – and consequently behave in the interests of the firm.

The arguments around the role of corporate culture have been developing at least since the 1980s and the 'business excellence' ideas of that period (Peters and Waterman, 1982). Deal and Kennedy (1982), Kanter (1984), Schein (1983, 1992), also promoted the idea that it is the primary task of leaders of organizations to develop and actively reinforce *strong* organizational cultures. 'Improvements in productivity and quality, it is argued, flow from corporate cultures that *systematically* recognize and reward individuals, symbolically and materially, for identifying their sense of purpose with the values that are designed into the organization' (Willmott, 1993, pp. 515–516; italics author's own). Naturally this 'leader-led' organizational culture will be characterized by an organizational (core) value system that represents the long-term interests of the firm. This represents the basis of cultural (normative) control in organizations.

Importantly, in this literature strong organizational cultures are those that are shared across the firm, strengthening the firm through integration and enhanced productivity. This integration perspective on organizational culture (Martin, 1992) and much of the literature that advocates the promotion of a strong organizational culture posit culture as an organizational variable that can be directly shaped by the behaviour and core values of the leaders and management of the firm. These core beliefs permeate the whole organization over time and serve to influence the values and norms of behaviour of the rest of the workforce. There is an emphasis on homogeneity, consensus and, importantly, within the context of a knowledge-intensive firm, predictable behaviour which, in this context, is characterized by an impressive work ethic and communitarian loyalty (Alvesson, 2004). This view has persisted over time and more recent literature in this area reinforces the idea that normative control is an important aspect of the enabling context for knowledge work (Pyoria, 2007). What tends to be overlooked here, however, is that whilst predictable behaviour is

sought with regard to knowledge workers displaying responsible autonomy, in other respects predictable behaviour is not advocated as this may not necessarily lead to innovation and creativity.

The way in which leaders of firms can actively create and shape organizational culture is explained in detail in Schein's work (1982, 1993). He suggests that leaders are in a position to implement primary embedding mechanisms and secondary reinforcement or articulation mechanisms, which will symbolically reflect and are consistent with the dominant, core values held by the leaders. Specific employment policies and practices such as the criteria used for recruitment and selection, performance management and reward are examples of what Schein refers to as primary embedding mechanisms. Organizational design and structure together with formal statements of organizational philosophy typically found in firms' mission statements are examples of secondary reinforcement mechanisms. Schein suggests that if leaders of firms implement all 12 mechanisms in a consistent and coherent manner then, over time, core organizational values will become shared values across the workforce leading to performance and productivity improvements. Alvesson (2004) also emphasizes the importance of symbolism and symbolic leadership, as an important aspect of creating and sustaining a strong organizational culture within knowledge-intensive settings.

From this perspective, if the leader of a knowledge-intensive firm wished to emphasize the importance of knowledge sharing – as might be expected in knowledge-intensive firms – then mechanisms that directly or indirectly rewarded knowledge sharing would need to be introduced. For example, knowledge workers might be financially or symbolically rewarded for contributing to projects they were not directly employed to work on. In this way, by implementing this embedding mechanism in conjunction with other mutually reinforcing mechanisms, Schein suggests that knowledge sharing behaviour in the firm can be encouraged and promoted as knowledge workers begin to recognize that knowledge sharing is a core value within the firm.

### **Multiple perspectives on organizational culture**

There is an overriding assumption in Schein's work and all of the business excellence literature that it is feasible and practicable for leaders of firms to actively create and shape an organizational culture which promotes integration and consensus around dominant organizational values. An expert, highly skilled and often highly educated and diverse workforce might, however, quite naturally hold a wide range of beliefs and values, particularly when diversity extends to national culture. Therefore it cannot simply be assumed or taken for granted that knowledge workers in knowledge-intensive firms will necessarily be willing to subsume their identity and personal value systems to those of the firm. The integration perspective on culture (Martin, 1992), which this literature reflects, assumes certain structural preconditions such as a well-defined hierarchy and highly centralized decision-making. These, as we have seen, are often not in place within knowledge-intensive firms – particularly those that organize as adhocracies. It may therefore be highly problematic to operationalize this approach to 'culture management' in a knowledge-intensive setting. The extent to which the leaders of such firms are in a position to shape beliefs, particularly in such an informal organizational context, is in fact highly questionable.

Leaders of knowledge-intensive firms may therefore have to acknowledge that knowledge workers will naturally hold a variety of beliefs, which cannot necessarily be altered or subsumed within a single organizational value system. This is referred to in Martin's (1992) work as the fragmentation perspective on culture. The fragmentation perspective suggests that culture is better viewed as a metaphor rather than a

variable – something an organization *is* rather than something an organization *has*. From this perspective culture is only loosely structured and partially shared, emerging dynamically as organizational members experience each other, events and the organizational context over time.

The fragmentation perspective provides support competing and contradictory value systems held by individuals across the firm, which is often the case in knowledge-intensive firms populated by a highly skilled, diverse workforce. This perspective acknowledges ambiguity, recognizing that within organizations individuals might experience a lack of clarity or simultaneously hold multiple meanings and beliefs. Lack of clarity can result from unclear structures, fuzzy boundaries or imprecise goals. These are likely to be apparent within a knowledge-intensive firm organized broadly as an adhocracy. It may well be the case, then, that knowledge-intensive firms display cultural characteristics more reminiscent of the fragmentation perspective rather than the integration perspective.

Leaders of such firms therefore need to acknowledge and accept that differentiation and fragmentation rather than integration might predominate, and recognize that they are only in a position to loosely manage organizational culture, for example, by promoting perhaps just one specific value or belief that knowledge workers will naturally wish to identify with. Research by Alvesson and Robertson (2006) demonstrated that in several different types of consultancy settings, leaders and management employed a variety of strategic and symbolic mechanisms to construct an elite organizational identity with which consultants readily identified; this served as an overarching way of integrating knowledge workers within these firms. Consultancy firms appear to be particularly appropriate settings for the construction of elite social identities because of the type of people employed (often of high academic ability) and the nature of much of the work that is conducted (ambiguous and intellectually demanding). Consultants in these firms provide their expertise to other professionals – the majority of their clients are highly skilled themselves – therefore a high level of self-confidence is required. A construction of self and the organization as elite and therefore clearly superior in vital respects can be important resources on which to draw to promote and reinforce the required self-confidence. Moreover an elite identity was found to be a significant mediator of consultancy work for a variety of reasons. First, an elite identity was found to promote self-discipline which sustained a desire to accomplish high standards of performance. Secondly, perceiving these firms to only recruit ‘the very best’ served to attract applicants and generate high retention rates. Finally, a shared belief that consultants themselves and the firm as a whole were ‘elite’ generated a strong image that generated high calibre clients.

Typically, organizational elites have been considered the privileged few who control organizational resources and have considerable power and influence both organizationally and to some extent at a societal level (Hill, 1995; Kabanoff and Holt, 1996). Thus in much of the extant literature the elite is located at the apex of an organization. Alvesson and Robertson, however, demonstrated that the notion of belonging to the elite can exist across whole firms. By promoting an organizational ethos that is more or less generally accepted and shared, rather than attempting to instil and reinforce a dominant core value system, there is a greater likelihood that knowledge workers will start to see the firm as a ‘good’ place to work. As far as is possible in such a diverse, loosely structured environment, this approach is more likely to aid retention and promote responsible autonomy within the firm. One example of this is provided by Timothy Koogle, the founder of Yahoo!, a leading web portal, who argues that his organization became successful largely because he promoted the idea that employees

should communicate freely with one another and as far as possible engage in genuine consensual decisions making (Greenberg and Baron, 2000). This ethos was considered to be essential in the fast-paced world of the Internet and at the same time intuitively appealing to the knowledge workers employed.

## CONCLUSIONS

This chapter has highlighted the structural and cultural conditions that provide an enabling context for knowledge work processes characterized by creativity and innovation in knowledge-intensive settings. Some of the conditions that can act as barriers to knowledge work were also discussed. It needs to be emphasized, however, that the limited research that has been conducted in such firms highlights that there is no single 'best management practice' here. Many knowledge-intensive firms operate in niche markets – offering very specialized services – and the way in which many of these firms choose to organize is often quite unique and highly context-sensitive. Generally, the structuring and organizing of these firms will be loose, informal and flexible characteristic features of the adhocracy. Whilst the adhocracy might appear to be a somewhat chaotic, relatively unmanaged context, it is perhaps useful to consider the way in which this configuration has been operationalized in a scientific consultancy firm based in the United Kingdom. The way in which structural and cultural conditions interact to promote knowledge work processes is explained in the following case study and illustrates the complex conditions actively promoted over time which have ultimately mediated the tensions around efficiency and autonomy within a knowledge-intensive setting. First the case is described and then two questions are posed.

We focus on the actual process of knowledge creation or knowledge generation and adopt a micro-level of analysis. We move from a firm-level analysis of the way in which modes of organizing and organizational conditions can develop in support of knowledge work processes to an analysis of the dynamics of knowledge creation processes within a project team setting.

# CASE STUDY

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## SCIENCECO MANAGING AN EXPERT WORKFORCE

ScienceCo was founded in 1980. It is a medium-sized, technology-based consultancy company, located on the outskirts of London. It operates today on a global basis. At the time of its inception, the founder wished to create a consultancy environment that would not only develop solutions in response to client problems, but also stimulate invention and innovation more generally. Eighty-five per cent of the workforce are highly educated scientists and technologists, who rely primarily on their expertise and knowledge rather than equipment or systems to provide inventions and innovative solutions for manufacturing, engineering and pharmaceutical companies around the world.

Since 1980, the firm has grown from a small entrepreneurial business employing a handful of scientific consultants specializing in engineering and communications to a medium-sized company employing about 200 people and incorporating other scientific disciplines such as biotechnology, applied sciences and information systems. The workforce is truly international, incorporating 19 different nationalities. In defining the type of projects that ScienceCo conducted for their clients, it is important to understand the difference between invention and innovation. Consultants working in interdisciplinary project teams develop completely new concepts and products that are marketed as intellectual property rights (IPR) to clients and project teams. They also develop innovative solutions to client problems using existing concepts, ideas and technologies in new ways. The firm has been responsible for the invention of major scientific and technological developments that are recognized and used throughout the world. One such item is the electronic security tag, which since its invention has been manufactured and marketed by the Swedish firm Esselte. ScienceCo is primarily in the business of creating new knowledge and applying existing knowledge in new ways.

A crucial issue for management at ScienceCo has always been attracting and retaining a highly skilled, expert workforce of international standing in order for the firm to grow and successfully compete on a global basis. Thus developing an appropriate organizational environment in which expert consultants are keen to work has been of paramount importance. The following sections outline the organizational structure, human resource practices, patterns of IT usage and organizational culture that have developed within the firm over time.

## ORGANIZATIONAL STRUCTURE

Attempts have been made to maintain a fairly flat organizational structure throughout the firm's development. Even today, there is fundamentally only one level of management, consisting of the founder (now Executive Chairman), Chairman and Managing Director. Decision-making within

the firm has typically involved significant numbers of consultants as well as management. A worker committee, the Board of Management, which consists primarily of consultants and one or two support staff, make recommendations to management regarding day-to-day operations and organization. Management communicates constantly with the whole of the firm (generally using e-mail) regarding new projects and potential future projects. Turnover and profitability are also communicated to everyone on a monthly basis. Consultants are encouraged to innovate outside of client project work, and they can request financial resources for this through the Innovation Exploitation Board. This forum includes consultants from across the firm, as well as the management team, who meet regularly to discuss the feasibility of new ideas proposed by consultants. All members of the management team are also active consultants, contributing to project team-working within the firm.

Consultants are organized across three divisions within the firm according to their particular scientific expertise. These are Business Innovation (BI), Technology, Internet, Media and Entertainment (TIME), and Engineering (ENG). While divisional managers head up divisions, there are actually no hierarchical levels either within or across divisions. Divisional managers tend to be those individuals who are prepared to take on some minimal administrative responsibilities such as recording revenue generation and monitoring the projects that are being managed by consultants within their own division. In many cases, divisional managers are actually remunerated less than other consultants within their division (see section on 'Performance management') and they also actively contribute to project working across the firm.

Divisions have emerged, merged and disbanded in a reactive manner over time, based on the client project work in hand. In 1980, there were only two skill groups, Engineering and Communications. However, in 1990, a divisional structure was introduced in order to provide improved financial accountability. By 1996, seven divisions existed including two business consulting divisions, Information Systems and Applied Sciences. The Life Sciences division emerged at this time from the Applied Sciences division when enough biotechnology projects had been secured to ensure the divisions' sustainability in the medium term. By 2000, however, Life Sciences had again merged with the Engineering division together with Applied Sciences. Business Innovation by this time incorporated both business divisions and the Information Systems division. Despite the existence of divisions, consultants tend to work in an interdisciplinary manner across divisions within small project teams. This occurs because the nature of client requirements generally requires cross-disciplinary skills and expertise. These project teams are self-forming and self-managed. Project team-working is discussed in more detail within the section on 'Performance management'.

## **RECRUITMENT AND SELECTION**

For many years, the firm did not employ a Human Resources (HR) manager. However, in 1995, based on predicted and expected project work, the firm was faced with a requirement to increase the expert workforce by 15 per cent (and this was projected to continue annually, compounded). The firm recruited

a Human Resources manager to develop a more formal recruitment and selection process, and to develop ways of maintaining high retention rates across the firm.

In the past, consultants had typically been recruited informally by word of mouth, drawing upon consultants' global personal networks of colleagues and contacts. In order to make the recruitment process more effective, the HR manager developed good relationships with two international recruitment agencies that had offices throughout the world. Once provided with a person specification and a brief that described very broadly the type of work carried out by the firm, they provided shortlists of candidates on an ongoing basis. In terms of the selection process, the founder had always insisted that candidates take an AH6 intelligence test and Cattell's 16PF personality test. Given that the majority of candidates shortlisted by the agencies generally had a PhD in a scientific discipline, it was virtually impossible for any candidate to fail the AH6 test. It was also difficult to 'fail' the 16PF because the firm did not look for an 'ideal' profile other than 'openness' and a 'willingness to experiment'. Consultants were simply keen to see what sort of personality profile candidates had. Thus, almost all candidates who had been shortlisted proceeded to an initial short interview with the HR manager and the relevant divisional manager.

During this preliminary interview, the HR manager stated that candidates were expected to demonstrate a strong understanding of their own and, more importantly, other disciplines, because of the need to work in interdisciplinary teams sharing knowledge. They were also expected to be 'almost naturally innovative' and have a strong commercial awareness. The HR manager stated,

It's quite a unique mix we are looking for. All the way through the selection process, we give out big indicators to say the sort of organization we are. It's quite aggressive maybe, and I'm sure interviewees will pick up quite a lot of arrogance on the part of the company. But the messages we are giving out are more about confidence in what we do and how we do it rather than us thinking we are better than anyone else.

And approximately 25 per cent, which typically equates to four candidates, progress to a second interview. The firm was not overly concerned about the high numbers of candidates rejected. Management is only interested in individuals with either a PhD or particular expertise within a scientific discipline, who are fluent in English, have some commercial/industrial experience, and who are prepared to adopt the role of a consultant. This role involves marketing their own and, more generally, the firm's abilities and expertise. It is therefore a relatively unique set of characteristics which is sought in candidates.

The second interview focuses on assessing the candidate's ability to market to clients, their overall level of expertise, and their ability to work within interdisciplinary project teams. This second interview is a panel interview involving a number of consultants from several divisions, who 'quiz' the applicant in some depth on their knowledge of their own and other science- or technology-based fields. Panel members are randomly drawn from across the firm, based on availability at the time of the interview. If the panel agrees on a candidate, then the candidate will be recommended for appointment to the MD.

In 1996, typically, 16 candidates were interviewed for each post, and for each of those interviewed, approximately ten CVs would have been received from the recruitment agencies. The selection process is described as 'rigorous' by the HR manager. He emphasized that the interviews focus primarily on the candidates' ability to 'fit in' to the ScienceCo way of working. This involves willingness and ability to collaboratively share knowledge across different science- and technology-based fields, both within project teams and more generally. The HR manager commented,

You get a CV, and the person has a PhD, and they've worked for a pretty high-powered research agency, and that's brilliant. You've got to see them, but you know that there is a pretty strong chance that the moment you meet them you're going to know what they're not – they're not one of us.

## PERFORMANCE MANAGEMENT

Only one formal system exists at ScienceCo, and this is the performance management system that was introduced in 1990. This system was introduced at the same time as consultants were allocated to divisions. Before this, individual consultants' performance had not been managed. The system focuses on divisional revenue targets (DRTs) and personal revenue targets (PRTs). Management establishes these targets at the beginning of each financial year, and they are monitored monthly. The same monthly PRT applies to all consultants, regardless of age, experience and so on. Hence, DRTs are the accumulation of PRTs, premised on the number of consultants within the divisions. By default, then, the larger divisions had to generate more revenue.

Revenue is generated through project work that is generally priced at a flat rate rather than a fee rate. A lead consultant emerges on client projects. Typically, this is the consultant who has the most contact with a particular client. The 'lead' consultant is responsible for negotiating the value of the project with the client, after careful consideration of the resources that will be required in terms of breadth of expertise and time. Lead consultants will use e-mail to inform consultants throughout the firm about potential new projects and the skills and expertise that will be required. Once the value of a project has been determined with the client, it is the responsibility of individual consultants who want to work on the project to negotiate with the lead consultant regarding the amount of project revenue they will be allocated. As there are no formal systems to record these negotiations, e-mail messages serve as a record of any negotiations that take place. The allocation of project revenue contributes to the individual consultants' PRT and the DRT to which they are assigned.

Management described PRTs as a scheme for making people sell their skills to other people in an effective manner:

It is a micro economy. It is a free market for expertise. Over the years it has been the subject of much controversy as it puts a lot of pressure on people, and it is in this way that we try to maintain a competitive (some would say combative) environment. It does create tension, but at the same time, it enhances innovation given by the rate at which new ideas come out of the organization.

In order to achieve PRTs, consultants generally work on a small number of projects at any one time, commanding a percentage of the overall revenue from each one. Achievement of PRTs consistently over time is expected of everyone, other than the most inexperienced consultants and recent recruits. The majority of consultants usually achieve their PRT. However, consistency across whole divisions is problematic and occasionally divisional managers find it difficult to achieve their DRT. At the end of each financial year, divisional managers performance-rank those within their division, based on achievement of PRTs and contribution to overall sales. This is a transparent process and individual consultants are free to discuss, and in some instances dispute, their overall ranking position. When divisional managers have agreed on their rankings within their division, they meet with the management team to agree on overall ranking across the firm. Individual consultants are then awarded percentage increments according to their ranking. Underperformers are tolerated in the medium term. Consultants who do not achieve PRTs over time will not receive a salary increment, but they are actively encouraged and helped by management to improve performance the following year. Management has never introduced salary scales within the firm, and no formal career structure exists because there is a no formal hierarchy. Individual consultants are therefore awarded a percentage increase based on the salary they have personally negotiated with the MD on their appointment to the firm.

It is also important to recognize that consultants manage their own time both within and outside of project working. Consultants are free to choose their hours of work and length of vacations. This means that some consultants work continuously, occasionally for months at a time and then take extended vacations, up to 2–3 months at any one time. Other consultants choose to work regular hours and take shorter breaks. Divisional managers only expect to be made aware of vacations (time and length) and consultants are trusted to manage their time effectively.

## **TRAINING AND DEVELOPMENT**

Professional development is particularly important to all consultants at ScienceCo. In order to stay at the top of their professional fields, consultants must be aware of any developments in their field, and they need to participate in activities that offer the opportunity for further professional development. Again, consultants are responsible for identifying their own requirements in terms of courses, conferences and workshops. Management simply provides the necessary financial resources, which in some cases are considerable. It is assumed that consultants will organize their workloads accordingly, in order to participate in professional development without any significant disruption of project work occurring.

Training for consultants has never been considered an issue within the firm. Management has always believed that the quality of the people employed negates any need for systematic training. It is assumed that if dedicated training is required, for example, in the use of particular software application for project work, then consultants are sufficiently skilled to train themselves at times that suit them.

## IT USAGE

Significant resources have always been made available for investment in any technology that might facilitate project working. An e-mail system was introduced in 1990 to facilitate communication between consultants. By this time, the firm had grown to around 100 consultants, and the opportunities for regular face-to-face contact with everyone were rapidly diminishing. The e-mail system began to be used extensively almost immediately, as there were very few formal systems or procedures in use for communication, and on any 1 day, significant numbers of consultants would be working remotely at client firms. By 1996, consultants were receiving between 100 and 150 e-mails each day, and despite attempts to curtail the use of e-mail for trivial matters, consultants today still receive about this number. This is because no protocols are used to classify mail sent, other than to attach a prefix of SOC for 'social' communication and INNOV for an e-mail where the sender is searching for information.

It is the e-mail system that is generally used to broadcast requests for information when putting together proposals for clients. Anyone who wants to be involved in a potential project initially communicates in outline their potential contribution, in terms of skills and expertise, via e-mail. The system works well in this respect as the medium is good for communicating low-level information, quickly and across the whole firm. However, the level of e-mail communication consultants are exposed to on a daily basis is recognized generally as a significant burden. Norms have developed, such as sending replies to everyone in the firm and failing to edit the title of e-mails to ensure that it relates to the content of the e-mail. These norms, while making the use of e-mail relatively thoughtless, informal and simple, have generated a somewhat chaotic and haphazard system of communication. For example, some consultants, when faced with ever-increasing numbers of e-mail, choose not to bother reading the majority, and only use the system when absolutely necessary.

Other technologies such as groupware technologies are occasionally used and intranets have been set up in and across divisions. Consultants are aware that packages such as Lotus Notes can provide useful project documentation. However, the majority of projects continue to be documented in a highly idiosyncratic manner because project leaders are free to provide documentation in whatever way they deem appropriate. Client requirements need to be fulfilled in this respect. However, if the client is satisfied with the documentation produced, no further effort is directed at producing, recording and classifying project documentation in a consistent manner across the firm. Again, consultants are trusted to produce high-quality project documentation, without recourse to formal standards, systems or procedures.

The use of both groupware and intranets tends therefore to be spasmodic and piecemeal. For example, groupware, such as Lotus Notes, only tends to be used when geographical constraints impose a need to work in this fashion. Consultants prefer project team-working to be face to face, rather than via Lotus Notes discussion threads. Groupware technology is not generally considered rich enough to adequately convey some types of information and knowledge required during project work. In many instances, when significant decisions or results need to be shared across a project team, the technology is simply used to schedule a telephone conference call.

## CULTURE

As stated in the introduction, from the outset the founder wanted to promote an innovative environment and one that would stimulate creativity. With this in mind, he attempted to develop and perpetuate an environment characterized by an absence of hierarchy, rules and formal procedures. An emphasis was placed on maintaining an egalitarian environment, one in which everyone was in principle free to contribute to decision-making, and one that allowed individuals' relative freedom to be creative. While the founder was keen to promote a corporate culture around a small set of core values specifically regarding the importance and value of creativity and innovation, to both the firm and society more generally, he respected individuals as individuals. He did not, therefore, attempt to develop a strong culture that encompassed particular norms of behaviour. The ScienceCo way of working is therefore characterized by a lack of prescription, informality and idiosyncrasy.

The heterogeneity and diversity of the workforce exemplify the importance placed on individuality within the firm. Not only are 19 different nationalities represented, there are also significant differences across the firm with regard to age, experience and general attitudes and behaviour. Individuality often tends to be manifest symbolically in dress, ranging from the bizarre (e.g. running shorts and vest in the depths of winter!) to the more traditional conformist dark suit and tie. During project working, however, diverse groups of individuals with differing expertise are expected to work together jointly, developing solutions to client requirements or problems. While conflict inevitably arises across such a range of diverse individuals, the environment is one in which individuals feel free to speak out without recrimination. Consultants are trusted to resolve any differences that might arise without recourse to the management team, so that ultimately client requirements are satisfied.

While everyone agrees that the environment is highly informal and this is considered to be one of the major attractions of working in the firm, consultants do have different perceptions of what constitutes organizational reality. For example, while everyone agrees that the organization is almost flat, it is widely recognized and acknowledged that a dynamic, informal hierarchy exists based on expertise. However, consultants do differ (in some cases quite considerably) in their opinions as to the hierarchical ordering based on their own personal experience of working with others in the firm. As one consultant stated,

Nobody in theory has a job title. Single status applies but obviously some people are seen as more powerful, more influential, higher status than others – based purely on what they are seen to contribute to the organization in terms of big projects or particularly innovative ideas.

Individuals across the firm can therefore command powerful positions within the informal hierarchy. Their position will be based on their ability to both acquire new business and command large proportions of project revenue that contribute to their PRT. Positions within this informal hierarchy, however, are transient and relatively ephemeral, as new clients and new projects requiring different skills and expertise are acquired over time.

## Questions

- Define and explain six critical organizational factors that have contributed to ScienceCo's growth and ability to retain an expert workforce.
- What are the potential problems that might arise over time in this organizational context?

## Summary of Key Learning Points

- Knowledge-intensive firms rely on their workforce for their competitive advantage. Therefore employee retention is a crucial strategic issue within these types of firm.
- 'Knowledge-intensive firm' is a generic term that encapsulates a broad range of firms operating across sectors in a post-industrial economy.
- Knowledge-intensive firms can be classified as client-based, problem-solving or output-based.
- Knowledge workers are often referred to as 'gold collar' workers, acknowledging the autonomy and exceptional working conditions they are generally afforded.
- The adhocracy, characterized by a dynamic organizational structure based on self-formed and self-managed teams, is considered to be an appropriate configuration where innovation is the basis on which a firm competes.
- Structural constraints on knowledge work include the development of organizational 'best practice' templates, monitoring of knowledge workers' time and organizational growth.
- Responsible autonomy is more likely to be achieved if management acknowledges that organizational culture is likely to be characterized by differentiation and fragmentation rather than consensus and integration. Hence management should only attempt to loosely manage culture, aiming to promote an organizational ethos that knowledge workers find accessible and can readily identify with, rather than a dominant core value system.

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