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Human Resource Advantage in the Networked Organisation**

It is often assumed that firms have freedom of choice over their HR policies and practices, however, the networks within which they operate suggest that the HR practices themselves may be influenced by clients, suppliers, partners and other collaborators. This paper aims to examine the development of HR policies and practices as a consequence of the exercise of strategic choice within the network. The influence of networks on competitive advantage is particularly evident in knowledge intensive firms (KIFs) that rely solely on their human capital to generate intellectual capital. We present three software firm case studies to illustrate various types of influences that the network may have on the HR Advantage of a firm.

Key words: **Network Influences, Human Resource Advantage, Knowledge Intensive Firms, Strategic Choice, Network Advantage**

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Introduction

Knowledge intensive firms (KIFs) typically operate in networks which include clients, suppliers, partners and other collaborators (Grugulis et al. 2003; Nohria/Eccles 1992). Their success depends vitally on how effectively knowledge flows within the firm and the network so that it is transformed into innovative products and services. This competitive advantage is built upon the human and social capital which makes up the unique trading assets of the firm (Alvesson 2001; Frenkel et al 1999; Lei et al 1999; Newell 2001; Purvis et al 2001, Starbuck 1992; Swart/Kinnie 2003). Successful firms are likely to possess a Human Resource Advantage where superior HR policies, practices and processes support this competitive advantage (Mueller 1996; Boxall 1996; 1998; Boxall/Steenneveld 1999; Boxall/Purcell 2003).

Our aim in this paper is to examine the influences on and impact of the development of this HR advantage in knowledge intensive firms. In particular we focus on the interactions between the focal firm and other members of its network and see the development of HR advantage as a consequence of the exercise of strategic choice within the context of external constraints (Child 1997)¹. We draw on research conducted into three software firms as part of a project sponsored by the Chartered Institute of Personnel and Development (CIPD) in the UK.

Previous Research

Much of the previous research in the field suggests that managers have a high degree of choice when selecting the appropriate HR policies. The exercise of choice by managers is seen as central to the strategic HRM approach which has been defined as a process involving planning, analysis, debates, the exercise of power and learning (Boxall/Purcell 2003:36).

The way in which choice over HR is exercised has been the subject of extensive debate in the field (Child 1997; Purcell 1999). The 'best fit' approach implies that managers are able to choose the most appropriate HR architecture (Lepak/Snell 1999) which either fits with their external competitive strategy or with their internal structures and policies. This view has been subject to extensive criticism and debate and Purcell (1999) described this as a chimera. The alternative view suggests that managers will select a set of best practices which have been proven elsewhere to have a beneficial effect on the performance of the organisation. Indeed, various authors (Pfeffer 1998) have sought to identify the practices which are applicable in all circumstances. Purcell (1999) described this approach as a 'cul-de-sac.'

More recently attention has shifted to the resource based view of strategy which argues that competitive advantage is gained from resources which are valuable, scarce,

¹ Grugulis et al (2003) discuss the various definitions of the 'network organisation' and it is possible for a firm to belong to a number of different networks. We are examining the relations between the KIF as the focal firm and other members of the network that are directly concerned with the products or services central to the success of the firm. This work can be contrasted with other work, for example in the manufacturing sector (eg Dyer/Nobeoka 2000) which has looked at the impact of a dominant firm on the other members of the network.

inimitable, non-substitutable and appropriate (Boxall/Purcell 2003). In the HRM arena this has promoted a discussion of what has been referred to as the acquisition of HR advantage (Mueller 1996; Boxall 1996 1998; Boxall/Steeneveld 1999; Boxall/Purcell 2003). This is comprised of the human capital advantage (HCA) and organisational process advantage (OPA). HCA involves the developing superior HR policies in key areas such as recruitment, selection training and team building leading to high levels of employee skill. OPA exists where employees work well together and the high quality HR policies are actually implemented as intended (Boxall 1996: 267). Mueller (1996: 777) draws particular attention to this 'social architecture' because it is created and re-created at all levels in the firm, but especially on the shop floor, and it is therefore especially difficult to copy.

This emphasis on both HCA and OPA means that these issues can only be examined in depth by means of a case study approach. This research approach also allows us to adopt the perspective which argues that it is essential to examine the network of relations to understand how a firm operates. This is supported by Child (1997: 54) who draws attention to network environment and argues that the ways actors seek to achieve their goals through choice needs to be complemented 'by attention to the ways they may seek to attain their objectives through mutual accommodation and collaboration with parties in the existing environment.' Moreover, he argues that firms often engage with external parties in relationships 'which are sufficiently close and long-standing as to lend a mutually pervasive character to organization and environment' (1997:55).

In this paper we draw on extensive research in three software companies which have been studied in detail.² We have focused on four questions:

- How do our firms achieve competitive advantage?
- What are the characteristics of the networks within which they operate?
- How is the way HR is managed in these firms affected by the characteristics of the network?
- How do the network characteristics affect the ability to generate HR advantage?

We will now explore three KIFs which we have studied in detail on a case by case basis. We will begin introducing the companies and explaining how they gain their competitive advantage. We will then move on to look at the interplay between the network relationships and dynamics and the exercise of strategic HR choice. In the discussion section we compare the cases by examining the ways in which the network characteristics influence the form and level of the HR advantage. We draw on network theory and argue that the links between HR and firm performance can only be understood in the context of the network of relationships within which they are embedded (Gulati et al 2000:203). These network characteristics shape and are shaped by the ex-

² The research was part of a larger study examining the links between HR and organisational performance sponsored by the CIPD in the UK. 18 companies in total were studied, including 7 knowledge intensive firms over a period of two and a half years. Qualitative and quantitative data were collected at three levels: senior managers and directors, line and middle managers, including team leaders and employees on the shop floor. Further details are given in Purcell et al (2003).

ercise of strategic choice by managers, what Child (1997: 53) refers to as the 'pro-active and reactive aspects of organisational decision making.'

We consider three characteristics of the networks within which our firms operate. First, the network structure which includes the purpose and membership of the network and the products and services which flow through it (Powell et al 1996). Second, the network relationships which include the nature of the ties between the members and how the network is governed through the exercise of power. Third, the dynamic aspects of networks are examined including the attempts by members to occupy a more powerful position in the network (Dyer/Nobeoka 2000). Having established these characteristics we then consider how they influence the development of HR Advances within each of our organisations.

We will be referring to both qualitative and quantitative data in our analysis. The qualitative data is drawn from interviews with directors, managers and employees at all levels in the organisation. The quantitative data is taken from structured interviews with employees whose responses were collected using a 5 point Likert scale where 1 is very satisfied or very good and 5 is very dissatisfied or very poor. The mean scores for the responses to various questions are shown in the text and in the tables in the appendix. Three composite measures of employee attitudes were identified by means of factor analysis conducted on a larger data set. The following measures for HR advantage were used: employee organisational commitment and the level of satisfaction with key HR policies; employee satisfaction with their relationship with their line manager and with communication and involvement in the firm.

Case studies

Bespoke Ware

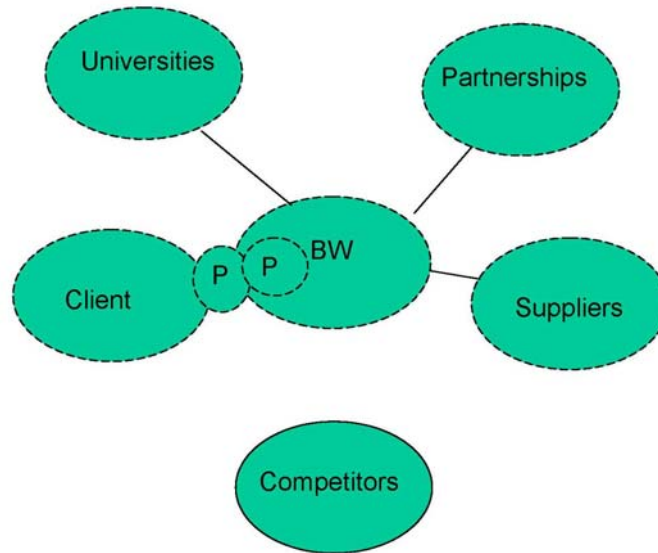
Bespoke Ware is a small software house based on two sites in the south west of England. It was founded in 1986 by three software engineers who wanted to focus on the development of bespoke software in embedded systems. At the time of the research Bespoke Ware employed 46 people, of whom 30 were software engineers and it had a turnover of £2m. Bespoke Ware's advantage in the marketplace is based on its dominant position in a niche market. Their main competitors are individual contractors.

Network relationships

Bespoke Ware provides customised embedded software rather than standardised products which they believe would be repetitive, reduce the job challenge for their employees and have a devastating impact on their culture and staff retention. Although they work very closely with their clients their employees do not spend long periods on client sites.

Contracts are all with large long term clients and vary from the smaller sub-projects with a long standing client (just a few weeks) to longer projects (3-4 months). Bespoke Ware has a history of excellent client retention and contracts are frequently renewed. They work very closely with other members of their network which include major software providers (e.g. Microsoft) and chip manufacturers and there is a high degree of collaborative resource dependence. They also maintain close links with local Universities who are their main source of new staff.

Figure 1: Bespoke Ware network



P = Project teams with fluid boundaries

The market in which they operate is poorly defined and clients come to them because they have the necessary expertise. There is a high level of uniqueness in their offering and clients are not able to specify demands because the solution is not known beforehand.

This emphasis on niche based expertise is reflected in the internal management structures which are non-traditional and emphasise the distribution of knowledge inside the firm. The organisation maintains a flat structure with only three levels: directors, senior software engineers and software engineers. There are no traditional functional departments within Bespoke Ware. Instead there are a series of committees which take responsibility for the key operating areas. All employees are members of at least two committees.

Although client project teams exist the barriers between them are very fluid: staff are rotated between the teams and they are encouraged to share their knowledge. Project leaders are chosen because they are the most competent for the task, based on their experience, not because they are the most senior. Clients therefore have very little influence over the firm’s internal structure and they do not interfere with the resource allocation of the various project teams. This strategy is designed to maximise their intellectual capital and achieve internal synergies.

Network influences on Human Resource Advantage

The emphasis we have noted on internal networks is reflected in the management of HR which has three important characteristics. First, as with other functional areas, the HR responsibilities are distributed throughout the organisation through a series of committees. Each of these takes responsibility for particular areas of HR policy. Second, the policies themselves are formed by extensive consultation with employees at all levels and are derived from suggestions and informal practices. These suggestions

are discussed extensively at the relevant committee and then translated into formal policy. Here the HCA grows from the OPA ensuring that HR policies and practices fit with the nature of the network. Bespoke Ware is well aware that software engineers have their own social networks that span the organisation's networks and that practices can be discussed and compared across the network (mainly on Fridays at the local pub). The organisation therefore used the network relationships to their advantage and allowed the HR policies and practices to evolve from the bottom up. This ensured a fit between HR Advances and network characteristics and also ensured that the employees were committed to the organisation, their team and their clients.

The success of this approach is reflected in the score for organisational commitment (mean 2.07, sd .651) which is roughly equal to FinSoft, our second firm, and the highest of the three cases. Team spirit is also high (mean 1.95, sd .887). There were also high levels of satisfaction with a number of HR policies (performance appraisal mean 2.00, sd .767; training mean 2.18, sd .795; worklife balance mean 1.73, sd .767; involvement mean 2.17, sd .778). Table 1 gives further details.

Third, the ownership of these policies is widespread and they are embedded in the routines and practices of the organisation. Line managers are closely involved in the implementation of HR policy. For example the mentoring system where a senior software engineer has two protégées was central to this. Mentors were responsible for the implementation of HR policies and focused on personal and career development via the performance management system. The development process was strongly linked to reward, although remuneration was the one issue dealt with at director level.

This high level of line manager engagement in HR policy implementation is seen clearly in the results for the relationship with line managers which is the best of the three companies studied (mean 1.94, sd .475). Line managers are also extensively involved in the recruitment and selection of new staff. Possible candidates were usually identified in advance from a knowledge of the local network and approached informally. Once again the network is appreciated and has a direct influence on the OPA within Bespoke Ware.

New employees were selected not just on their technical ability, but also on their capacity for innovation and the ability to communicate their ideas. Employees were attracted by the ability to work on highly demanding projects, as shown by the high levels of job satisfaction (mean 1.91, sd .705).

Bespoke Ware is closely embedded in the network within which it operates and the management of its employees reflects this. The success of the company is closely bound up with other members of the network. It depends on the network for new business, for the development of ideas and as a source of new recruits. The flow of knowledge across the network is evident here and positive resource dependence is created which stimulates innovation. The members of the network know that it is in their common interests to make sure the network is effective.

Table 1: Employee attitudes in Bespoke Ware, FinSoft and LifeCo

Company		Communication	Commitment	Satisfaction	Relationship with managers	Rewards and recognition	Performance Appraisal	Level of training
Bespoke Ware	Mean	2.0145	2.0725	1.1931	1.9478	2.1449	2.00	2.18
	Std Dev	.45481	.65100	.70509	.47565	.62624	.767	.795
FinSoft	Mean	2.3070	2.0439	2.1184	2.0268	2.3377	2.32	2.54
	Std Dev	.71610	.81713	.64945	.58938	.97529	.973	1.169
LifeCo	Mean	2.5333	2.5333	2.2533	2.8640	2.6867	2.47	2.33
	Std Dev	.62361	.57735	.74087	.80565	.97814	1.172	1.049

Company		Career opportunities	Sense of team working	Work life balance	Involvement	Openness	Job security	Job challenge	Motivation
Bespoke Ware	Mean	2.23	1.95	1.73	2.17	1.43	1.96	1.91	1.87
	Std Dev	.612	.887	.767	.778	.590	.706	.596	.548
FinSoft	Mean	2.14	2.00	2.24	2.83	1.59	1.87	1.82	1.97
	Std Dev	.948	1.121	.883	.845	.762	.935	.801	.687
LifeCo	Mean	2.44	1.78	2.24	2.83	1.87	2.16	2.21	2.04
	Std Dev	1.294	.850	.523	.702	.680	.898	.833	.735

Bespoke Ware – N=23, FinSoft – N=38, LifeCo – N=25

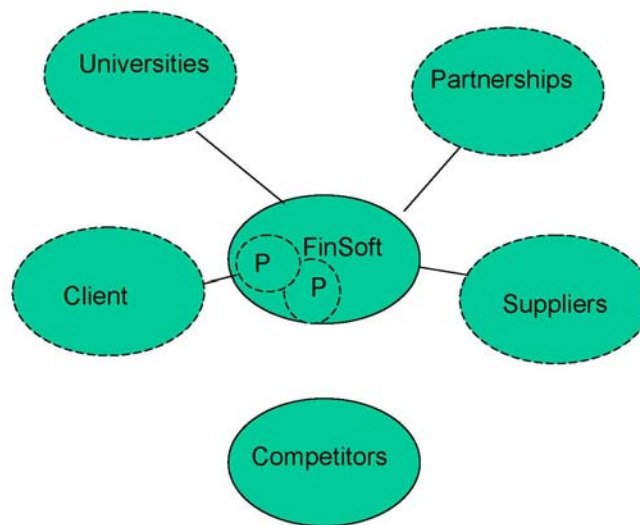
Scale: 1- strongly agree/very good/very satisfied, 2 – agree/good/satisfied, 3 – neither agree nor disagree, 4 – disagree/poor/dissatisfied, 5 – strongly disagree/very poor/very dissatisfied

The HR advantage of Bespoke Ware is established at both the organisation and network levels and it effectively supports the source of competitive advantage. The approach to HR policy, practice and process reflects the external emphasis on networking. Indeed, the HR Advances might be referred to as a network approach both within the firm and the external network. They have created a HR Advances at the level of the organisation where there is high satisfaction with HR policies and high organisational commitment by concentrating on the quality of life rather than the need to grow fast as well as through their ability to involve all employees in both the design and implementation of their HR policies. This produces a high level of satisfaction with the relationship with line managers. They are also able to create the necessary skills, attitudes and climate within employees to encourage them to collaborate with clients and other members of the network. The weak intra and inter-organisational boundaries enable and encourage employees to share knowledge with colleagues, clients and other members of the network. This knowledge sharing contributes towards satisfying the demands for these employees for personal development and challenging work. They are therefore able to attract and develop employees who have the skills which are in high demand in the marketplace. Bespoke Ware is able to achieve an HR advantage at the organisational and network levels which is well suited to what makes the organisation successful in the marketplace.

FinSoft

FinSoft provides software products and services for around 20 clients in the financial services sector. It was established in 1986 and at the time of the research employed around 400 people and in 2001 it had a turnover of £20m. FinSoft's competitive advantage derives from the firm's expertise at managing its relations with its clients and with its employees.

Figure 2: FinSoft network



P = Project teams with fluid boundaries

Network relationships

FinSoft offer their clients a mix of software services and products. The services involve the development of bespoke software especially for clients who are looking to integrate existing data bases. This involves a high level of customised work to fit the client's needs. Contracts vary in length, size and value. Some may be relatively short (just a few weeks), small (a handful of employees) and of low value whereas others are longer (up to 2 years), involve a large team (20) and are of high value.

Recently FinSoft have been developing a more standardised product which they can sell to clients and then gain a licence income. This move was because the services work produced income which was unpredictable and variable. This meant that close relationships had to be formed with clients although employee time spent on clients' sites was minimised and was much lower for example than in LifeCo. Clients found that the bespoke approach was very expensive and meant they had to get FinSoft to make subsequent changes while with a software product they could make changes themselves. For FinSoft products provide a smoother income stream, less time on client's site and less attention needs to be given to the precise demands of individual clients.

Competition in the marketplace is intense with alternatives provided by in-house specialists and other software houses. As Figure 2 shows the network has various

members. Aside from existing clients the most important member of the network is a large management consultancy organisation with whom FinSoft have a strategic alliance. This firm provides new business opportunities by passing on contacts or subcontracting work. Other ways of getting new business include extending work for existing clients or responding to a formal Invitation to Tender. These invitations and more informal approaches often arise because FinSoft is well known for its expertise in the relevant industry networks. This is established not only by word-of-mouth but also by its networking activities such as making presentations of its research findings and hosting seminars.

This mix of products and services has an impact on the internal structures. There are a series of client based project teams and a separate product team. These project teams vary in size depending on the client needs and the stage of the project. The boundaries between these teams are weak and there is an emphasis on knowledge sharing across the organisation. In addition, FinSoft has a number of other teams or communities to facilitate knowledge sharing. The vocational teams are comprised of employees doing the same job (for example testers) and are designed to share best practice throughout the company. There are also non-hierarchical committees which are used for the communication of information vertically and horizontally within the company. Extensive efforts are made to communicate information by technical and non-technical means.

The multiple teams and multiple role structure are designed not only to share knowledge, but also to develop a high level of organisational commitment. The sophisticated internal management structure provides a good service to clients but also avoids clients being the employees' only focus or source of identity. In practice it acknowledges the importance of clients but seeks to keep their influence at arm's length.

Indeed, FinSoft is very conscious of the need to manage relationships with clients and to manage relationships with employees. This is summed up by their stated intention to be 'the best company in the world to work with and the best company in the world to work for.' They are relatively successful in doing this. Employees in FinSoft showed the highest level of organisational commitment (mean 2.04, sd .817) of any of the companies we studied. Team spirit is also strong (mean 2.00, sd 1.121). In 2001 they were voted the 5th best company in the UK to work for in a major national poll of employees.

Network influences on HR Advances

Changes are taking place in the demands made by clients in two directions. First, some clients are specifying their demands less clearly than in the past and are simply presenting FinSoft with a problem and saying how can you solve this for us? They are looking to FinSoft to provide then with what one respondent referred to as 'thought leadership'. FinSoft gets business because it is seen to offer a unique solution to problems putting them in a strong position in the marketplace. These unique skills mean that clients are dependent on FinSoft's resources from the outset of the relationship. However, this poor definition of the problem places more emphasis on the business analysis skills of their employees – skills which are in short supply and need to be addressed by HR policies. Although these projects involve a high level of integration and

close working with the client FinSoft works hard to minimise the time spent on client's sites because they want maintain good relations with their employees and to protect their organisational culture.

Other clients have much more specific needs and do not want to have lots of expensive development work done. They want to be able to buy a relatively standardised product and then do the subsequent development work and modifications themselves. This requirement has implications for the organisational structure and for the skill needs. Product development work is in some ways less challenging and can involve more repetitive work for employees. It is often less interesting with fewer novel problems to be solved because the work involves refining and developing a product with perhaps only a small amount of customisation for each client. This change also meant that a new product division had to be established which consumed resources before it had made a sale. However, this did mean that there was much less pressure to work on clients' sites allowing them to preserve the FinSoft culture.

This emphasis on commitment to the organisation is also reflected in various HR practices and the role of HR specialists in decision making in the organisation. New employees are recruited principally directly from university. Selection criteria emphasise the fit with the organisation's culture rather than technical expertise. Training for new employees lasts for three months and is designed to develop generic rather than client specific skills. This approach is also reflected in training more generally where each employee has 6 days' training a year relating to industry standards. The performance appraisal system is consistent with this because it is not based solely on the client. Employees are appraised not only on their contribution to a particular client project but also more generally on the extent to which they have developed their skills. Similarly the reward strategy is not just linked to individual contribution to projects but is based on an overall appraisal of their contribution to the organisation as well as their place in the salary structure.

These HR policies reflect the overall attempt at focusing on the internal organisation of FinSoft, maintaining a strong organisational culture and developing generic skills which are valuable to the employee and the organisation rather than just concentrating on the needs of individual projects or relying on the client to do the training. The level of satisfaction with these policies does not match the high level of organisational commitment. For example the satisfaction with training was somewhat lower (mean 2.54, sd 1.167) although satisfaction with other policies was better (performance appraisal – mean 2.32, sd .973; career opportunities – mean 2.14, sd .948).

This is also reflected in the HR structure where the HR Director is closely integrated into strategic decision making. She has a position on the board and so is able to influence major corporate decisions and also has a key role to play in allocating staff to client projects. The concern here is to ensure that the allocation of staff takes account of both the needs of the client and the need for employee development, which are not always compatible.

Line managers also have a clear responsibility for carrying out HR policy and they are monitored to check that they are carrying this out. For example they are responsible for conducting performance appraisals of their staff and the HR department will

check up to see if they have done this. This emphasis is shown in the high level of satisfaction which employees have with their line manager relationships (mean 2.02, sd .589), which is second only to Bespoke Ware. However, satisfaction with involvement is relatively poor (mean 2.83, sd .845) while communications are perceived as the second best of the cases (mean 2.30, sd .716).

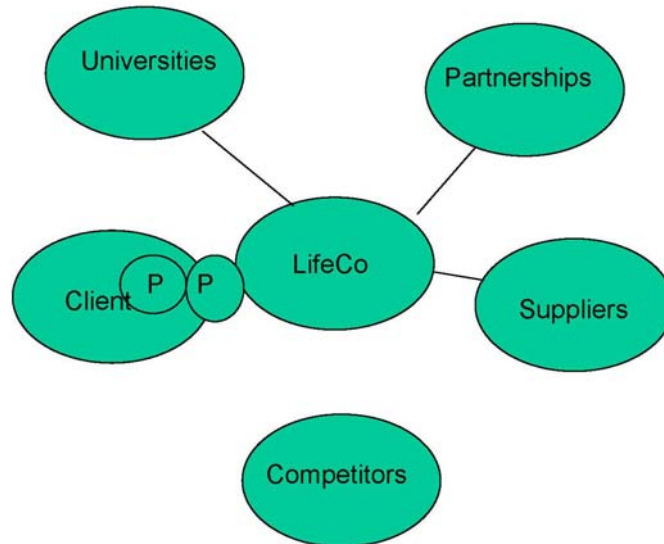
Thus the nature of the competitive advantage in this organisation is derived from the relationship between the organisation and its clients. The aim is to develop expertise within the organisation which has value to a variety of clients. This is supported by the sophisticated internal structures which are designed to maximise knowledge sharing and to provide a means of managing external client pressure by avoiding their differing demands from pulling the organisation apart. Although internal boundaries between teams are weak, external boundaries are somewhat stronger. This is reflected in the approach to managing HR which is aimed at developing a set of appropriate skills and maintaining a strong organisational culture. There is clear evidence that a HR advantage is achieved which contributes to the success of the company. This is seen in terms of both the HCA and the OPA especially, but not exclusively, at the level of the organisation.

LifeCo

LifeCo provides software products and services to the mortgage, life, pensions and investment sectors of the financial services industry. It concentrates on products which form part of the client's IT platforms that support core business processes. It therefore tries to lock itself into the network by contributing to the client's core business processes. Established in 1987 it employed around 500 people at the time of the research and its turnover had increased by 58% between 1998 and 2000 to reach £50m. It gains its competitive advantage from paying very close attention to client needs and by developing expertise overtime about client products and IT systems.

Network relationships

LifeCo has developed a diverse set of products and services and offers these to clients in a variety of ways. A combination of insourcing, outsourcing, third party administration, managed services and application series provision are made available. As Figure 3 suggests LifeCo operates in a complex network. Aside from clients, with whom it may operate joint ventures, other members of the network include informal relationships with companies regarded as being influencers in the industry. This might include management consultants and consulting actuaries with whom knowledge is shared, company developments discussed and mutual opportunities identified. This is clearly an important way of winning business (aside from formal Invitations to Tender) since LifeCo is recommended by word-of-mouth and via the use of reference sites. A third important group is the 'Net' group of companies who work with Microsoft. The final group in the network are the local educational providers who have co-operated with LifeCo to provide courses which are well suited to the company's skill requirements.

Figure 3: LifeCo

P = Project teams with solid boundaries

Competition for business in the industry is very tough and the alternatives are in-house providers and other software houses. These market conditions combined with the nature of the product and services offered mean that potential clients can specify their demands to possible providers quite precisely. The contracts with major clients are large, long and high value and typically involve multiple releases of software within the same product dedicated to a client. Teams of employees often work closely with clients on their own sites over long periods. LifeCo staff are on the client's site and face the client's operational pressures for the release of a piece of software by an agreed date. Clients retain a lot of power throughout the life of the product, and as one respondent said, 'the client is King.'

This emphasis on products has an impact on the internal structure of the company. LifeCo is structured around three major products and within these there are various project teams linked to particular clients.

Network Influences on HR Advances

Although there is a low level of uniqueness at the start of a contract LifeCo employees build up an expertise over the life of the project. They gain an intimate knowledge of the client's products and IT systems by spending a lot of time on the client's site. Consequently, the client becomes increasingly dependent on LifeCo as the contract develops. This client-dedicated knowledge also creates barriers to entry for competitors and ensures that the client and LifeCo project team become closely intertwined. This approach produces the strongest sense of teamworking among employees (mean 1.78, sd .850) within our three cases but a much weaker commitment to LifeCo as a whole (mean 2.53, sd .577).

This strong emphasis on the relationship between the team and the client and weak attachment to the organisation affects the distribution of knowledge inside the LifeCo. Expertise is not well distributed within LifeCo and there are strong barriers to knowledge sharing between the project teams. This is because individuals are seldom rotated between project teams and there are very solid boundaries between various project teams with very little knowledge flow between them.

This approach to knowledge sharing is linked more generally to the way LifeCo is internally structured. The firm is organised in a traditional manner according to functional specialisms, e.g. finance, HR, legal, sales, marketing, training, research and development. There is a high level of fragmentation, specialism and hierarchy within the firm. These functional departments and the project team structure contributed to what one respondent referred to as a 'silo mentality.' The HR department, although large, is separated from mainstream decision making within the business. It is also separated from the training activity (known as The Academy) which is responsible for the extensive induction training.

This approach is also reflected in the HR policies themselves. Apart from this initial training there is little formal training for existing employees and most emphasis is placed on on-the-job training. However, employees were reasonably satisfied with the level of training provided (mean 2.33, sd 1.049). Although line managers are supposed to play an important role in HR they do not always do this in practice. For example performance appraisals are not always carried out and there is not always a clear link between this and reward. There is a strong philosophy of 'work them hard' and promotion tends to take the form of 'up or out.' This is reflected in employee attitudes towards performance appraisal (mean 2.47, sd 1.172) and career opportunities (mean 2.44, sd 1.294) which were the lowest in the three companies studied. More generally this is shown in the satisfaction which employees have with their relationship with their line manager which was the lowest of the three companies studied (mean 2.86, sd .805).

These HR practices reflect a wider style of management within LifeCo. Senior managers and directors retain a high degree of control over the running of the company and employees expressed low levels of satisfaction with their involvement in decision making (mean 2.83, sd .702) and with communications (mean 2.53, sd .623). There is a clear feeling that the management style is one which is more suited to a small company and one respondent argued that there was a clear intention to run LifeCo as if it were a series of small companies. This may have worked when the company was 200 but there are many more difficulties within a fast growing firm of 500 people. Many of these characteristics can be traced back to the articulated values of the company which are: the quality of service to the client; development of the team and adherence to industry best practice.

We can see that the HR structure, policy and practice reflects the conditions which exist within the network. The competitive advantage of the organisation is based upon developing expertise over the products and services of the client over time and then producing the software releases which the client wants on time. The success of the firm is centred on the team and its relationship with the client. This highly specialised, fragmented and segmented approach is reflected in the approach taken to managing employees and the internal organisation of the firm which is based

on hierarchy and specialisation with close monitoring of performance from the top. Line managers are under a high degree of pressure to deliver to the client on time and a low priority is given to the importance of HR and people management issues.

LifeCo is the least able of the three companies studied to develop an HR advantage at the organisational level. This could firstly be because of the direct influence that the network has on HR practices: that is, clients place demands on the composition of teams, the length of time spent on the client site and on their ability to deliver short term operational results. Here the LifeCo employees become accustomed to the culture and practices of the client organisation, which in turn leads to greater fragmentation when the employees return to LifeCo. Secondly, the firm struggles to establish HR Advances across the organisation because its HR policies and practices are focused mainly on the individual level with no provision made for secondments and resource allocation that takes future skill development into account. The individual level focus is also evident in the line manager responsibility for project team allocation, which leads to competition for resources between teams and further fragmentation at the organisation level.

This lack of organisational level HR Advances weakens the firm as a whole in the long term. It has a fragmenting effect on HR policy because it involves giving way to client pressure and the emphasis on teams means that organisation wide knowledge sharing synergies are absent.

Discussion

Our three companies gain competitive advantage in quite different ways. Bespoke Ware is successful because of its network relations, while in FinSoft's performance depends on the relations between the organisation as a whole and its clients. In LifeCo the advantage is at the level of the relationship between the team and the client.

We have seen evidence of the dynamic interplay between the exercise of strategic HR choice and the characteristics of the network. Opportunities exist for managers to exercise choice, but at other times actions by members of the network constrain these decisions. For example in the early stages of growth decisions are made about the types of people they want to employ, and later on choices are made about whether to bid for a particular contract which have implications for employee skills and knowledge. At other times clients, for example, may decide to terminate a contract which will have major consequences for employment.

Choices are made in two key areas of HR. Decisions managers make over their HR policies and the type of people they employ have a major bearing on their acquisition of a HCA. They also make decisions about the way these policies are implemented by line managers and over other important processes such as the extent to which knowledge sharing is encouraged, both of which contribute to the development of an operational process advantage. These decisions vitally influence the way in which the management of HR contributes to the development of competitive advantage.

We have drawn particular attention to the development of HCA and OPA because of the importance of intellectual capital to the success of these firms. However, this emphasis on the different forms of HR advantage has been discussed elsewhere

whereby HR policies are seen as providing a necessary but not sufficient basis for this advantage (Mueller 1996:777) or can be regarded as the 'table stakes' simply needed to compete (Boxall 1999:459). Our research adds to this discussion by drawing attention to the impact of the characteristics of the network within which the KIF operates on the development of HR advantage. These firms are so intimately entwined in their networks that their way of managing their employees and ultimately their success can be understood only in the context of this distinctive external environment. Their strategic choice over both HCA and OPA are directly and indirectly affected by these network characteristics. Successful firms will continuously take the members of their network into account when making key choices over their HR policies and how these are implemented. Indeed, these firms will be exercising choice in ways which influence and are influenced by the conditions in the network.

This raises the broader issue, which has been discussed so far only in passing (Mueller 1996:777), of the level at which HR advantage can be gained. We identify one aspect of HR advantage that is achieved at the level of the network, or a 'network advantage.' This advantage exists when HR policies and practices and other key processes are chosen and operated in such a way as to gain the maximum benefit from the characteristics of the network.

This emphasis on the level of HR advantage allows us to compare this with the level at which competitive advantage is achieved. Although as Boxall and Purcell (2003:86) have argued it is difficult to recognise the impact of an individual policy, 'the knowledge of how to create a positively reinforcing blend of HR philosophy, process practice and investment *within* a particular context is likely to be very rare. The *systemic* quality of highly effective policy is likely to be very important.' In this instance we are defining the context of these firms in terms of their network relations and examining the extent to which they are able to generate HR advantage systemically throughout this network.

Our firms illustrate the acquisition of HR advantage at these levels to varying degrees. There is strong evidence of a HCA and an OPA in Bespoke Ware at the network and organisational levels. It achieved HCA because the design of its policies and the type of people it employs are well suited to its business objectives. They achieve OPA because its processes for the development and implementation of these HR policies fit well with the style of managing and produce high levels of ownership. These advantages exist at the organisational and the network levels because they are well suited to the participation in internal and external networks that is vital to the success of the firm (Reagans/McEvily 2003). HR policies and practices have been evolved so they match the conditions prevailing in the network.

FinSoft's success depends principally on gaining a competitive advantage at the level of the relationship between the organisation and individual clients. Its HR policies are well suited to this because they are aimed at establishing and maintaining a strong organisational culture, generic skills and experience that can be used for a variety of clients and practices and structures which share knowledge effectively throughout the organisation. The processes for policy development and implementation are aimed at ensuring consistency of treatment and encourage a strong identity with the organisation as a whole.

LifeCo is, however, unable to gain this HR advantage as shown by the lower results for organisational commitment (HCA) and relationships with line managers (OPA). In contrast to Bespoke Ware and FinSoft, LifeCo is successful because of the performance of individual teams and their ability to deliver for clients while on site rather than because of the strength of the organisation as a whole. This emphasis on competitive advantage at the team-client level is reflected in the strong team spirit which exists in this firm, although the HR policies and practices focus on the individual and do not contribute to this. The HR specialists are detached from mainstream decision making, there is an inconsistency between HR policies and little attention is given to the implementation of policy. This strong team-based approach makes it much more difficult to develop HR Advances at the organisational level which in turn poses questions about the efficiency of the organisation and its long term success. Doubts exist because the fragmentation within the firm restricts the internal synergies to be gained, for example, from knowledge sharing.

Conclusion and Implications

Our firms illustrate the interplay between the exercise of strategic choice and the conditions in the network in which they participate. Decisions on business strategy and HR are neither determined by the network conditions nor the result of unfettered strategic choice. Managers and leaders in these firms take both implicit and explicit decisions about what type of business they want to be in and how they want to manage their employees taking account of the network characteristics, and especially the wishes of their clients. This exercise of strategic choice creates opportunities to develop HR advantage in the form of a HCA or OPA at the level of the organisation or network. In Bespoke Ware and FinSoft the level and form of HR Advances fits well with the source of competitive advantage, while in LifeCo the emphasis on teams supports the competitive advantage but undermines the organisational level HR Advances which is essential to long term success.

The consequence of this is that we cannot understand the links between HR policies and processes and the performance of the firm without taking into account the nature of the external environment. In the case of these firms that is the networks in which they participate and the impact these have on the generation of HR Advances. More generally this raises the broader issue noted by Child (1997: 57) as to whether in the age of the networked firm it is really appropriate any longer to distinguish between 'organisation and environment' as if they could be easily separated.

This emphasis on the form and level of HR advantage has implications for theory and for practice. From the theoretical point of view we are able to provide a more sophisticated view of the potential form and level at which HR advantage might be acquired. The differences between our firms suggest that a typology based on the form and level of HR advantage could be generated. However, this would require further data collection and a refinement of the measures of the various forms and levels of HR advantage, especially the network level advantage. The main practical implication is that managers of HR in firms like those studied here need to consider how they are influenced by and how they might shape the characteristics of the networks within which they operate.

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