Author Contact Information

Andrew R.J. Dainty Ph.D, Senior Lecturer, Department of Civil and Building Engineering, Loughborough University, Leicestershire, LE11 3TU, UK, Email: a.r.j.dainty@lboro.ac.uk, Tel ++44 1509 228742, Fax ++44 1509 223981

Ani B. Raiden Ph.D, Lecturer, Business School, University of Glamorgan, Pontypridd, CF37 1DL, UK. Tel ++44 1443 480480. Email abraiden@glam.ac.uk

Prof. Richard H. Neale DSc., Director of Research, University of Glamorgan, Pontypridd, CF37 1DL UK. Tel ++44 1443 480480. Email rhneale@glam.ac.uk

Towards a knowledge-based resourcing framework for project-led organizations

Andrew R.J. Dainty[1*], Ani B. Raiden[2] and Richard H. Neale[3]

1 Department of Civil and Building Engineering, Loughborough University, UK

(email: a.r.j.dainty@lboro.ac.uk)

2 Business School, University of Glamorgan, UK

3 School of Technology, University of Glamorgan, UK

**Author for correspondence –*

Email a.r.j.dainty@lboro.ac.uk

Tel ++44 1509 228742

Fax ++44 1509 223981

Towards a knowledge-based resourcing framework for project-led organizations

Abstract

Employee resourcing refers to the process of matching human resource capabilities to the strategic and operational needs of the organization. This is exceptionally problematic in project-based organizations due to the competing priorities of the project, the individual employee and the wider succession needs of the organization. This paper presents the findings of research which set out to develop an innovative approach to project resourcing which balances organizational, project and individual employee requirements. Based on a synthesis of successful practices utilized by leading construction organizations, it develops a new approach to capturing and integrating knowledge on employees' abilities and aspirations into the project resource allocation decision making process.

Keywords - Employee resourcing, decision making, employment relationship.

Introduction: The challenge of Resourcing in Project-Based Sectors

Employee resourcing is one of the key strategic human resource management (SHRM) functions. It focuses on matching human resources to the strategic and operational needs of the organization and ensuring the full utilization of those resources (Armstrong and Baron, 2002). As such, it embodies core SHRM activities such as the recruitment, selection and deployment of employees within the organization, which should be managed in such a way as to support the strategic objectives of the firm. However, despite the vital importance of effective team selection and formation to the success of organizational performance, employee resourcing remains a reactive and largely operations-focused function in most project-based firms (Loosemore et al, 2003: 83). A possible reason for this is that allocating staff to projects demands that the (often competing) requirements of the organization, the project *and* individual employees have to balanced. Whereas project and organizational resourcing requirements are relatively easy to discern, capturing employee needs and integrating them into the decision process is more problematic. This is because the knowledge requirements necessary for effective resourcing decisions are mainly tacit in nature, as they relate to an individual's aspirations and personal preferences as well as their professional experience, skills and competency. Eliciting this knowledge required detailed and sensitive involvement with each individual, which is time consuming and, in a geographically distributed project-based organization such as a construction firm, is logistically challenging. Although tacit knowledge is difficult to communicate or share with others (see Haldin-Herrgard, 2000; Smith, 2001), if it is managed poorly or excluded from the human resource allocation decisions, the result is likely to be dissatisfied employees and likely to be

breached psychological contracts (see Guest and Conway, 2002). Thus, incorporating individual employee needs into the resourcing decision making process arguably represents a major challenge for all project-based organizations where a differing set of challenges and contexts must be carefully managed in every project. However, despite the growth in project-based working, there is a paucity of research which has examined the process of human resource allocation within such organizations. This represents a serious gap in the extant literature given the importance of human resource management to understanding the various issues of knowledge development and learning which is known to have a profound impact on performance (see Hobday, 2000; Gann & Salter, 2001).

Human resource management (HRM) practice plays a central role in mapping and identifying gaps in the knowledge base of the organization (see Soliman and Spooner, 2000). Within a project led organization it can be seen as the vital function for enabling operational effectiveness (Loosemore *et al*, 2003). This is because, although projects represent temporary systems for control and coordination, their management is largely based on experiences on previous ventures (Clark and Colling, 2005). Thus, the challenge for the human resource management function is to ensure that the appropriate blend of skills experiences come together in such a way as to meet the needs of both the individual managers and the project requirements, whist at the same time fulfilling learning and succession plans of the organization. This requires that those with responsibility for allocation decisions capture and effectively utilize data on individual employees' skills, knowledge, experience, competency, aspirations and expectations of the deployment process.

This paper reports on a project which set out to develop a more robust methodology for capturing and taking account of employee requirements in the resourcing process. It examines the resourcing practices of leading construction organizations which operate within one of the most dynamic project-led industrial sectors. It focuses on how the knowledge relating to employee needs and abilities is fed into the resourcing decision making process. By combining effective elements of this practice, and supplementing it with leading-edge thinking in relation to the resourcing function, it provides a robust framework for incorporating such decisions into the resourcing process. It should be stressed that the aim is not to try to identify normative solutions to managing the resourcing process. One of the developments emerging from the HRM movement in the late 1980s was a shift from prescribing 'how to' manage human resources to one which takes a more contingent view of the form of management practices suitable for organizations (Storey, 1992; Marchington and Grugulis, 2000). As such, the framework is aimed at signposting employees towards the knowledge-based practices which are likely to foster improved resourcing decisions. It arguably offers a new paradigm for incorporating employee needs within the resourcing decision making process which has hitherto given primacy to project and organizational needs.

The Requirements and Challenges of Effective Employee Resourcing in Construction

The major components of employee resourcing comprise: staffing, performance, HR administration and change management (Taylor, 2002). These functions comprise several discreet but interrelated management activities which are summarized in Table

1. The *staffing* and *performance* objectives aim to ensure that the right numbers of employees with the right skills and competencies are in the right place at the right time. This is effectively a 'balancing act' in which managers are tasked with taking into account the longer-term strategic considerations of human resource planning (HRP) while providing immediate solutions for the shorter-term operational issues, such as recruitment and selection, team deployment, dismissal and redundancy (Rothwell, 1995; Beardwell, and Holden 1997). Ideally, management of staffing and *performance* are simultaneously concerned with ensuring the best possible performance is achieved whilst facilitating employees' career progression and offering them appropriate reward for their efforts. *HR administration* focuses on the collection, storage and use of employee data supporting the monitoring and analysis of HR information (Torrington *et al*, 1991: 22). The *change management* aspect of the function aims to facilitate the continuous evolution of the organizational strategies and practices through the interrelated aspects of staffing, performance and HR administration. It can be appreciated that managing all of these functions concurrently represents a complex and challenging task for any large organization. However, for construction companies, the dynamic context of project mobilization renders it even more problematic.

Insert Table 1 About Here

Whereas in many industries the resourcing process represents the coordination of a set of fairly controllable tasks, the nomadic, transitory and project-based nature of construction often results in employee needs being subordinated in relation to project

requirements. This is primarily because construction projects tend to have a short lead-in time which demands the rapid mobilization of teams (Loosemore *et al*, 2003: 84). This renders it a largely reactive practice and one which overlooks the strategic importance of the developmental opportunities afforded by project-based working. Resourcing practices usually rely on the personal assessments of line managers (Druker *et al*, 1996). Thus, given the likely pressures for successful project delivery, there is the potential for individual requirements to be downplayed in relation to immediate operational requirements. This, in turn, can lead to high levels of staff turnover as employees' careers aspirations are compromised, which is in itself is disruptive to the successful delivery of projects. As such, poor resourcing practices lead to a self-fulfilling cycle of inappropriate decision-making and organizational inefficiency.

Overcoming the extremely demanding resourcing context for both HR departments and line managers requires a flexible approach to the employee resourcing function in construction organizations. The different components of the employee resourcing function (i.e. staffing, performance management, human resource administration and change management) must be integrated to form an interconnected network of decision-making and support processes (see Taylor, 2002). Many human resource information systems (HRISs) offer facilities to assist in this task (see Greenlaw, and Valonis, 1994; Miller, 1998). However, these only provide data management tools and must therefore be supported with carefully conceived and well-managed strategies for capturing the data necessary for informing resourcing decisions and utilizing it in a transparent and robust manner.

Effective Project Resourcing: A knowledge-based process

In recent years, there has been a great deal of interest in developing ways to manage knowledge more effectively in organizations, primarily through the development of new information and communications technologies (ICT). However, this emphasis has largely been at the expense of efforts to explore the human dimensions of effective knowledge management (Scarborough, 1999; Swan et al, 2000). Arguably, an overemphasis on technological solutions for managing knowledge within large organizations has contributed to the relatively high failure rate of knowledge management (KM) within many industries and organizations (Ambrosio, 2000; Carter and Scarbrough, 2001). Recent thinking has reflected the likelihood that HRM concepts and frameworks could be utilized to improve understanding of what shapes the willingness of workers to share their knowledge (Hislop, 2003). Moreover, HRM practices offer a route to creating a culture that encourages the free flow of knowledge for meeting organizational goals (Soliman and Spooner, 2000). Thus, there is a practical need to integrate KM programs with human resource management (HRM) policy, to ensure its effective contribution to the performance of the modern business.

Effective resourcing is clearly predicated on having the requisite knowledge for managing the process effectively. As was discussed above, however, this demands that decision-makers take account of both explicit data on their staff and less easily defined tacit knowledge held by the individual. Nonaka (1994) and Nonaka and Takeuchi, (1995) develop the concept of tacit knowledge to embrace both cognitive and technical elements. The cognitive element centers on mental models in which humans form working models of the world by creating and manipulating analogies in their minds.

These include schemas, beliefs, and viewpoints, which help individuals to perceive and define their world. The technical element of tacit knowledge includes specific know-how, crafts, and skills. For example, a manager may develop a wealth of expertise after years of experience but s/he is often unable to articulate the technical and philosophical principles behind it. Nonaka also sees a connection between tacit and explicit knowledge in that they interchange into each other in the creative activities of human beings. This perspective is highly relevant to the resourcing process, where decisions about an individual's suitability for a project will be determined by both their skills and knowledge of relevance to the endeavor, but also their personal aspirations and desire to involved within it. These types of knowledge come together in the process of deciding upon whom to allocate to project teams.

Clearly, much of the knowledge required for effective resourcing decisions will be tacit in nature. For example, understanding an individual employee's aspirations and career development needs and reconciling these with company performance assessments is exceptionally difficult. A key factor in ensuring that the requisite knowledge on employee needs is captured is the development of a climate of trust in the employment relationship between employers and their managers. Trust is important because employees will not be willing to share their work-related knowledge unless they feel secure that it will be used for them rather than against them (Storey and Quintas, 2001). If employees feel that their employment relationship is not fair, if they feel that work-related promises or commitments have not been kept, and if they do not trust their employer to keep promises or commitments in the future, then they are less likely to feel disposed to share knowledge at work. Ellis (2001) also argues that it is difficult to

manage knowledge without trust, as most people will not risk sharing what they know without it.

In project-based sectors, the success of the resourcing process effectively depends upon identifying: (i) the skills and experience that an employee brings to their role; (ii) their limitations in relation to the tasks inherent in the project for which they are being considered; (iii) learning opportunities in terms of further developing the individual's skills, competencies and abilities; and (iv) employees' personal needs and career aspirations reconciled against the project opportunities on offer. Clearly, identifying and understanding the limitations of employees is problematic given that most employees would not wish their weaknesses to be made explicit to their employer. Even their positive knowledge and competencies may be seen as a commodity which they may be reluctant to convey to their employer in fear of them strengths being exploited in areas of the organization where they do not wish to work. However, the most difficult tacit knowledge to identify concerns the personal aspirations and development requirements of individual employees. Such needs may not accord with organizational goals or opportunities and hence, may be retained by the individual in a way which impedes the efficient deployment of staff to meet project requirements. Thus, finding ways to incorporate this into the decision making process is fundamental to the successful management of the resourcing process. If managed successfully, appropriate opportunities for employees to develop within the organization can be identified and the possibility of harnessing and capitalizing on employees' contributions enhanced. The research presented here sought to synthesize existing practice in managing this process amongst leading construction firms in order to refine an improved resourcing process

framework. The aim was to develop a knowledge-based resourcing model which enables firms to make appropriate and rapid operational deployment decisions, whilst concurrently safeguarding the broader human resource development function for the benefit of the wider organization.

Research methodology

A research methodology was required for this study which enabled the investigation and evaluation of the ways in which large construction firms captured employees' tacit knowledge, expectations and aspirations, and factor them into the resourcing decision making process. Much of the previous research on construction employee resourcing has focused on examining particular aspects of the function, such as recruitment and selection (Bresnen *et al*, 1985), project allocation (Jaselskis and Ashley, 1991) or team building (Spatz, 2000). These have tended to develop solutions that primarily seek to satisfy the organizational/project requirements and objectives. In this research the primary need was to understand the environment within which construction contractors operate and how this was overcome. Given that the researchers had no *a priori* knowledge of the likely approaches adopted by construction companies from which a hypothesis could be derived, an inductive methodology was chosen which allowed for the examination of the resourcing process from a variety of stakeholder perspectives.

The six organizations that agreed to participate in the research were chosen as they operated throughout the UK and their activities spanned every major sector of construction activity. All of the companies were in the leading twenty UK contractors measured by annual turnover. As some of the largest, established and most well-

resourced construction companies, it could be reasonably expected that their practices would be likely to be effective in comparison to other construction firms. A total of 35 staff were interviewed in a semi-structured manner. The informants comprised senior HRM staff, directors and senior operational managers, all of whom has some responsibility for resourcing decision-making. In addition, a selection of project-based employees were interviewed in order to explore their perceptions of the efficacy of the deployment approaches used. A research instrument was developed to guide the discussions to cover all the major topics within employee resourcing and HRM these also incorporating issues specific to project-based sectors. The questions were derived from a synthesis of good practice extracted from the literature. The interviews were recorded, transcribed verbatim and then coded and analyzed using NVivo™ qualitative analysis software. NVivo proved invaluable in aiding the codification and organization of the research material and also in allowing for exploratory searches to be carried out on keywords, nodes and/ or attributes (see Attride-Stirling, 2001). The data were categorized according to whether the practices espoused by the participating firms were likely to facilitate or impede knowledge-based resourcing.

Results

It emerged that no single organization managed the resourcing process effectively as a whole. All acknowledged the difficulties inherent in managing resourcing within the construction project environment and suggested that the development of more structured solutions had been hampered by the unpredictability of human resource needs. Many examples of reactive resourcing practice emerged from the case studies which

undermined the strategic nature of the function. Nevertheless, several positive areas of good practice emerged in terms of ascertaining employee needs and taking account of them within decision-making practices.

Examples of both positive and negative practices emerging from the cases are summarized in Table 2 in terms of whether they facilitated or constrained the strategic resourcing function. Those generally deemed by the informants as having a positive outcome on the process are denoted by the shaded cells within Table 2. The practices identified are further elaborated below under headings drawn from the table.

Insert Table 2 about here

Human Resource Planning (HRP)

The positive human resource planning (HRP) activities found within the case study organizations included succession planning (companies A and B), graduate and student recruitment (companies A, D and E) and quarterly meetings (company C). The *succession planning* involved the identification of people who showed director-level potential, who were subsequently placed on executive development programs. In company B, HRM specialists and departmental directors collaborated more formally in identifying suitable candidates for their intensive management development program. Their selection criteria were drawn from business plans and current organizational capability charts. A member of the HR team had the overall responsibility for overseeing and facilitating the process providing a single contact point for all involved. This ensured effective integration of the organizational strategic and operational requirements of the business with a management team capable of providing the services and products that clients demand. Many organizations prioritized *graduate development*. Showing long-term commitment to developing graduates and offering them transparent progression opportunities were seen as key factors to successfully retaining the brightest candidates. Companies A and D in particular specialized in student and graduate development as a long-term staffing strategy. This type of long-term approach to graduate recruitment illustrates an effective integration of the strategic HRP and recruitment and selection activities integrated with HRD.

The only negative HRP activity was found within company F, which operated weekly meetings which focused on plugging skills gaps through external recruitment and

agency outsourcing with no HR involvement. Clearly the short-term approach contributed little to knowledge management or employee resourcing in the organization.

Recruitment and selection

Companies A, C, D and E demonstrated positive recruitment and selection practices. Following from the HRP activities, these included graduate and student recruitment (A, D and E), active promotion of company culture (A), internal activities (C), exemplary use of job descriptions (D) and a centralized recruitment service (E). The compatibility of a company's value system to that of the potential candidate's was cited as a major determinant of resourcing success. Thus, company A actively promoted the company culture within their recruitment process and adverts in a bid to ensure that applicants' attitudes and abilities aligned with their desired values. In articulating the company values and culture in this way, this company had tried to ensure that potential employees were clear as to the behaviors that would be expected of them if they were appointed. Contrastingly, company C focused on internal recruitment and promotions. All vacancies were advertised in the company intranet and staff were regularly encouraged to access the available information. Similarly, Company E's HR department operated a centralized recruitment and selection service that facilitated graduate and executive recruitment (managers and qualified professionals). This provided staff and managers within the organization a visible one-point of contact. Company D's strength was in utilizing job descriptions. These included job specific roles and responsibilities at an entry and exit levels. The entry level outlined the minimum requirements for the post. In reaching the exit level the post holder would be expected to demonstrate a superior quality performance at all aspects of the job, at which stage the post he/ she would

generally take on additional responsibilities (and be promoted) or be transferred to a different role.

The negative practices identified included recruitment and selection training/ workshops, which generally may be considered a positive activity but in this context present a negative attribute of company B's approach to change since they were introduced as a reactive measure to increasing staff turnover within newly recruited personnel (6-12 months service). Company F's generic recruitment website failed to consider line management requirements in the recruitment and selection process and also, although it provided the candidates a single route to submitting applications, because of the lack of line management input there were no department specific details available.

Team deployment

Positive team deployment activities emerged within companies A-E. These firms relied upon regional and national resource banks which delineated the workforce according to their needs and preferences, a resource management database provided useful availability charts. In Company A the responsibility for team deployment was devolved to line management. This had resulted in some short-term, reactive practices, where existing teams moved from project to project largely together and any available people were deployed to fill immediate staffing gaps. Their management development program had been used to address this by enabling employees to voice their preferences through their performance reviews. Companies B and E had restructured its operations to form

separate regional and national businesses. Within the regional businesses line managers took day-to-day responsibility for team deployment and other SHRM issues. HR personnel managed the national business deployment via a central resource bank, which members of staff could voluntarily agree to join. This helped the company to ensure that only personnel willing or keen to travel were deployed to projects beyond the regional boundaries. Company C utilized a resource management database to inform their team deployment activities. The system catalogued all employees' job titles, their previous experience and projects, line manager, home address, etc. Availability charts provided a basis for decision-making, which was focused on identifying the required skills and competencies for the upcoming projects and selecting appropriate personnel to fill the vacant posts. Secondary criteria included appraisal records, career development needs, location, salary package, client, etc. All of this information was held within the resource management database, and thus easily accessible.

Company D operated a particularly effective knowledge-based approach to the team deployment process. Four main sources of information were drawn together to form a comprehensive picture of a potential team members' suitability for a project, namely: technical competence reports (from job descriptions, experience summary sheets, chartered status records, etc.); personal development assessments (which included information on personal aspirations, needs and preferences); information on personal relationships (subjective knowledge on how the employee works with other people/ as part of a team); and data on their availability. A knowledge-based process was said to govern the dismantling and redeployment of the teams. Generally a member of the team was moved to a new project with selected personnel also being disbanded to other

locations. This allowed for effective transfer of knowledge from the project and its team members' previous experience. Regional functional managers had been introduced to form a communication link between site and office staff. Their role had also been proven effective as an alternative for direct line management contact regarding appraisal interviews, career management discussions and grievance.

Again, the only potentially negative practices emerged within Company F, which relied on weekly meetings to agree deployment decisions within the organization based on the judgments of line management.

Exit

Companies A and E had positive exit monitoring and management practices in place. Company A administered and analyzed in-depth exit questionnaires of all leavers. The main problems with staff turnover were said to stem from poor recruitment decisions. Management development was identified as a potential solution to improving their recruitment and selection, training and development, and people management skills. Within company E exits were managed in HR-line management collaboration via a more comprehensive procedure that was in place for dealing with voluntary turnover. This procedure was carried out with anyone indicating an intention to leave, including managers, professional staff, graduates, industrial placement students, etc. It was praised for giving the company a chance to persuade a person to stay and correct any issues that might exist within their workplace.

Companies B, C, D and F did not manage exits positively. The negative practices included an operations focused "hire and fire" management style and random exit questionnaires (company B), HR consultation only on grievance/ disciplinary matters (companies C and D) and in company F there was no system in place for dealing with exists neither was there any way of monitoring or analyzing relevant data. This area clearly presents the weakest staffing activity overall and has the potential to undermine many other aspects of the resourcing process.

Performance management

Only two positive performance management activities were identified within the participating firms. In Company C an information gathering system fed directly into the resource management database, thereby integrating the performance management and resourcing functions. The performance management system provided information on employees' skills, their personal objectives, aspirations and preferences, training and career development needs (in relation to both experience and qualifications). It provided comprehensive data which enabled potential succession candidates to be identified and to establish how well their employees shared the company values. As well as an annual appraisal, employees also had project appraisals which reviewed employees' performance on the project in question, what they had learned and what they would like to do next. Company F's performance management system was highly structured in order that it could be used as a tool for reviewing performance and reward and for setting future goals. However, as Table 2 indicates, Company F did not have equally as robust supporting practices to support the performance management system.

Companies' A, B, D and E operated reactive approaches to performance management which were paid lip service by employees and line managers alike. There was little evidence of the data being used to shape either learning interventions or number of forms returned to HR for analysis was low which made use of such data unreliable and application of the system overall unproductive.

Career management

Only Company D operated a knowledge-based approach to career management which included a total rewards package and a network of career paths that were guided by job descriptions (see recruitment and selection above). The total rewards package included competitive salary and benefits, and training and development options. The network of career paths provided a map of transparent progression opportunities that were used to aid discussions on aspired and realistic future moves. They formed a practical tool for benchmarking performance against desired criteria and identifying training and development needs.

Negative practices were apparent in companies A and E where career management was seen as an employee responsibility with no involvement/ direction from HR or line managers. In company B career management was not considered at all, this despite being identified as one of the main reasons as to why people had left the company on their exit questionnaires. Although companies C and F recorded individuals career ambitions on the paper appraisal forms no systematic process existed to enable managers to take this into account.

HR administration

Companies A and E had developed their own human resource information systems and Company C operated a comprehensive resource management database. These held all basic personnel data such as information on employees' addresses, dates of birth, job titles and absence records. In company E the system had been developed to provide a centralized information source for the group as a whole and had been integrated with the main personnel database. In companies A, E and C the HR department had responsibility for administering the system. This ensured that records were kept in a consistent manner and ensured the comparability across the database. Companies B and F had basic commercially available database systems in place and Company D had no computerized HRIS in place at all. The lack of retrievable information rendered their resourcing decision making processes highly subjective and lacking in employee input.

A Framework for Capturing and Integrating Employee-Derived Data within the Resourcing Process

The analysis of the practices used by the six case study organizations revealed that none of the firms provided a wholly robust methodology for capturing knowledge on employees' individual abilities, needs and aspirations as part of the resourcing process. It has also revealed the interrelatedness of the HRM aspects explored. None of these HRM elements exist in isolation, but mutually shape the other aspects of the resourcing process. The HRP, recruitment and deployment functions form a set of conjoined

approaches for ascertaining future human resource requirements based on internal and external market assessments, recruiting and selecting the appropriate people and utilizing them in a way which supports the aims of the business and projects. It is therefore essential that the outcomes of this process are fed back into future planning, recruitment and deployment decisions if the organization is to develop effectively in the future. Thus, it is clear that improved resourcing is unlikely to be achieved through the application of an isolated element of good practice, but should be sensitively designed to complement the other elements of the resourcing process in a way which is compatible with the prevailing operational climate of the firm.

By extracting elements of each of the practices used by the firms discussed above, a framework was developed (see Table 3), which forms the underlying process elements of a strategic employee resourcing model. The approaches advocated in Table 3 represents a synthesis of the beneficial practices identified within the case study firms and how they overcome the inherent challenges posed by project-based working. The emphasis of the approaches summarized is that they should ensure that balanced decisions are made which take account of the individuals' aspirations and capabilities within the resourcing process. As such, there should be less chance of a breach or violation of the employment relationship.

Insert Table 3 About Here

Two key aspects underpin the efficacy of the framework. Firstly, team deployment resides at the centre of resourcing process for the project-based organization as it

determines the success of the project which in turn, determines the competitiveness of the organization. Accordingly, the function must be managed with longer-term planning in mind incorporating a broad range of variables into the decision-making process. It must recognize individual employee needs and preferences and provide a route for balancing organizational, project and employee factors. A second key factor is the role of employee involvement (EI) in enabling it to work effectively. This is an approach to increasing organizational effectiveness through manager and employee collaboration and sharing power and control. The framework facilitates EI through frequent and effective team briefing structures and information provision, introduction and maintenance of upward problem-solving and task participation and the integration of the team deployment and other employee resourcing functions (such as HRP, recruitment and selection, performance and exit). These seek to initiate mechanisms for employees to voice their needs and preferences in relation to their project allocation, development, careers and other employee resourcing and SHRM related issues.

The performance and career management sections of the framework seek to secure an integrated comprehensive strategy for maximizing individual, team and organizational performance whilst facilitating employee career development. This is a further tool for managing the balance between organizational, project and individual employee priorities, needs and preferences. It also promotes investment in the development of people and alignment of the SHRM practices with the organizational strategic decision-making as well as encourages innovation. In terms of career management balance between employee-manager responsibility is important. The practical elements include continuous review/ feedback mechanisms together with the appraisal process, personal

development plans (PDPs), job descriptions and job profiles. Career management charts are also included to guide employees in thinking about their longer-term development.

The training and development elements lie outside of the immediate resourcing requirements highlighted in the framework. This focuses on learning and development of the organization and people within it, ensuring staff have the skills required for their current roles and can develop those required for future posts. It has a strong motivating and retention factor as training indicates commitment to people and the recipients are more likely to feel valued. As well as a link to performance aspect of resourcing, training and development is a crucial associate to employee resourcing in that it plays a key role in supporting learning organization culture and effective knowledge management. A HRIS can be used to record individual employee needs and priorities and thus, learning and training activities can be transparently linked to structure for on-the-job training. This delivers a proactive approach to meeting the organizational needs.

Overall, the main benefits of the system are derived from effective provision of consistent information within the organization, coherent management practice throughout geographical regions, operating divisions and departments, and transparent organizational culture. Human resource development support is provided in the form of clear and transparent information on the varied opportunities available and effective management of the individual and organizational development activities. The model also provides a communication channel for HR issues and could help to diversify learning activities and promote cross-project and cross-function transfer of knowledge. Flexibility is inherent aspect of the framework. The HRIS component helps balance the organizational, project and individual requirements for flexibility through the structured

decision-support and comprehensive information provision. The HRIS facility provides the underlying knowledge base for the framework and encourages employee involvement via the "self-service" functionality. Effective knowledge management is the key contribution of the model beyond the employee resourcing specific functions. The model incorporates a web-enabled user interface and an underlying HRIS mechanism, which correlate with the mechanistic approach to KM. These help in capturing and reusing necessary and useful information. Secondly, the model helps in the transfer of knowledge between projects via efficient allocation of human resources and facilitates effective sharing of company and other information which supports the organic, people-centered approach to KM.

Resourcing Framework Validation

In order to examine the practical application of the framework described above, it was tested in relation to the resourcing of a program for the construction of ten schools. Each project was to be allocated a Project Manager, each of whom was responsible to a Contracts Manager, who assumed responsibility for the production teams for one, two, three projects depending upon their size. Within each project was appointed a range of site-based managers who were responsible for the supervisory staff (foremen, engineers, trainees). A diverse range of staff had been deployed to the projects ranging new employees recruited specifically for the schools projects to long-standing managers with over thirty year's service. The others had been specifically recruited for the projects.

This staffing strategy adopted by the case study organization before the framework was implemented (after one of the projects had been resourced) resulted in multiple

challenges which re-emerged throughout the program's duration. The newly appointed Contracts Manager required extensive guidance from his longer serving colleagues. The organization had no written policy or procedures for team deployment or recruitment. At the site level, there was extreme pressure to meet expected performance levels. New recruits were entrusted to undertake the work with the guidance of long-serving site agent. The under-developed working relationships inevitably led to a reduction in team synergy, problems which were compounded by an abject lack of written policies or procedures on recruitment and selection or team deployment.

The resourcing framework was implemented in subsequent projects within the program to address issues emerging from its early operation. The system encouraged the production of good practice guides on employee resourcing, HRD and other elements of SHRM. This included recruitment and selection procedures and team deployment processes, which ensured the effective utilization of staff across the organization, its sub-divisions and departments as well as individual programs as in this case. Thus, inefficiencies in resourcing decisions between the projects were highlighted and new and experienced personnel were allocated to the projects in a more balanced manner. The HR administration element of the framework supported timely and accurate employee data storage and retrieval. This included explicit information about their background and skills, but also tacit information which refers to their experience and expertise. This database was used as a directory of in-house expertise through which resources could be deployed according to organizational and project requirements. At the same time, employees were encouraged to input their needs and preferences in terms of work-life balance and career ambitions ton the system were incorporated into the

managerial decision-making. This way transparent and balanced decision-making took place, which was used to rapidly satisfy employee/ client enquiries. The user group suggested that, in the long-term, the system should help in planning employee progression and also encourage repeat-business.

Conclusions

A key aspect of strategic human resource management function is the deployment of human resources to operating teams and divisions. In order for it to be managed effectively, it requires the systematic and concurrent combination of dynamic organizational, project and employee data in order that appropriate resource allocation decisions can be made. This paper has explored how knowledge is currently captured within leading UK construction companies. Capturing individual employee perspectives on their skills, competencies and personal needs is the cornerstone of any successful project resourcing strategy. Such knowledge is difficult to take into account as it is tacit in nature and specific to every individual employed by the organization. Nevertheless, if an organization fails to take employee needs in the resourcing process, the implications are likely to be detrimental both to project performance and to the psychological contract. Thus, capturing employee's perspectives on the resourcing process is key to the efficacy of the HRM function within large construction businesses.

Although none of the firms participating in this research had developed a solution which demonstrably resolved the resourcing challenge, a synthesis of the practices of those identified has resulted in a more robust methodology for addressing the challenge of

taking into account employee perspectives in the resourcing process. A framework for enabling the capture and effective utilization of the tacit knowledge required for robust resourcing has been developed which has been shown to have practical utility through its application as a prototype in a construction program. However, its successful operation within other firms will demand a culture of trust and openness if employees are to be explicit in stating their aspirations, abilities and limitations. Although this may present a significant challenge to construction organizations, if both parties work to develop such a culture then the benefits should be employees who are appropriately deployed in a way which is sympathetic to both their needs *and* those of the organization.

References

Ambrosio, J. (2000). Knowledge Management Mistakes. *Computerworld*. 34(27), 44-45.

Armstrong, M. and Baron, A. (2002) *Strategic HRM: the key to improved business performance*, London: CIPD

Attride-Stirling J. (2001) Thematic network analysis. *Qualitative Research*, 1(3): 385-405.

Beardwell, I. and Holden, L. (1997) *Human resource management, a contemporary perspective*, London: Financial Times

Bresnen M, Wray K, Bryman A, Beardsworth A, Ford J and Keil E. (1985) The flexibility of recruitment in the construction industry: formalisation or recasualisation? *Sociology*, 19(1).

Carter, C., and Scarbrough, H. (2001). Towards a second generation of KM? The people management challenge. *Education + Training*. 43(4/5), 215-224.

Clark, I and Colling, T (2005) The management of human resources in project management-led organizations, *Personnel Review*, Vol.34, No.2, 178-191.

Druker, J., White, G., Hegewisch, A. and Mayne, L. (1996) Between hard and soft HRM: human resource management in the construction industry, *Construction Management and Economics*, Vol. 14, pp. 405-416

Ellis, K. (2001). Dare to share. *Training*. 38(2), 74-80.

Gann, D. & A. Salter (2001): "Innovation in project-based, service-enhanced firms: the construction of complex products and systems", *Research Policy*, Vol. 29: 955-972.

Greenlaw, P. and Valonis, W. (1994) Applications of expert systems in human resource management, *Human Resource Planning*, Vol. 17, No. 1, p. 27

Guest, D.E. and Conway, N. (2002) Communication the psychological; contract: an employer perspective. *Human Resource Management Journal*, Vol. 12, No. 2, 22-38.

Haldin-Herrgard, T., (2000). Difficulties in diffusion of tacit knowledge in organizations. *Journal of Intellectual Capital*. 1(4), 357-369.

Hislop, D. (2003) Linking human resource management and knowledge management via commitment: A review and research agenda, *Employee Relations*, Vol.25, Iss.2, 182-202.

Hobday, M. (2000): "The project-based organization: an ideal form for management of complex products and systems?", *Research Policy*, Vol. 29: 871-893.

Jaselskis E. and Ashley D. (1991) Optimal allocation of project management resource for achieving success. *Journal of Construction Engineering and Management*, 117(2): 321-340.

Loosemore, M., Dainty, A.R.J. and Lingard, H. (2003) *Human resource management in construction projects: Strategic and operational approaches*, London: Spon Press

Marchington, M. and Grugulis, I. (2000) 'Best practice' human resource management: perfect opportunity or dangerous illusion? *Int. J. of Human Resource Management*, Vol.11(4), 905-925.

Miller, M. (1998) Great expectations: is your HRIS meeting them? *HR Focus*, Vol. 75, No. 4, pp. 1-4

Nonaka, I. (1994) A Dynamic theory of organizational knowledge creation. *Organization Science*. 5, 14-37.

Nonaka, I., and Takeuchi, H. (1995) *The Knowledge Creating Company*. Oxford: Oxford University Press.

Rothwell, S. (1995) Human resource planning, in Storey, J. (ed.) *Human resource management: a central text*, London: Routledge

Scarborough, H. (1999). "System error". *People Management*. 8 April, 68 – 74.

Smith, E. (2001) The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management*. 5(4), 311-321.

Soliman, F. and Spooner, K. (2000). Strategies for implementing knowledge management: the role of human resources management. *Journal of Knowledge Management*, Vol.4, No. 4, 337-345.

Spatz D. (2000) Team building in construction. *Practice Periodical on Structural Design and Construction*, 5(3): 93-105.

Storey, J. (1992) *Developments in the Management of Human Resource: An Analytical Review*. Basil Blackwell, Oxford.

Storey, J., and Quintas, P. (2001) Knowledge management and HRM. In: Storey, J (Ed.). *Human Resource Management: a critical text*, 2nd Ed. London: Thomson Learning.

Swan, J., Newell, S., and Robertson, M. (2000) Knowledge management – when will people management enter the debate? *Proceedings of the 33rd Hawaii International Conference on System Sciences-Volume 3*. 04 – 07th January, Maui, Hawaii.

Taylor, S. (2002) *People* resourcing, (2nd ed.), London: CIPD

Torrington, D., Hall, L., Haylor, I. and Myers, J. (1991) *Employee resourcing*, London: IPM.

SHRM objective	***SHRM activity***	***Tasks involved***
Staffing	Human resource planning (HRP)	Strategic human resource forecast (SHRF) – an input; development of a human resource plan – an output
	Recruitment and selection	Identification and analysis of recruitment needs; drawing of job descriptions and person specifications; advertisement of the vacancy; short listing candidates; selection process utilizing appropriate selection techniques (i.e. interviewing, assessment centers, etc.); selection of the 'right' candidate; induction
	Team deployment	Formation and building of effective teams; deconstruction and redeployment of teams
	Exit	Redundancy, retirement, dismissal, voluntary exit
Performance	Performance management	Continuous evaluation and performance appraisal; feedback and reward
	Career management	Promotion; personal and professional development planning (PDP)
HR admin.	Collection, storage and use of employee data	Utilization of appropriate HR administration system, e.g. manual filing system or a computerized human resource information system (HRIS)
Change management	"Change agent"	Ensuring proper recognition is given to significance of change; management of business and SHRM processes via which organizational culture and structure continually evolve

Table 1: Employee resourcing tasks with related SHRM activities and objectives

(c.f. Taylor, 2002)

SHRM objective	*SHRM activity*	**Evidence of Positive and Negative Practice in Each Case Study Organization (shaded cells indicate positive practice from a resourcing perspective)**					
		A	**B**	**C**	**D**	**E**	**F**
Staffing	HRP	Succession planning; graduate recruitment	Succession planning	Quarterly HRP schedules	Student placements; graduate recruitment	Student placements; recruitment at low levels	Weekly meetings
	Recruitment and selection	Company culture	Recruitment and selection workshops	Internal recruitment and promotions	Job descriptions	Centralized recruitment service	Generic recruitment website
	Team deployment	Management development and employee involvement	Regional and national resource banks	Resource management database; availability charts	Holistic approach	Employee development	Weekly meetings
	Exit	Exit q'nnaire	"Hire & fire" management style; exit q'nnaires	HR consulted only on grievance/ discipline matters	HR consulted only on grievance/ discipline matters	Exit procedure	No monitoring/ analysis
Performance	Performance management	Reactive HR; org/ industry "drip feed" culture	Secondment and lateral moves	Info for staffing and HR admin; project review	Fast-tracking	Annual appraisal	Structured system
	Career management	Employee responsibilit y	Not discussed	Line management contact	Network of career paths	Leave and come back culture	Info recorded on paper via appraisal
HR admin.	Collection, storage, use of employee data	In-house HRIS	Basic database	Resource management database	Intranet	In-house HRP information system	Basic commerciall y available system

Table 2: A Typology of Dominant Resourcing Practices Utilized within the Case Study Organizations

Table 3: Framework for Capturing and Integrating Employee-Derived Data within the Resourcing Process

Core resourcing element	**Challenges of managing process within a construction context**	**Good practice identified from case study firms related to tacit knowledge capture**	**Benefits for the successful management of the resourcing process**
HRP	Nomadic, transitory, project-based sector	Transparent identification of succession criteria (companies B and C)	Effective integration of strategic and operational business requirements Long-term staffing strategy integrated with HRD
Recruitment and selection	Fluid and dynamic environment	Organizational culture explicitly described throughout the recruitment process (company A)	Efforts targeted at suitable population Candidates' value system matches that of the organization
Team deployment	Need to balance external, organizational, project and	Multiple sources of decision-support information (company D)	Flexibility Quality of work High staff morale Effective knowledge

	employee variables	Facilitation of communication from projects to office-based managers (company A)	transfer
Performance management	Reliance on personal assessments of line managers	Post-project reviews Structured performance management systems (company F)	Employee commitment Team deployment decision-making support Tool for employee voice and two way discussion
HR administration	'Personnel' (Rather than SHRM): low take-up on technology	HRP information system/ HRIS (companies A, C, E)	Comprehensive data capture and sharing Decision-support for resourcing decisions