

EMBEDDING NEW MANAGEMENT KNOWLEDGE IN PROJECT ORGANISATIONS: THE INTERPLAY BETWEEN STRUCTURAL CONDITIONS, AGENCY AND KNOWLEDGE AMBIGUITY

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Abstract

Research on the diffusion of knowledge and learning within and between organisations has emphasised the situated nature of knowledge and the difficulties in transferring learning from one context to another. The context in which such knowledge is applied and the implementation process itself can have significant implications for how new knowledge is translated into practice by affecting how it is understood, legitimised and enacted. The aim of this paper is to contribute towards an understanding of such processes by exploring the diffusion of knowledge associated with the introduction of new management initiatives in project-based organisational settings. The reason for concentrating upon this particular scenario is that it highlights the difficulties associated with attempting to embed new knowledge in a context where there already exists a strong action imperative and where existing knowledge may be deeply embedded in practice.

Keywords: knowledge diffusion, project- based organizations, structuration.

Embedding new management knowledge in project organisations: the interplay between structural conditions, agency and knowledge ambiguity

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Research on the diffusion of knowledge and learning within and between organisations has emphasised the situated nature of knowledge and the difficulties in transferring learning from one context to another. The context in which such knowledge is applied and the implementation process itself can have significant implications for how new knowledge is translated into practice by affecting how it is understood, legitimised and enacted. The aim of this paper is to contribute towards an understanding of such processes by exploring the diffusion of knowledge associated with the introduction of new management initiatives in project-based organisational settings. The reason for concentrating upon this particular scenario is that it highlights the difficulties associated with attempting to embed new knowledge in a context where there already exists a strong action imperative and where existing knowledge may be deeply embedded in practice.

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Suggested track: Managing organizational knowledge and competence

1 Introduction

Research on the diffusion of knowledge and learning within and between organisations has emphasised the situated nature of knowledge and the difficulties in transferring learning from one context to another (Cook and Brown, 1999; Szulanski, 1996; Lave and Wenger, 1991): The problem here is that the widespread diffusion of innovations requires that they are context-free in order to maximise their transferability (across projects, organisations and sectors): However, the implementation of new ideas is context-specific, with organisations needing to re-interpret management ideas and practices to suit their own particular circumstances (e.g. Swan and Clark, 1992): The resulting process of translation that involves the application of new management ideas can lead to distortions as new knowledge is re-interpreted and re-constructed to suit operating conditions and organisational contexts (Rovik, 1998): Ironically, however, this process of translation means that it is the inherent ambiguity or 'interpretative flexibility' of new management ideas that is often the key to their effective diffusion within and across organisations (Bijker et al., 1987; Clark and Staunton, 1989):

Moreover, the context in which such knowledge is applied and the implementation process itself can have significant implications for how new knowledge is translated into practice by affecting how it is understood, legitimised and enacted (Orlikowski, 1996): The aim of this paper is to contribute towards an understanding of such processes by exploring the diffusion of knowledge associated with the introduction of new management initiatives in project-based organisational settings. The reason for concentrating upon this particular scenario is that it highlights the difficulties associated with attempting to embed new knowledge in a context where there already exists a strong action imperative and where existing knowledge may be deeply embedded in practice (DeFillippi, 2001): The emphasis, therefore, is upon understanding the micro-processes of knowledge diffusion associated with change in project environments and how this change is actually accomplished (Orlikowski, 1992, 1996; Tsoukas and Chia, 2002):

Although individual projects may themselves be inherently changeable (since they follow a life-cycle rather than repetitive logic), they do operate according to the logic of intentional finality and closure, which is clearly not the case for organisation more generally. Consequently, it becomes important to examine project organising as the

result of a dynamic interplay between changing project circumstances *and* a shifting organisational backdrop (cf. Tsoukas and Chia, 2002): In these conditions, processes of knowledge diffusion associated with the implementation of new management ideas will be complicated immensely by shifting patterns of sense-making that reflect the dynamic interplay between project-based working, on the one hand, and broader organisational change dynamics, on the other (cf. Weick, 1995): Therefore, project management practices can be seen then as the outcome of a complex, recursive relationship between structural attributes and individual agency, in which actors draw upon, enact and hence re-produce (and, under certain circumstances, modify) the structural properties of the system in which they are embedded (Giddens, 1984): The consequence is that the ways in which managerial knowledge diffuses throughout project organisation is filtered through a relatively well-established body of project management knowledge that has been accumulated and adapted through experience and practice.

In order to examine in greater depth the process of diffusion and embedding of new management knowledge in project organisations, this paper draws upon a case study of the implementation of a new management initiative in a firm within the construction sector. The analysis of the case provides an insight into micro-processes of change within the sector and allows exploring the factors enabling and inhibiting the introduction of new management knowledge. More specifically, the paper examines how the initiative was envisioned, articulated and implemented by management and how, in turn, it was interpreted, moulded and acted upon by people and groups that it was designed to effect. The main argument presented in this paper is that understanding the diffusion of knowledge not only requires an understanding of the knowledge base itself and processes involved in its implementation. It also requires recognition of the complex counterpoint between the diffusion of new ideas and on-going organisational working practices and routines (Orlikowski, 1996; Orlikowski and Hoffman, 1997; Orr, 1990):

2 Project-based organising

Although project-based organisation is sometimes conceived of as a flexible and dynamic mode of organisation (e.g. Drucker, 1993), research on project-based learning consistently highlights the problems involved in attempting to capture, share and

diffuse knowledge and learning across projects (DeFillippi, 2001; Grabher, 2002a; Newell et al., 2003; Prencipe and Tell, 2001): Some commentators suggest there is an inherent contradiction between short-term, project task objectives and the longer-term developmental nature of organisational learning processes (Grabher, 2002a): Ekstedt et al. (1999), for example, identify a 'renewal paradox', which they relate to the contradictions involved in combining action with knowledge formation in project organisations. Others go as far as to suggest that project basing can act as a limiting factor on the firm's innovative potential (Dubois and Gadde, 2002; Gann, 2001; Gann and Salter, 2000; Winch, 1998): It is quite possible, therefore, that, far from being the vehicles of creativity they are sometimes presented as in the literature, projects can create barriers to change, by privileging short-term task performance over long-term knowledge accumulation. If that is the case, then it becomes important to understand the diverse 'logics of action' that underpin project organisation processes, on the one hand, and organisational knowledge accumulation processes, on the other (cf. Cyert and March, 1963):

Such an approach assumes, of course, that new management ideas are not immutable and that they contain some 'interpretative flexibility' that enables them to be modified to suit practical needs and circumstances (Bijker et al., 1987; Rovik, 1998): It also presupposes the importance of agency in the diffusion and enactment of management knowledge (Feldman, 2000; Orlikowski, 1996; Weick, 1995): A concern with the effects of project organisation on processes of change also suggests, however, that it is important to allow for the effects of structural context. Structural conditions will influence the rules of signification and legitimation and the resources of power that are used to help embed new knowledge in managerial practice. Consequently, it is helpful to view the introduction of new managerial initiatives in a project organisational context as inevitably affected by processes of structuration (cf. Giddens, 1984): According to this approach, the recursive interplay between structure and agency will thereby affect the ongoing reproduction (and perhaps modification) of structure through practice (Sydow and Windeler, 1998; Windeler and Sydow, 2001):

Given the importance of context, then, the type of project and its organisational and institutional characteristics become crucial in understanding the relationship between processes of broader knowledge diffusion, on the one hand, and localised project-based working practices, on the other. The particular setting focused on in this paper –

the construction industry – represents one particular type of project environment with its own organisational and institutional features and associated managerial discourse (Bresnen and Marshall, 2001): The industry is an example of a mature, project-based industry, in which new product development (of roads, offices, housing and the like) involves not only non-routine production processes, but also complex inter-professional and inter-organisational contractual and working relationships (Bresnen, 1990; Cherns and Bryant, 1984; Gann, 2000): The industry is also one in which decentralised project working is the norm, causing significant horizontal and vertical differentiation within the construction firm (Bresnen and Marshall, 2000a) and a degree of uncoupling between project activities and wider organisational strategies (Dubois and Gadde, 2002): Consequently, not only is action centred around transient projects, but also diverse institutional practices and norms become a very important influence on project management practice (Bresnen, 1990), in a way not apparent in other types of project setting (e.g. single disciplinary, internal R&D projects):

Contemporary discourse in the UK construction sector (and elsewhere too) has been dominated in the last decade by calls for radical changes in the way that the industry operates, stemming from the publication of a number of key government-sponsored and industry reports. The Egan Report (1998), for example, takes its lead from recent advances in manufacturing and calls for improvements in quality and efficiency by the creation of more integrated project processes of product development, project implementation, and supply chain partnering. The result of this, and similar, interventions (e.g. Latham, 1994) has been a multitude of industry-wide initiatives in recent years, where construction firms have revisited their management practices and looked both across and outside the sector for examples of 'best practice' (Gann, 1996, 2000; Bresnen and Marshall, 2001): The industry is one, however, in which implementing and embedding innovative practice has proven difficult (Fairclough, 1998): Recent research on partnering, for example, suggests that considerable difficulties are often experienced and reported in implementation that stem from the internal fragmentation of construction firms (Bresnen and Marshall, 2000b):

Clearly, the context in which such ideas are applied and the implementation process itself can have significant implications for how such initiatives are translated into practice by affecting how they are understood, legitimised and enacted (Orlikowski, 1996): On the face of it, project-based working should be conducive to the processes of

knowledge diffusion and accumulation associated with implementing organisational change. After all, projects themselves are often creative endeavours concerned with the generation of new knowledge (e.g. DeFillippi, 2001; Grabher, 2002b): Project life-cycle dynamics make them inherently developmental in nature and project objectives, deadlines, and team-based modes of working provide a framework for action in the integration of knowledge from widely dispersed (functional, organisational) sources (Lindkvist et al., 1998; Winch, 2000): Moreover, certain types of projects – those associated with wholesale organisational renewal (Blomquist and Packendorff, 1998) – are precisely concerned with radical organisational change. Indeed, the idea of the project as a vehicle for change and renewal has become ubiquitous in recent years (Drucker, 1993; Ekstedt et al., 1999; Lundin and Midler, 1998; Lundin and Hartman, 2000; Packendorff, 2002):

However, research has consistently shown that the temporary nature of projects militates against the capture and generalisation of project-based learning (e.g. DeFillippi, 2001; Prencipe and Tell, 2001): Projects are often one-off, self-contained tasks, which have specific objectives, finite life cycles and dedicated project teams (Grabher, 2002a: 207-8): Added to this, many project tasks – including engineering projects, R&D activity, film-making, advertising campaigns or wholesale company transformation – are complex and uncertain and characterised by close interdependencies and extensive inter-disciplinary and inter-organisational team working (Bresnen, 1990; Gann and Salter, 2000; Hobday, 2000): The problem of capturing project-based learning and/or of embedding new knowledge in project management practice is therefore enormously magnified to the extent that the epithet that 'each project is unique' holds true. Knowledge and learning obtained from one project becomes difficult to transfer to the next as it depends crucially upon context and because the uniqueness of the project makes it difficult for those involved to see the opportunities for learning (DeFillippi and Arthur, 1998):

Projects do not neatly fit into routine organisational processes and often require dedicated modes of organisation and specific management techniques, processes and routines (Kotnour, 1999; Prencipe and Tell, 2001): As the implementation of new management ideas is more concerned with the diffusion of process knowledge, it should create less of a problem, as it involves the abstraction of management processes from project content. Film-making or advertising, for example, can

undoubtedly lead to the generation and learning of new ways of producing, directing and editing work that is, at the same time, artistically highly variegated (Grabher, 2002b): However, here too there are problems to the extent that knowledge is not easily codified and relies for its diffusion upon the existence of strong social relationships in which knowledge about different ways of working is embedded (Brown and Duguid, 1991, 2001; Hansen, 2002; Hansen et al., 1999): Recent research has shown, for example, how difficult it can be to sustain such ties in project organisations (Bresnen et al., 2003): Also, how cross-project learning is as much, if not more, dependent upon social relationships than upon the simple, direct transfer of declarative knowledge (Newell et al., 2003): In other words, 'reinventing the wheel' may be an inevitable and essential part of the process of embedding new understandings and ways of working in conditions of organisational fragmentation, discontinuity and team re-configuration – conditions typified by project organisation.

Moreover, the context and infrastructure within which projects are embedded often consists not simply of single organisations and their systems, but of wider networks that encompass a range of inter-organisational and inter-institutional relationships (DeFillippi, 2001; Grabher, 2002a; Sydow and Staber 2002; Windeler and Sydow, 2001): This is particularly the case in sectors of activity such as construction, engineering and aerospace in which external contracting is the norm (Bresnen, 1990): Resulting discontinuities and disjunctures not only between projects, but also within wider institutional fields mean that knowledge gained from one project is not so easily captured or diffused across others. This is particularly the case in so far as knowledge is embedded in social relationships that span professional, organisational and even institutional boundaries (Ayas, 1996; Bresnen et al., 2003; DeFillippi, 2001; Newell et al., 2003):

3 Understanding knowledge diffusion in project organisations

Examining the spread and implementation of new management ideas in the case of project-based organisations is also made more complex by the fact that one is confronted with conditions that require a much more dynamic interpretation of organising processes (Tsoukas and Chia, 2002): Most analyses of project-based learning deal with the issue of change by treating projects as the primary source of variability – bringing them to the foreground and depicting them as fluid against an

essentially static organisational background (e.g. Prencipe and Tell, 2001): This may usefully describe situations where organising by project is the *exception* rather than the rule. However, it does not adequately describe situations where mainstream activities are entirely or mostly project-based (as is the case in engineering, construction, aerospace and parts of the media): In such organisations, projects do not simply occur within a lattice of relatively established, steady state activities. Instead, they *constitute* the organisation's steady state.

Moreover, although individual projects may themselves be inherently changeable (since they follow a life-cycle rather than repetitive logic), they do operate according to the logic of intentional finality and closure, which is clearly not the case for organisation more generally. Consequently, it becomes important to examine project organising as the result of a dynamic interplay between changing project circumstances *and* a shifting organisational backdrop (cf. Tsoukas and Chia, 2002): In these conditions, processes of knowledge diffusion associated with the implementation of new management ideas will be complicated immensely by shifting patterns of sense-making that reflect the complex and dynamic interplay between project-based working, on the one hand, and broader organisational change dynamics, on the other (cf. Weick, 1995):

The picture is complicated further when one considers that, in sectors such as the construction industry, project management is a well-established and coherent body of knowledge and way of working (in contrast perhaps to other sectors, such as advertising, film-making and R&D): Indeed, the construction sector, together with engineering and aerospace, has provided much of the bedrock of experience that has gone into the development of project management as a discipline (Morris, 1994; Hodgson, 2002): Importantly, the flavour of that knowledge base is very much influenced by its roots in engineering and systems analysis (Bresnen and Marshall, 2001; Hodgson, 2002): Indeed, critical commentators are quick to point out that that it represents a very mechanistic way of thinking about project management (Anderson and Larsson, 1998; Cammack, 2000; Engwall, 1998): Research even suggests that project management systems are often so mechanistic that they actively inhibit cross-project learning (Busby, 1999; Kotnour, 1999; O'Dell and Grayson, 1998): Consequently, project management practices may represent a much more

conservative influence on attempts to introduce change than proselytisers of project organisation and management would have us believe (e.g. Drucker, 1993):

Seen through the lens of structuration theory, project management practices can be seen then as the outcome of a complex, recursive relationship between structural attributes and individual agency, in which actors draw upon, enact and hence reproduce (and, under certain circumstances, modify) the structural properties of the system in which they are embedded (Giddens, 1984; Sydow and Windeler, 1998): Thus the development of new project management practice not only derives from project and organisational sources of signification, domination and legitimation (structural dimension): It also derives from how actors make sense of and enact the system by communicating according to particular interpretative schemes, deploying particular sources of power and sanctioning in accordance with specific norms (interactional dimension) (Giddens, 1984):

The difference perhaps in a project management setting is that those interpretive schemes, norms and sources of power draw upon not only organisational mechanisms, but also upon a generalised and relatively well-established (and rather mechanistic) body of project management knowledge that has been filtered and adapted through experience and practice. Those interpretive schemes, legitimacy norms and bases of power may also be widely dispersed and potentially highly competitive, reflecting the multitude of interests commonly involved in projects and the inexact alignment of temporary projects with the organisation(s) in which they are embedded (Gann and Salter, 2000; Hobday, 2000; Lindkvist et al., 1998; O'Dell and Grayson, 1998): The consequence is that the ways in which managerial knowledge and practice diffuse throughout project organisation may be more to do with localised learning within projects that is also filtered through understandings shaped by a practically-focused project management knowledge base, than it is to do with the crystallisation of generalised project management discourse into abstract, company-wide change initiatives.

4 The case study: implementing 'Dashboards' in the building division of ConstructCo

In order to examine in greater depth the inter-relationship between project management and organisational change processes, this paper draws upon a case study of the introduction of a new project performance management tool across the Building Division of a large UK contractor (renamed here ConstructCo): The case study forms part of a wider, ongoing study of the management of change and organisational learning in the construction sector, the aim of which was to explore the factors enabling and inhibiting the introduction of new management initiatives in construction firms¹. Importantly, then, the research takes the construction *firm*, rather than the construction *project*, as the unit of analysis.

The research was interview-based, with interviews being conducted in two time periods, 12 months apart, thus allowing some 'real-time' as well as retrospective analysis. Three meetings and 14 interviews were conducted across the different regional offices and different hierarchical levels within the company. The informants selected included senior managers from the head office, regional managers and also project managers working on the company's construction sites. All interviews were semi-structured in format and followed a pre-designed interview schedule. Open ended questions were asked about the person's background, their understanding of the initiative, the wider commercial and corporate context, the implementation process used, changes to working practices brought about by the initiative and overall effects and outcomes. On average, interviews lasted about an hour and all were tape-recorded. Data from the interviews were supplemented with documentary evidence, including internal company reports and presentations as well as external consultants' reports.

4.1 ConstructCo and the new initiative

ConstructCo is a building contractor that operates nationally in the UK, with a Building Division that cuts across the company's three regional offices: Southern, Central and Northern (the company's head office is in the Central region): In 2002, the Building Division contributed about £160m of a total company turnover of around £500m per annum, of which £360m was in construction business. The Building Division was formed at the beginning of 2000 and started to function fully as an autonomous unit from May 2002. Before then, each of the three regions had been responsible for both

¹ Based on research sponsored by the UK's Engineering and Physical Sciences Research Council (grant

building and civil/process engineering projects. The re-structuring of the organisation was intended to separate building from engineering work and thus to integrate activity along product divisional lines.

The three regions faced quite different market conditions and undertook different types of work. Central region carried out most of its building work for the retail sector and also provided warehousing for the transport and distribution sector. Being positioned in the centre of the country provided steady demand for this type of construction. As a result, the company undertook a high volume of similar projects with large turnovers, sizeable margins and low risks. Performance in the region was considered to be generally good . According to the Head Office Operations Director: "...it would be foolish if anybody ever made a mistake because we have done so many [projects of this kind] we know how to put them together".

Southern region operated mostly in the office building sector. However market saturation in office construction had meant that the region was having to diversify into other areas such as retail, industrial and hotel building. As a result, its projects were higher risk and less predictable. This was reflected in poor performance across many projects – some of which were rated by head office as "of concern" or even "to be taken into care", according to performance reports available on projects that were active at the time of the research.

Northern region operated in equally difficult market conditions. Low demand meant that the region was taking on any kind of work it could get. At the time of the research, almost all of the projects carried out in this region involved different types of work involving low margins and, consequently, higher risk. Project performance in the Northern region was considered to be consistently poor. Table 1 summarises these differences across the regions.

INSERT TABLE 1 HERE

Since the restructuring of the group in 2000 and, in the light of these performance problems, attempts had been made to unify processes throughout the company. In October 2001, external consultants were employed to carry out an audit in order to assess compliance to company standards and procedures across regions and projects. The audit identified a general lack of uniformed planning mechanisms across projects. As a result, a new management tool was recommended that would reinforce existing planning processes and be able to show how projects were performing and how likely they were to complete on time. This tool would also, it was hoped, enable the transfer of 'best practice' across the company and raise the level of competence across projects in all regions.

4.2 Implementing 'Dashboards' in the building division

The new project performance evaluation tool introduced by the company was called 'Dashboards' and was designed to enable project managers and their teams to evaluate project performance in ways that were focused on future outcomes, rather than past performance. The major driver for this new initiative was concern about the increasing number of projects that were failing to deliver jobs to time and to quality. The initiative was therefore mainly aimed at project managers and was intended to formalise planning processes, helping project managers to anticipate likely future problems.

'Dashboards' was developed with the help of the external consultants and involved the assessment of project performance over a five-week advance period, based on an evaluation of progress to date. The new process introduced by the 'Dashboards' initiative consisted of several steps. First, project managers defined project success criteria via weekly meetings with their teams. Each week, the list of criteria could be updated according to changing circumstances. Project progress was then monitored daily and scored weekly on each of the criteria. At the end of the week, the list of the criteria with their respective scores was reported from site to regional management. The role of regional management was to assess the teams and provide feedback on their performance. The performance data was then aggregated at regional level and forwarded to the head office, where the reports produced by the dashboards would be used to support decision making.

The implementation of the Dashboards initiative started in January 2002 across the company. Figure 1 presents the time line of the main phases and events associated with the roll out of the initiative.

INSERT FIGURE 1 HERE

The introduction of the new tool started with a training programme, which consisted of one-day workshops conducted by the external consultants for management and project teams over a three-month period. By the end of the training programme, all project teams across all the regions started to use dashboards. The head office would review progress reports on a weekly basis and give the teams and regional management feedback on the quality of the reports produced. This process carried on for six months and was part of what was described as an 'educational programme', aimed at coaching the teams on how to use dashboards.

The training programme and coaching process had mixed effects. Across the regions, it was felt that the teams received conflicting messages about what to use as the key performance criteria. Although the tool was presented in training as designed to help project managers do their job, feedback from head office indicated that other commercial priorities were to be reflected in the dashboards. Disagreements between the project managers and head office resulting from this ambiguity were eventually resolved through feedback. However, interaction with the head office was different across the regions and had a different impact. As one of the managers from the head office commented:

"Whilst we were doing it, the feedback we were giving [the North] was not as good quality. The feedback we gave [the Southern region] and [the Central region] was face to face every week. One of us would actually sit them down and say: why haven't you done this? why that? and [we would] really have a debate about it."

The amount of attention given to the Northern region partly reflected the fact that there were only a few projects going on in the North at the time. However, poor feedback during the rolling out process also contributed to a lack of commitment in the Northern

region to the new tool. One project manager commented about the feedback he had received:

"[Feedback] was always done as [if] the dashboard was not good enough. Not: how have you put your dashboard together? why have you put that in there? Or: this is what you should be using it for. It was just: your dashboard is not good enough."

And according to another project manager:

"I would get a call back on Monday afternoon: change it to this because it did not suit who was looking at it. That was when I lost heart in it. Because I thought it was important for my job [...] I just started thinking: hang on, it is just another reporting tool here. It is not really a management tool for day to day use, it is just another reporting tool."

By May 2002 it was recognised that dashboards were not going to be effectively implemented in the Northern region without additional involvement from head office. Indeed, reports on the quality of those produced (see the second half of Figure 1) signalled up concerns about commitment from the Northern region during this period. As a result, it was decided to repeat the training programme in the region.

The aim of the initial training programme was to embed the new management tool within project teams across the company. At the end of the six-month period, it appeared that the quality of the dashboards produced by the regions had reached satisfactory levels. The decision was made to transfer the ownership and responsibility for the analysis of the dashboards to the regions. This meant that project teams would no longer receive feedback from the head office concerning the quality of the dashboards produced and their performance in using them.

However, soon after the completion of the programme, some problems in the use of dashboards were identified. In some projects, there was an apparent mismatch between performance as recorded on the dashboards and actual project performance,

which was measured according to financial targets and programme for completion. These instances occurred across all the regions. The Operations Director recalled:

“Where people were applying the tool meaningfully they would set the key objectives and do it sensibly. And, if they missed them, they would score [that] they had missed it and they would reset the date. But for some of the teams, getting a good score became more important than actually moving the job on. So they would set soft targets and then achieve them or if they did not achieve something they might actually even say they had achieved it and were going to do it a day or two afterwards. So the scores became...a game. So people were trying to look good with the scores.”

Head office restarted the feedback process for the problematic teams, but this was interpreted as “heavy interference” by some project managers with how project teams were using the tool. The attempts of the head office to overcome the effects of the scoring game by putting more effort into the feedback process caused resistance among some of the project teams. One project manager from the Southern region recalled:

“I have never had a real problem with the dashboards - apart from ... last year, when there was what I would describe as very heavy interference from head office as to what we should be doing on the dashboards. And, to be quite honest, I lost interest in the dashboards for four to five weeks.”

At this time, the tensions between the autonomy that project managers felt they should have and the control that the tool was seen to represent were most apparent. Project managers appreciated the autonomy they were given. As one project manager in the Northern region reported:

“Me and all the other guys are responsible for everything on the site. The money, the programme, quality and safety and everything is down to the guys on the field.”

In many instances, however, the way in which dashboards were introduced resulted in a perception that they were being used for purposes of control. According to a project manager in the Northern region:

“And that is when the dashboards started to get really unwieldy. That is when it started to get too complicated. So what tended to happen was that you had something that you knew was going to take you a long time to sort out [...] it was going to look on your dashboard as if you had not sorted something out. So you don't put it on. It is just a waste of time, isn't it? [...] All that would happen was that people would ring me up and say “Hey, you have not sorted this out”. [...] I was getting a lot of grief from above saying you have not sorted this out yet; sort it out. I didn't like this kind of transparency.”

This happened most when project managers and head office disagreed about what performance evaluation criteria to use in the tool. A project manager in the Southern region commented:

“Although sometimes the level of control from the top is too much, dashboards are great. It is when they try to interfere in how we put our dashboards together. That is my biggest criticism.”

In an attempt to improve the situation, the head office intensified the support given to the Southern region for a period of time and tried to persuade project managers to use the tool according to head office recommendations. However, the feelings of the teams towards the scoring system (which, according to several project managers, made them 'look bad') aggravated the situation even more. Across all regions, the project managers resented the scoring of their performance, interpreting it as a lack of trust.

In such conditions, it was going to be difficult to achieve the quality of dashboards required by head office and avoid letting teams 'play the scoring game'. Consequently, resistance to this form of the tool was so strong that the head office modified the dashboards, eliminating scoring. From now on, performance would no longer be rated using a scoring system. The new approach would be to use a colour-coded scheme

(green, amber, red) to indicate progress made (good, moderate, bad) according to the criteria used.

4.3 Implications of divisionalization

Variations across regions

Throughout the introduction of the dashboards, the Northern region appeared to be the most problematic. This was associated in part with wider changes within the organisation at the time. Prior to the restructuring of the company, the Northern region had enjoyed the status of being the most independent part of the company with what was generally considered to be the strongest management team. However, power relations changed with the restructuring of the group. As the Operations Director described:

“Over the years we have broken down [regional] barriers but, in the North, it was more predominant than anywhere else.”

This process of 'breaking down barriers' involved the removal of individuals from the regional management team in the North. For instance, one of the regional managers, who had been with the company for several years, left the company some time after the introduction of dashboards. According to senior head office managers, it was necessary for the region to embrace the change. The reaction in the Northern region to wider changes in the organisation was mirrored in the negative feelings towards the initiative – feelings that percolated down to project teams. As a result, Northern region lacked the support and, most importantly, legitimisation of the new tool by local senior management.

Another feature of importance was variation in the types of projects undertaken across the regions. Project teams that performed more routine projects tended to have fewer problems adjusting their practices to the new standards and in producing good quality dashboards. They also managed to achieve better performance in using the tool. On the other hand, project teams that were undertaking more varied and less routine types of project struggled to produce their reports and to achieve good dashboard

performance. They also showed higher levels of resistance to attempts to change their working practices.

Thus, Central region hardly had any problems in applying the tool, because success criteria were clearly known in advance due to the more repetitive and predictable type of work being undertaken. Southern region performed more variable and less predictable types of project (see Table 1), which may have had some bearing on the problems reported in the application of the tool. The effects of variation in project work were most striking in the Northern region. Having to perform a wide variety of jobs, project managers here had difficulties in adapting the template to each new project. As one project manager reported:

“For instance, the job that I did [on the previous project] we had maybe ten subcontractors on it - quite straightforward job. [...] It was a four phase contract that we had done with the client, so financially it was quite straightforward. There was very little difficult detail in it. Where I am now we have got, I think, seventy five subcontractors, [...] we have got a client that likes us and an architect that hates us. A very difficult strained relationship with the architect. So we have got a completely different scenario on this site than we did have on [the previous project]. And to try and convey that on the dashboards for the [previous project] may have been easily [done], for all the salient points for the next five weeks, on one page. If I tried to do it for where I am now, it would run for pages and pages and pages.”

Furthermore, knowledge sharing mechanisms between project managers played an important role in embedding the new processes within the teams. Southern and Central regions had knowledge sharing mechanisms in place, such as monthly meetings between project managers, where issues related to the tool could be and were discussed. Project managers in the Northern region had little opportunity to see how the tool was used by other managers in the region and so did not share their experiences. One project manager recalled:

“I have only ever seen other people’s dashboards by default when I had an e-mail that came to me that should not have. That is the only time I have seen anybody else’s [dashboard]. I got an email from somebody who forwarded something instead of just

sending it. And I got to see all the other sites and that is when I realised that the one [dashboard] I was doing was so totally different from what other people were doing.”

Formal mechanisms for social interaction in the Southern and Central regions allowed the views of the new initiative to be clearly expressed and communicated across the teams within the regions. In the case of the Southern region, it helped mobilise the consistent collective response to the attempts of the head office to interfere with the way the Dashboards were produced. Such a reaction eventually led to the changes to the tool (elimination of the scoring system) introduced by the head office.

In the Northern region, there were no such established mechanisms for social interaction between project managers. During the first five months after the introduction of the initiative, the isolated resistance of the project managers did not lead to any concessions on the part of the head office as to how dashboards should be produced. There was, however, informal exchange of information amongst project managers in the region. But the patchy pattern of such social interaction resulted in no more than a shared feeling of dissatisfaction. As one of the project managers in the region commented: “I knew that the other guys were filling it in the same way.”

Variations across projects

Apart from regional differences, the particular practices used by individual project managers also seemed to matter to how the dashboards were accepted and applied throughout the company. Project managers, whose existing management processes were mismatched with the new procedures introduced by the tool, were more reluctant to adjust their working practices. Thus, greater resistance was observed in projects where there was no alignment between the application of the tool and existing project management practices. The following comment from a project manager was typical:

“We have got our contract programme. We have got at the moment a six week programme. We also have two week programme. For the actual production out on site those are a good tool to manage that, for me. [...] I don't see why I need another tool.”

In these instances little value was attributed to the new tool, reducing it to a mere duplication of activities. As one project manager remarked: “[It was] another reporting tool, another piece of paper coming in.”

On the other hand, in projects where existing processes were similar to the ones introduced by the dashboards, the benefits of the new tool were more readily recognised. One project manager reported:

“It is just something that I feel has been with me for a long time. [...] Initially we were just doing weekly reporting. I would produce a report at the end of a week on a Friday and send it off to my MD. And that was a fairly informal monitor, albeit quite useful. Then we had what we used to call one and five week look ahead programmes. [...] And that worked very well and it meant that when dashboards literally came in and replaced these one and five week look ahead programmes I think I was better placed than most to be able to understand what was trying to be achieved. I have never had a real problem with the dashboards.”

Interestingly, according to regional managers, ‘good’ project managers were more resistant to the use of dashboards. By ‘good’ project managers, they were referring to those that they considered able to deliver projects on time and with acceptable margins. Head office managers generally expected that ‘good’ project managers would embrace the initiative more readily because, as the Operations Director said, “they were doing it anyway”. Indeed, those project managers seemed to have processes in place that enabled them to manage projects successfully. However, they were very reluctant to change their processes. This was an unexpected effect, considering that one of the objectives of the initiative was to transfer ‘best practice’ in project management across the company.

In the case of poor performing project teams, where there were no formal planning ahead procedures in place, the dashboards had mixed effects. For instance, in the Northern region, poor performing project teams also struggled to produce proper dashboards. These teams scored poorly on the dashboards reports and were more reluctant to accept the new processes. As the Senior Commercial Manager recalled:

“And it only struck me this week that the ones that are doing badly [on the quality of the dashboards produced] do badly when I go out and order them commercially. When I started going to this region the first three jobs I went to I was horrified. Could not believe how bad it could be.”

In the Southern region, in contrast, the initiative appeared to have better acceptance within project teams. Consequently, according to regional management, if the tool were to be ‘dropped’, 50% of the project managers would continue to apply the processes introduced by the use of dashboards.

4.4 Evaluation of the ‘Dashboards’ initiative

The research covered a period of 18 months from the first introduction of the Dashboards tool across the company. A number of projects were completed using the tool at the end of this period and it was possible for the teams across the regions and projects to evaluate the contribution of the new management tool to their activities and performance.

The evaluation of the initiative by the teams varied from project to project as did the criteria used to assess it. The overall perception in the Southern and Central regions was that the initiative had changed project management processes for the better. The managers in these regions more readily recognised and accepted the benefits of the new tool for project management. In the Northern region, however, opinions were more varied. One regional manager suggested:

“I think the sites have not seen the benefits yet. I don’t think they see what it is doing.”

Another manager in the same region explained:

“I think there is still a misunderstanding about what it is about. [...] There are still a lot of guys who are operating at too low a level. They are still using it as just a glorified action list.”

In the Northern region, lack of acceptance and understanding of the tool by project managers and the reaction of the head office were the most salient issues. Managers here were reluctant to assess the dashboards in terms of project or team performance. Instead they concentrated on problems in application and implementation of the tool. As one project manager in the Northern region reported:

"I have never once had any feedback on what happens with the dashboard after I send it. We never know what it is used for."

5 Discussion

The above case narrative examines how the new management initiative was acted upon, transformed and embedded across the regionalised landscape of this particular construction project organisation. It illustrates how those actors promoting the initiative attempted to encourage change towards new, standardised working practices. At the same time, others who were affected by the change became engaged in an active negotiation and reconstruction of the meaning and significance of the tool, as they decided which aspects of the initiative to reject, ignore, use or adapt.

To interpret the case and illuminate further the process of new knowledge diffusion within and across project organisation, the paper has taken an approach informed by the insights of structuration theory (Giddens, 1984): Structuration theory focuses on the recursive interplay between structure and human action and emphasises the importance of issues of power, sense making and legitimacy (Sydow and Windeler, 1998). It highlights how the spatial, temporal and social contexts in which project organisations are embedded shape, and are shaped by, human action. Structures provide "rules and resources that human agents use in their everyday interaction. These rules and resources mediate human action, while at the same time they are reaffirmed through being used by human actors" (Orlikowki, 1992: 404):

The rules and resources available to the managers across regions and projects at ConstructCo produced different patterns of interaction in the process of implementing the Dashboards initiative, leading to different outcomes and uses of the tool. The general

antipathy of the Northern region towards initiatives that originated at the centre that resulted from the power shift among the regions after the earlier restructuring created a basis for legitimated resistance to the new initiative. Combined with the lack of explicit support given by regional management, it established the rules of legitimisation particular to this region. These rules helped define managers' orientations towards the dashboards and, consequently, affected their willingness to embrace the new initiative. Elsewhere within the company, norms of conformity and control tended to encourage, rather than discourage, the use of the tool. However, it was clear that difficulties in getting commitment to the initiative in its original form reflected a clear perception of a misalignment with existing ways of managing projects. Thus, questions were raised about the usefulness of the tool and, therefore, the legitimacy of the initiative when set against the needs of project management.

A key factor affecting this and other dynamics in the case was the importance of decentralisation within the company. Decentralisation to regions and thence to projects created conditions that enabled project managers to interpret and act upon the new initiative by drawing upon shared local (i.e. regional or project) perspectives or interpretative schemes. The introduction of the tool appeared to pose a threat to the operating autonomy of project managers and the personalised systems and routines that they preferred to use. Individual project managers had their own systems and practices for the review of project progress and these blended together existing methods with tacit understandings of what criteria to look for. As the Dashboards initiative was an attempt at standardisation, it therefore aligned poorly with many project managers' existing ways of managing their projects. Being able to articulate local, contingent reasons for difficulties in applying the tool then helped explain or rationalise any problems with its practical application and thus provide justification for any implicit or explicit resistance.

Added to this, decentralisation inevitably went hand in hand with a dispersion of organisation-wide surveillance and normative pressures – particularly associated with the spatial differentiation of the company into regional divisions and localised projects. The original intention was that project managers and their teams would themselves be empowered to decide upon the criteria against which they could judge their own performance. This move in the direction of self-regulation by teams might have had powerful disciplinary effects had the idea been accepted and internalised (cf. Foucault, 1977): Indeed, the residual use of the tool by some project managers showed some acceptance of the method as an aid to performance review and some internalisation of the values of the approach. However, differentiation by region and projects within the organisation meant that

there was no widespread identification with the initiative or internalisation of its values to promote control through self-regulation. Moreover, senior management were unable to resist the temptation to regress to using the tool as a means of more explicit, direct control.

The relative autonomy that came with decentralisation gave project managers considerable latitude in being able to choose how to respond to the new tool (by accepting it, modifying it or rejecting it): Moreover, project managers were often able to draw upon considerable power resources in their attempts to resist or subvert the initiative. These sources of power included their own expert knowledge in project management practice, the 'slack resources' available in each project for putting the processes into effect and the availability and use of social networks, which enabled project managers to share experiences and mobilise collective action. Depending upon the resources available to project teams across the regions, project managers were thus able to transform the initiative and the implementation process with responses like 'playing the scoring game'. Perhaps more importantly, such responses helped reinforce the existing balance of autonomy and control between head office and project teams – reproducing the dominance of local expertise over standardised process.

In directly confronting project managers' freedom to exercise their own judgement using their own methods, this attempt to 'normalise' working practices across projects represented something of an attempted shift in power/knowledge within the firm (Foucault, 1980): Methods for judging progress by project teams were to be substituted with a standardised mechanism, with its own built in assumptions about appropriate criteria and methods (cf. McLean and Hoskin, 1998): What was remarkable, however, was the variation in reaction of project managers. Many of those that the company considered 'good' project managers were resistant to the change, whereas it was other project managers that appeared more willing to embrace the new method. It may have been that those who were considered 'good' managers had more influence and therefore leeway to resist the changes or to modify it in ways that better suited their needs. Whatever the reason, an initiative that began as an exercise in emulating best practice across the company ended with a tool that was considered redundant by those whose 'best practices' it sought to emulate and sufficiently non-threatening to those whose practices it was intended to influence and improve. The irony here was that the empowerment of project managers and dependence on their tacit skills created conditions that were antithetical to the capture and codification of their 'best practice' in more formalised systems.

Regarding the initiative itself, clearly there was some 'interpretative flexibility' (Bijker et al., 1987) in the way in which the dashboards were implemented and used. However, such flexibility contributed significantly towards its lessened impact. Unlike change initiatives whose inherent ambiguity can contribute towards their effective diffusion (Clark and Staunton, 1989), the ambiguity associated with this initiative became a major impediment to its implementation. Part of the reason for this was the difficulty that managers found in mapping dashboard processes onto existing project management processes that they already used. In a context where mechanisms that contribute directly towards the completion of finite task objectives tend to be more highly prized, the less finely honed nature of this tool made it, in the words of one manager, "just a glorified action list". There was also the suggestion too of a poor rhythmic alignment between the processes involved in the use of the tool and the needs of project managers – especially as imminent deadlines approached and made the five-week planning horizon seem less urgent (cf. Brown and Eisenhardt, 1997; Lindkvist et al., 1998): Consequently, the findings suggest that, in project organisations such as the type examined here, new initiatives that are more ambiguous and/or less aligned with project objectives and methods may be less likely to diffuse more successfully and become embedded in project organisational practice.

The findings have other more general implications for understanding the diffusion and deposition of knowledge within project-based organisations. The earlier discussion in the paper highlighted the potentially more conservative influence of project management processes upon attempts to introduce change. The findings suggest that it may indeed become more appropriate to *foreground* changes in organisation-wide systems and practices and assess how they become a significant source of variation, uncertainty and change for relatively well-established routines used for the management of projects. From the perspective of chief executives bent on introducing new managerial initiatives, for example, clear-cut project organisation boundaries and the familiar litany of project objectives, plans, milestones, deliverables and the like may constitute awkward obstacles to introducing certain types of change and diffusing relevant knowledge. To the project manager, on the other hand, such shibboleths of project management may be vital ways of legitimising a mode of organisation that reinforces the primacy attached to project task completion. They may also, as the case suggests, provide a useful means of re-articulating broader initiatives so that they conform to existing and preferred localised values and norms.

Taking this point further, it suggests that inter-project differentiation is as much a factor influencing the diffusion of management knowledge within project organisations as is the

more commonly investigated phenomenon of inter-functional or inter-professional team working (cf. Hansen, 2002): Much of the project management literature tends to assume that project team working occurs against an organisational backdrop characterised by professional demarcations and functional boundaries. This may often be the case. However, the findings presented here also suggest that there is no reason why differentiation by project cannot be seen in much the same way as other forms of differentiation (departmental, professional) – that is, in terms of territories, domains, jurisdictions and bases of power. Arguably, for instance, internal fragmentation into subcultures and/or inter-group politics are likely to be just as, if not more, pronounced where project-basing is the norm as it is in functionally-based hierarchies (see, for example, recurring discussions of the problems associated with matrix organisation): This may particularly be the case if inter-organisational project working encourages outward-looking tendencies and/or the encouragement of strong project team identities (Bresnen, 1990; Bresnen and Marshall, 2000a, 2000b): Such blurred organisational boundary conditions may then have a major impact not only upon the incorporation and flavour of initiatives as they are framed, interpreted and practically enacted (with new management initiatives *defusing* as they diffuse), but also upon the actual sources of new project management knowledge and practice.

The key to understanding the effects of project organisation on processes of diffusing and embedding knowledge is therefore the context of project organisation in general, and the decentralisation of project working, in particular. In the case study explored in this paper, well established ways of working by project managers provided more immediate templates and sources of meaning and legitimation than the wider organisational initiative that the company was aiming to diffuse. In this context, application of the idea depended crucially upon the frames of reference used by project managers and the extent of their identification with the practice (whether it was seen as regionally accepted or company driven): More generally, it may well be the case that, in encouraging decentralisation, project organisation makes it more likely that the diffusion and embedding of new management knowledge in practice will be influenced by the divergence between organisational systems and norms on the one hand and project based ways of working on the other.

6 Conclusion

This paper has attempted to examine some of the key problems in embedding new management knowledge within project organisations, when the changes concerned are expected to align with (and perhaps replace) existing project management procedures and processes. Using an approach informed by structuration theory and drawing upon a case

study of the attempt to introduce a new project performance evaluation processes within a large UK construction firm, the discussion has highlighted the importance of the particular type of project organisational context in which the change occurs and its effects upon the diffusion and embedding of knowledge throughout the organisation.

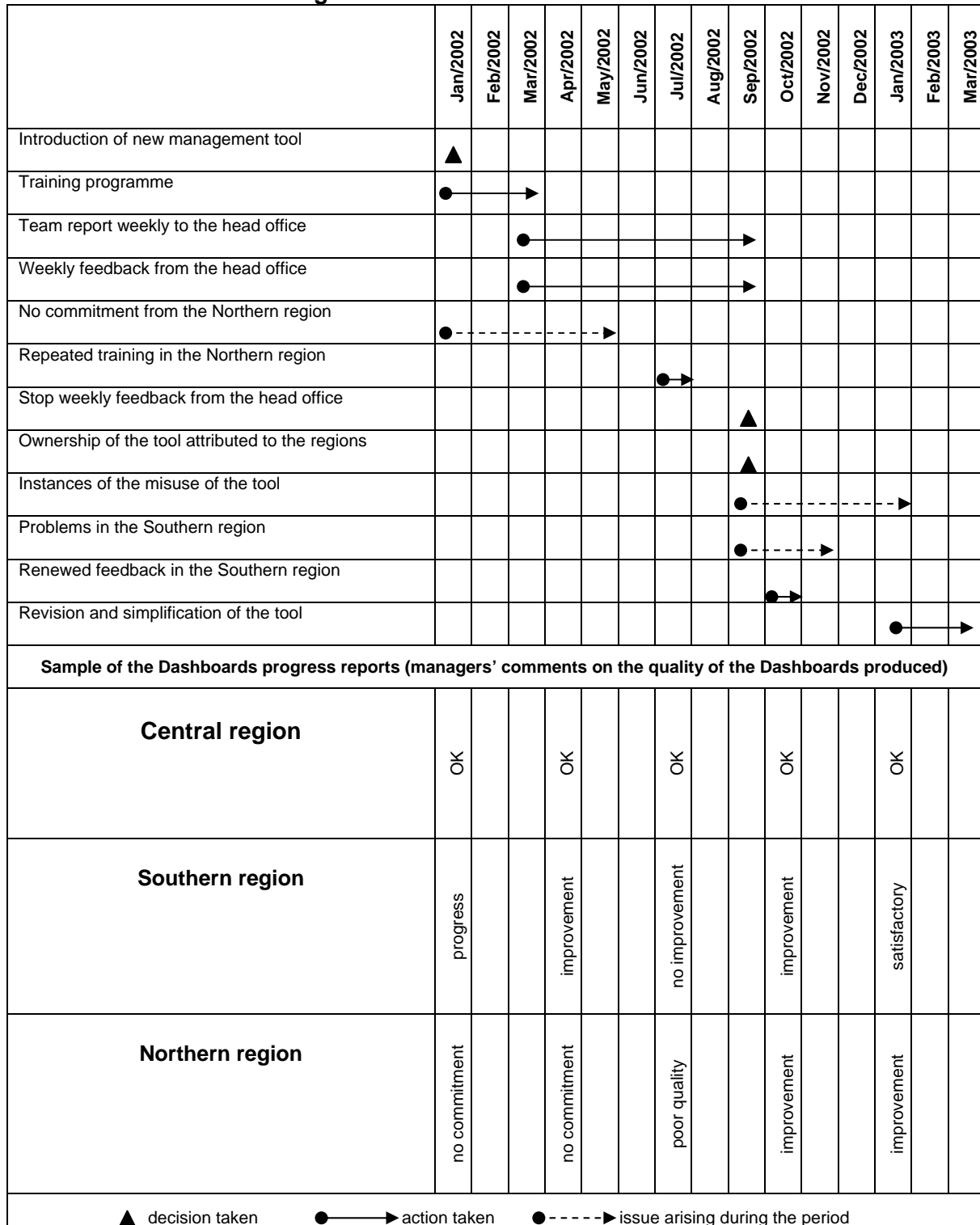
The discussion of the case has focused upon the autonomy/control dilemma in project organisations (cf. O'Dell and Grayson, 1998) and the effects that this had upon encouraging different responses within the organisation, including resistance towards and/or modification of the new standardised project process. The aim of the analysis has been to explore the often-neglected micro-processes of change (Tsoukas and Chia, 2002) by charting the ways in which the initiative was shaped as it was diffused and embedded within the project organisation, in ways that reflected the dynamic interplay between structural conditions on the one hand and interpretation and agency, on the other. The findings from the case study also demonstrate how projects in this type of environment, ironically, create barriers to change through the attention they direct to immediate, short term project objectives (cf. Ekstedt et al., 1999) and through processes of structuration that reinforce existing ways of working in decentralised project organisations.

The central message to emerge from this analysis is therefore that the diffusion and embedding of knowledge associated with the implementation of new management ideas in project-based organisations is likely to be significantly influenced by the complex interplay between wider structural conditions within the organisation and the existing routines used by project managers for the management of their projects. Importantly, localised conditions within a project organisation will influence the ways in which broader organisational initiatives are likely to be interpreted, legitimated, modified and incorporated. The implication for understanding knowledge diffusion in project environments more generally is that a range of factors – including, among others, patterns of decentralisation, the strength and coherence of existing knowledge bases and the degree of alignment between new knowledge and existing practice – are likely to have an important bearing on the extent to which new knowledge is shaped as it is embedded in project management practice.

Table 1. Differences across regions

	Central	Southern	Northern
Context	Steady demand High volume of similar jobs Highest turnover and margins Mature business	Saturated market, fierce competition Refocusing on new market sectors Second highest turnover, narrow margins Mature business	Low demand Low turnover and margins Less mature business
Projects characteristics	Routinized Low risk Large project turnover Good performance (in terms of safety, quality, errors and delivery on time) consistently across projects	Moderately similar jobs High risk Medium project turnover Variable performance from good to very poor across projects, though poor performance predominates	Higher degree of novelty High risk Small to medium project turnover Poor performance consistently across projects

Figure 1. Time line of issues and events



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