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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

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IMPROVING INNOVATION AND PROJECT PERFORMANCE IN CONSTRUCTION PROFESSIONAL SERVICES FIRMS: THE LEADERSHIP ROLE OF MIDDLE MANAGERS

By
John Kissi

A dissertation thesis submitted in partial fulfilment of the requirements for the award of the degree Doctor of Engineering (EngD), at Loughborough University

November 2012

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ABSTRACT

With rapid changes in the business environment, more acute competition and increasingly demanding clients, organisations in the construction industry have identified innovation as a means of achieving competitive advantage. Innovation provides an important avenue for firms to improve performance while differentiating their products and services. Research has identified a number of factors as influencing innovation in construction organisations. Primarily these include internal factors such as organisational climate, innovation championing, leadership and exogenous influences such as clients, regulations, technology and the economy. The role of senior management in promoting innovation is widely recognised in literature. However, in the construction and project based environment, very few studies have focused on middle management and how their day to day leadership activities impact on innovation and project performance. The purpose of this study was to improve middle management leadership behaviour in order to facilitate innovation and improve project performance in construction professional services firms.

Through a combination of qualitative case study, questionnaire surveys and qualitative interviews, the research identified how the leadership behaviour exhibited by middle managers in the workplace could enhance innovation and project performance. The study was undertaken in five phases to reflect the five key objectives for the research. The first phase comprised a review of the literature on innovation to identify key internal and external factors influencing innovation and ultimately, project performance. The second phase involved a case study of three different innovative projects to examine the role of middle managers in facilitating the innovations studied. Phase three of the study investigated the relationships among transformational leadership, innovation championing and organisational climate for innovation while examining how they combine to promote innovation and enhance project performance. Phase four involved qualitative validation of the relationship among the constructs examined in phase three and preparation of leadership development resource for middle managers which was subsequently trialed in phase five.

Key findings from the study suggest that transformational leadership behaviour exhibited by middle managers influences innovation by developing an environment conducive to innovation which in turn fosters innovation championing behaviour and ultimately, enhances project performance. The study contributes to knowledge and adds to the understanding of the role of middle managers in facilitating innovation and improving project performance. It demonstrates that the bypass effect of transformational leadership is applicable in the project based environment since transformational leadership of middle managers directly influenced project performance, circumventing project managers. In addition, the cascading effect of transformational leadership was confirmed, as championing behaviour and climate for innovation mediated the relationship between transformational leadership of middle managers and project performance. Furthermore, it revealed that the individual dimensions of transformational leadership influenced innovation and project performance differently. The study found that individualised support was the most influential dimension impacting on innovation championing behaviour, climate for innovation and project performance. Articulating vision and fostering the acceptance of group goals both influenced climate for innovation and project performance. High performance expectation, modelling behaviour and intellectual stimulation influenced innovation championing and project performance. Beyond these the study has highlighted the particular actions which constituted each dimension of
transformational leadership and how they influenced the performance of project team members.

Through this study transformational leadership development resource has been developed to help middle managers cultivate the expected leadership behaviour that could facilitate innovation and improve project performance. The study also identified how transformational leadership behaviour can be engrained in the day to day working practices of middle managers. The study presents a more positive view of middle managerial role in improving organisational performance contrary to previous negative reporting on this constituency and identifies the need for greater recognition for their role. The study recommends that construction professional services firms should support middle managers to develop transformational leadership behaviour and create the kind of environment where innovation becomes a part of the normal daily work practices. In addition the study opens a new avenue for the study of transformational leadership by using both qualitative and quantitative methods to investigate the impact of the individual dimensions. It recommends that future research adopts the same approach in different contexts to further test the suggested relationships. The study concludes with recommendations for policy makers to give greater attention to incorporating transformational leadership behaviour into the essential set of behavioural competencies managers in the construction industry need to develop beyond their technical skills.

**KEYWORDS**

Climate for Innovation, Innovation Championing Behaviour, Middle Managers, Project Performance, Transformational Leadership
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

PREFACE

This thesis has been undertaken in partial fulfilment of the requirement for the award of an Engineering Doctorate Degree (EngD) through the Centre for Innovative and Collaborative Research (CICE) in Loughborough University. It presents the outcomes of research embarked on between 2008 and 2012 in an industrial context. The study was a collaborative project jointly sponsored by Mouchel, the Engineering and Physical Sciences Research Council (EPSRC) and Loughborough University.

The primary aim of the EngD programme is to develop innovative solutions to challenging engineering problems that yield benefits not only to the sponsoring organisation but also the wider industry. The EngD provides what has been described as a radical alternative to a traditional PhD programme as it facilitates researching and providing solutions to real life challenges in the workplace.

Besides developing deliverable solutions, the EngD is examined on the basis of a thesis consisting of a discourse of about 20,000 words supported by a minimum of 3 published or accepted papers one of which must be a recognised peer reviewed journal. This thesis comprises a discourse around 5 papers (3 published conference papers, 2 published journal). To provide a complete picture of the research undertaken, the thesis should be read in conjunction with the published papers.
USED ACRONYMS / ABBREVIATIONS

CICE Centre for Innovative and Collaborative Engineering

EngD Engineering Doctorate

EPSRC Engineering and Physical Sciences Research Council

GDP Gross Domestic Product

KPI Key Performance Indicator

NESTA National Endowment for Science, Technology and the Arts

ICE Institute of Civil Engineers

OGC Office of Government Commerce

PM Project Manager

PMBOK Project Management Body of Knowledge

PMI Project Management Institute

PRINCE2 Projects in Controlled Environments

R&D Research and Development

RE Research Engineer

UK United Kingdom
TABLE OF CONTENTS

Thesis Access Conditions and Deposit Agreement ............................................................... iii
Acknowledgements .................................................................................................................... i
Abstract ..................................................................................................................................... ii
Key Words ................................................................................................................................ iii
Preface ...................................................................................................................................... iv
Used Acronyms / Abbreviations .............................................................................................. v
Table of Contents .................................................................................................................... vi
List of Figures .......................................................................................................................... ix
List of Tables ............................................................................................................................. x
List of Papers ............................................................................................................................ xi

1 Background to the Research ........................................................................................ 1
1.1 Introduction .................................................................................................................. 1
1.2 Context of the Research ............................................................................................... 1
1.3 Industrial Sponsor ......................................................................................................... 5
1.4 Justification for the Study ............................................................................................ 7
1.5 Aim and Objectives ....................................................................................................... 9
1.6 Novelty of the Research ............................................................................................... 9
1.7 Thesis Structure ........................................................................................................... 10
1.8 Synopsis of Papers ....................................................................................................... 10
1.9 Summary ..................................................................................................................... 12

2 Literature Review ....................................................................................................... 13
2.1 Introduction ................................................................................................................ 13
2.2 Innovation in the Construction Industry ....................................................................... 13
2.3 Models of Innovation in Construction ......................................................................... 14
2.4 Factors Influencing Innovation in the Construction Industry ................................... 16
2.5 Transformational Leadership ...................................................................................... 18
2.6 Transformational Leadership, Climate for Innovation and Project Performance .......... 19
2.7 Transformation Leadership, Innovation Championing and Project Performance .......... 21
2.8 Transformational Leadership of Middle Managers ...................................................... 23
2.9 Summary ..................................................................................................................... 24

3 Research Methodology ............................................................................................... 26
3.1 Introduction ................................................................................................................ 26
3.2 Ontological and Epistemological Considerations ....................................................... 26
3.3 Research Paradigm ..................................................................................................... 27
3.4 Research Methodologies/Strategies ........................................................................... 27
3.4.1 Experiment .............................................................................................................. 28
3.4.2 Survey .................................................................................................................... 28
3.4.3 Archival Analysis .................................................................................................... 28
3.4.4 History .................................................................................................................. 28
3.4.5 Case Study ............................................................................................................. 29
3.4.6 Action Research ................................................................................................... 29
# Table of Contents

3.5 Methodology Employed and Justification ................................................................. 29
3.6 Credibility and Trustworthiness Measures .............................................................. 30
  3.6.1 Triangulation ........................................................................................................ 30
  3.6.2 Interview Fidelity .................................................................................................. 30
  3.6.3 Theoretical Validity .............................................................................................. 30
3.7 Research Methods and Analysis ............................................................................ 30
  3.7.1 Literature Review .............................................................................................. 31
  3.7.2 Qualitative Interviewing .................................................................................... 31
  3.7.3 Questionnaire Surveys ....................................................................................... 32
  3.7.4 Thematic Analysis .............................................................................................. 32
  3.7.5 Statistical Analysis ............................................................................................ 32
  3.7.6 Triangulation ...................................................................................................... 33
3.8 Summary and Research Plan .................................................................................. 34

4 The Research ........................................................................................................... 37
  4.1 Introduction ............................................................................................................. 37
  4.2 Phase 1 – Review of Existing Literature and Initiatives ............................................. 37
    4.2.1 Review of Literature .......................................................................................... 37
    4.2.2 Review of Existing Initiatives .......................................................................... 37
  4.3 Phase 2 – The Role of Middle Managers in Innovations ............................................. 38
  4.4 Phase 3 – Quantitative Validation of Relationships .................................................... 38
  4.5 Phase 4 – Qualitative Validation and Resource Development ..................................... 40
  4.6 Phase 5 – Evaluating Leadership Development Resource ......................................... 41
  4.7 Summary ................................................................................................................ 43

5 Findings & Implications ............................................................................................. 44
  5.1 Introduction ............................................................................................................. 44
  5.2 Phase 1 – Review of Existing Literature and Initiatives ............................................. 44
    5.2.1 Phase 1 – Review of Existing Literature ............................................................ 44
    5.2.2 Phase 1 – Review of Existing Initiatives ............................................................ 44
  5.3 Phase 2 – The Role of Middle Managers in Innovations ............................................. 46
    5.3.1 Support for Innovation .................................................................................... 46
    5.3.2 Resource Supply ............................................................................................... 47
    5.3.3 Autonomy and Freedom ................................................................................... 47
    5.3.4 Intellectual Stimulation .................................................................................... 47
  5.4 Phase 3 – Testing of Relationships .......................................................................... 48
  5.5 Phase 4 – Qualitative Validation and Resource Development ..................................... 51
    5.5.1 Qualitative Validation ....................................................................................... 51
    5.5.2 Resource Development ..................................................................................... 55
    5.5.3 Initial Assessment of Impact of Study .............................................................. 56
  5.6 Phase 5 – Evaluation of Leadership Development Resource ..................................... 57
  5.7 Implications for Sponsor ....................................................................................... 59
  5.8 Implications for Industry ........................................................................................ 61
  5.9 Summary ................................................................................................................ 62

6 Conclusions ............................................................................................................... 63
  6.1 Introduction ............................................................................................................. 63
  6.2 Realisation of Aim and Objectives .......................................................................... 63
  6.3 Contribution to Knowledge and Practice ................................................................... 66
  6.4 Critical Evaluation of Research .............................................................................. 67
  6.5 Recommendations ................................................................................................. 68
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5.1</td>
<td>Recommendations for Further Research</td>
<td>68</td>
</tr>
<tr>
<td>6.5.2</td>
<td>Recommendations for Sponsor Company</td>
<td>69</td>
</tr>
<tr>
<td>6.5.3</td>
<td>Recommendations for Industry</td>
<td>70</td>
</tr>
<tr>
<td>6.6</td>
<td>Summary</td>
<td>71</td>
</tr>
<tr>
<td>7</td>
<td>References</td>
<td>72</td>
</tr>
</tbody>
</table>

Appendix A  Paper 1 ........................................................................................................ 81
Appendix B  Paper 2 ......................................................................................................... 94
Appendix C  Paper 3 ......................................................................................................... 114
Appendix D  Paper 4 ......................................................................................................... 125
Appendix E  Paper 5 ......................................................................................................... 152
Appendix F  Tools For Improving Leadership And Project Performance .......... 165
Appendix G  Sample Qualitative Leadership Feedback Form ............................ 171
Appendix H  Leadership Development Resource ......................................................... 174
Appendix I  Sample Output From Nvivo ................................................................. 178
LIST OF FIGURES

Figure 1: Typical Organisational Structure................................................................. 7
Figure 2: Two moment model of construction innovation process (Winch, 1998:73) ....... 15
Figure 3: Factors that influence innovation in the construction industry (Hardie and Newell, 2011:261)........................................................................................................ 18
Figure 4: Conceptual relationship between transformational leadership, innovation championing, climate for innovation and project performance..................... 23
Figure 5: Summary of research and their links to published paper............................... 36
Figure 6: Confirmed relationship between transformational leadership behaviour of middle managers, mediators and project performance .............................................. 50
Figure 7: Relationship between individual dimensions of transformational leadership, innovation championing, climate for innovation and project performance..... 52
LIST OF TABLES

Table 1-1: Synopsis of papers ................................................................. 11
Table 3-1: The relevant situations for different research strategies ...................... 28
Table 3-2: Research map ........................................................................... 34
Table 5-1: A review of current initiatives by the company ........................................ 45
Table 5-2: Table of transformational leadership dimensions, its expressions, impact and supporting quotes .............................................................. 55
Table 5-3: Summary of feedback on leadership development resource .................... 58
Table 6-1: Primary objectives, research questions, key findings and evidence .............. 63
LIST OF PAPERS

The following papers, included in the appendices, have been produced in partial fulfilment of the requirements for the award the Engineering Doctorate during the course of the research.

PAPER 1 (SEE APPENDIX E)

PAPER 2 (SEE APPENDIX FB)

PAPER 3 (SEE APPENDIX HC)

PAPER 4 (SEE APPENDIX I)

PAPER 5 (SEE APPENDIX IE)
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Other papers produced in the course of the study but not included in the discourse are listed below.

**PAPER 6**

**PAPER 7**
1 BACKGROUND TO THE RESEARCH

1.1 INTRODUCTION

The focus of this chapter is to introduce the thesis on the subject of the role of middle management leadership in improving innovation and project performance in construction professional services firms. The chapter outlines the research context in the construction industry in general and within the industrial sponsor’s organisation. It also provides justification for the research, outlines the research questions to be addressed and defines the primary aim and objectives of the research. It further highlights the novelty of the study while detailing the structure of the thesis. Finally, the chapter provides a synopsis of the papers published in the course of the study which also provides further details to the discourse.

1.2 CONTEXT OF THE RESEARCH

The need for organisations in the construction industry to respond to the rapidly changing and often conflicting expectations from clients and remain competitive in the current harsh economic environment has resulted in a continuous search for innovative approaches aimed at improving project performance (Koch and Bendixen, 2005). Innovation contributes significantly to economic growth and at the firm level enhances profit in the longer term while increasing resilience in recession (Reichstein et al., 2011). Innovation in the construction sector is very important in view of the significant contribution the sector makes towards the economy. In 2006, the sector which had over 182,000 firms and employed more than 1.17 million people generated about 10% of the country’s Gross Domestic Product (GDP), equivalent to about £90 billion (NESTA, 2007). The performance of the sector could therefore have significant implications on the economy of the United Kingdom (UK) as a whole.

However, the construction industry has often been criticised for being highly conservative with efforts at innovation being undermined by the project-based nature and short-term thinking which is further exacerbated by unfavourable procurement arrangements (NESTA, 2007). In comparison to other industries, the construction industry is considered a traditional sector with very low levels of investment in innovation including research and development (R&D). According to the UK innovation index report (NESTA, 2009), only 0.1% of turnover is spent on R&D by firms within the sector. This compares unfavourably with other sectors such as software and IT services (4.3%) and consultancy services (0.7%). This has led Reichstein et al. (2011) to label the sector, ‘last among equals’ , in view of the low number of firms engaged in process and/or product innovation.

A number of barriers to innovation in the industry have been identified; lack of the capacity to absorb and make use of ideas from outside the firm, customer responsiveness, appropriately qualified personnel and the cost of finance (Reichstein et al., 2011). Other factors inhibiting innovation include the fragmented nature of the industry particularly between different key stages of the process and the adversarial environment within the industry which often leads to mistrust (Egan, 1998; Fairclough, 2002; Latham, 1994). The need for improvement has been recognised not only by researchers but also the government. The Office of Government Commerce (OGC, 2007) through the Achieving Excellence in Construction initiative has advocated innovative approaches to delivering construction projects.
The need for improvement is even more pronounced in view of the current difficult economic environment that has seen substantially reduced spending by the government. As the government is among the biggest clients of the industry, the reduced spending has seen many companies pursuing very limited opportunities. Innovation has therefore become an important source of competitive advantage as it provides an avenue by which organisations can differentiate their products or services (Dulaimi et al., 2005). Innovation has been linked to improvements in both short and long term project performance (Dulaimi et al., 2005). While innovation in the construction industry has mainly been driven by developing solutions to problems encountered on site, others have been motivated by the aspiration to improve performance (Dulaimi et al., 2005). It has also been driven by the need for flexibility that enables firms to respond to clients’ demands (Koch and Bendixen, 2005). Efforts to improve performance through innovation have often been hampered by lack of practical guidance for professionals in the industry on how to make it thrive (Shaw, 2011).

According to Tidd et al. (2005), the innovation process involves three primary stages; scanning, selecting and implementing. The effective management of the process is however influenced by a number of contextual variables both internal and external to organisations (Scott and Bruce, 1994). These present challenges to firms in the management of the innovation process as they seek to make sense of the complications and risks associated with the phenomenon (Tidd et al., 2005). Research has identified external factors such as regulation, clients, manufacturers, technology and the economy among others as key influencers of innovation (Blayse and Manley, 2004; Hartmann, 2006).

Manley and Mcfallan (2006) suggested that at the firm level internal factors are more important than external ones in influencing the decision of firms whether to innovate or not since external factors are beyond the control of organisations. That view supports research finding that a single negative internal factor such as poor leadership or a culture unfavourable to change could potentially derail innovation even where there are favourable external influences (Seelos and Mair, 2012). Technological changes could also prompt organisations to make internal changes and adopt the new technology and take advantage of the opportunities it offers for differentiating services. This will normally be associated with internal changes in working practices for the new technology to work (Peansupap and Walker, 2005). In addition, adverse changes in the economy such as the UK is currently experiencing coupled with more demanding clients implies that the commercial risk of not changing could be much higher than that associated with changing to be more innovative and competitive. Whereas government regulations could potentially result in conforming attitude in some organisations, it can also inspire other organisations to make internal changes to enable them explore innovative ways of satisfying the regulations.

From above this study considers that firms can make the necessary internal changes to enable them take advantage of or respond to changes in the external environment to innovate and improve performance. For that reason, the focus of this study is on the internal factors. The study examines how the internal factors could be managed to foster innovation and improve project performance. Key internal influences on innovation have been identified as leadership, organisational climate and innovation championing behaviour (Dulaimi et al., 2005; Jung et al., 2003; 2008; Nam and Tatum, 1997; Sarros et al., 2008). The impacts of these factors on innovation have been investigated individually by various researchers. For example, the relationship between leadership style and innovation has been investigated by Jung et al., (2008), organisational climate and innovation by Ekvall and Ryhammar (1998), and
innovation championing and project outcomes by Dulaimi et al. (2005). However, the interplay of these factors and how they combine to influence innovation and project performance in construction professional services firms and the role of key organisational actors such as middle managers in the process is yet to be explored, (Papers 2&4, Appendices 2&4).

A central theme in the study of innovation is the significant role leadership plays. Mumford and Licuanan (2004) asserted that leadership can make a difference as to whether efforts at innovation succeed or not. The authors also noted that it is not a ‘given’ that leadership behaviour does have significant impact on innovation and suggested an alternative explanation for innovation performance could be drawn from the leadership substitute theory as well as the independent nature of creative people (Mumford and Licuanan, 2004). This leads to the question as to whether leadership really matters in innovation? There is still sufficient evidence to suggest that leadership does make a difference in innovation. For example, innovation performance was found to be adversely impacted due to the absence of an identifiable leader who could among other things facilitate effective interactions among team members in the innovation process (West et al., 2003). García-Morales et al. (2008) also highlighted leadership as one of the most important influences on innovation at the firm level suggesting leaders can set specific innovation targets and promote it among their employees. Furthermore, leaders can support innovation by making the necessary resources including time and funds available to their followers (Egbu, 2004). These findings back the proposition that leadership indeed matters in innovation performance.

Transformational leadership has been particularly linked to improved innovative performance. It is considered an approach to leading that changes followers, causing them to look beyond self-interest in favour of the group’s objectives by modifying their morale, ideals and values (Pieterse et al., 2010). It is associated with employees’ heightened commitment to organisational goals above self interest in particular and has been highlighted as a leadership style which fosters innovation and leads to improved performance (Jung et al., 2003; 2008). Transformational leaders can also influence innovation and performance by defining the work context within which their teams interact and work together towards achieving set goals (Jung et al., 2003; 2008).

García-Morales et al. (2008) confirmed the importance of transformational leadership in generating innovation as it is more associated with collective commitment to goals and enhanced capabilities than traditional leadership which is more centred on top-down decision making. Moreover, transformational leadership helps develop a sense of community, supporting a shared commitment which drives and unites employees to achieve the set objectives (García-Morales et al., 2008). In a study of 1158 managers in the private sector in Australia, Sarros et al. (2008) found that transformational leadership accounted for 26% of the variance in organisational climate for innovation. Particularly the study found that transformational leadership in organisations was linked to the provision of adequate resources, which influences the perception of the workplace environment as supportive of innovation.

In the project environment, transformational leadership behaviour of middle managers who have the responsibility of managing project teams could contribute to improved innovation and better project performance. They could do this by creating the kind of climate in the workplace which enhances innovation championing behaviour among project managers and
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Team members to improve their performance on projects (Carneiro, 2008). This study therefore focuses on the direct and indirect impact of transformational leadership behaviour of middle managers on innovation and ultimately on project performance. In that direction the primary research question the study seeks to address is: ‘how do middle managers influence innovation and project performance in construction professional services firms’? The research questions are discussed further under section 1.4.

Consistent with Dopson et al. (1992), middle managers in this study are those above first level supervision but below strategic decision making senior managers such as business unit directors. In the context of this study divisional managers/directors, portfolio managers, team managers, project directors and technical directors constitute middle managers. Project managers are the first line supervisors in the study. The definition of middle managers adopted in this study is also consistent with the Institution of Civil Engineers description of middle managers (ICE, 2001).

Consistent with Schneider and Reichers’ (1983) suggestion that climate studies should be facet specific to yield meaningful and useful results, the study focused on ‘climate for innovation’ and examined how it influenced innovation and project performance. Climate for innovation in the study refers to the enabling environment that encourages project team members to adopt innovative approaches to delivering projects while innovation championing behaviour in this study is defined as ‘the project manager’s observable actions directed towards seeking, stimulating, supporting, carrying out and promoting innovation in projects (Dulaimi et al., 2005: 566). Project outcomes have often been measured on the basis of financial, budget and quality performance (Salter and Torbett, 2003; Shenhar et al., 1997). Beyond these traditional measures, it is recognised that projects generally have different stakeholders with varying expectations and views on project success (De Wit, 1988). Project performance in this study is therefore multi-dimensional in nature incorporating both short and long term measures including innovation (Dulaimi et al., 2005; Shenhar et al., 1997).

Innovation has often been used interchangeably with creativity which comprises the processes leading to the generation of new and useful ideas (West et al., 2003). This study treats them as distinct constructs. Yet, there is a common theoretical understanding that creativity is what brings innovation as innovation starts with a creative idea from an individual or team (Amabile et al., 1996; Eaton et al., 2006). The concept of innovation has been defined severally by researchers and stakeholders. Dodgson et al. (2008:2) essentially defined innovation as ‘the successful commercial exploitation of new ideas’ and suggested it includes the scientific, technological, organisational, financial and business activities leading to the commercial introduction of new (or improved) product or service. Innovation has also been considered as ‘the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context’ (Van de Ven, 1986: 604), thus highlighting the interactive nature of the innovation process. Slaughter (1998) also suggested that innovation refers to ‘the actual use of nontrivial change and improvement in a process, product or system that is novel to the institution developing the change’ (Slaughter, 1998:226). In the construction industry, these improvements could be in the form of enhanced or new approaches to project delivery, new concepts in designs or use of new materials.

Innovation in the construction industry involves both products and processes (Ivory, 2005). Whereas products move along the supply chain to clients or markets, process innovations is associated with a reduced cost and improved quality (Ivory, 2005). Thus this study defines
innovation as the generation or adoption of ideas, design concepts or delivery processes, new to the adopting organisation which upon implementation yields a reduction in cost and/or time associated with project delivery and improves the quality of the final output with an enhanced level of client satisfaction (Paper 3 - Appendix C). The focus of the study is therefore on innovations introduced in the course of project delivery. Among other avenues, innovation in the construction industry takes place during project execution primarily through personal exchanges among designers and clients in some cases (Salter and Gann, 2003), thereby highlighting the importance of the environment that facilitates this kind of interaction.

1.3 INDUSTRIAL SPONSOR

Mouchel, the sponsor company for this project is a consulting and business services group that provides many of the design, managerial and engineering services that support modern society. The company operates in diverse markets broadly grouped into three segments: government services, regulated industries and infrastructure services. Mouchel and Parkman merged to form Mouchel Parkman in 2003. The name of the company was subsequently changed to Mouchel in 2007 to reflect the diverse businesses represented within the Group. Between 2003 when the merger occurred until the onset of the credit crunch, the company grew from about 4000 employees to over 12000. The company’s astronomical growth was achieved through both organic growth and acquisitions. The company gradually moved away from being a predominantly civil engineering practice to a broadly-based provider of outsourced services in pursuit of its growth strategy. Mouchel now employs about 8000 people and has a turnover of over £500 million. Mouchel’s current primary activities include planning, designing, constructing, maintaining and operating the physical and administrative infrastructure that supports modern society. It is associated with infrastructure ranging from roads and railways, through water and energy, to local government property, schools, back-office support functions and management consultancy. The company seeks to distinguish itself from competition by building ‘great relationships’ with clients, suppliers and staff. It is organised into divisions primarily around specialities, geographical locations and clients.

The company’s aspirations of growing and increasing its turnover led it to commission a private firm to undertake a survey of key clients regarding the company’s services. One key feedback from the survey was that the company needed to be more innovative and proactive in project delivery. This resonated with results from individual client feedback interviews which often scored lower in innovation than the other key project performance indicators. This perception posed a threat to the company’s growth ambition. The need for the company to respond to the concerns of clients and adopt innovative approaches to improve performance in order to retain existing contracts and attract new ones is very important. This is particularly so in the current economic circumstances as most of the company’s contracts are from central and local government clients most affected by the economic downturn. More importantly, the company needed to be in the position to compete favourably and win its fair share of the limited opportunities available.

The company has been making efforts to promote innovation as a means of improving performance. Specifically, the company promoted innovation by identifying individuals from each division across the business stream as innovation champions with the mandate to encourage the generation of ideas among staff for further development. Regular innovation workshops were held to provide the platform for the innovation champions to share ideas.
Regional and National awards were set up to recognise and reward successful innovative projects from across the company. Whereas these efforts may have contributed to promoting innovation and improving performance across the company, it was not clear how that impacted on innovative behaviour of the staff. Besides, at the advent of the economic downturn some of these activities had been reduced significantly and in some divisions they were virtually non-existent. The cost associated with taking people out of the work environment for a period of time to talk about innovation could hardly be justified by some of the senior managers and this constituted a significant barrier to innovation promoting activities. Another barrier to innovation within the organisation was the understanding employees had about what constituted innovation. For most of the staff innovation had to be ‘a blue sky idea’ separate from their day to day project delivery which required a lot more time beyond what was allocated on their projects. Opportunities to adopt innovative approaches on their work on daily basis to improve project performance and enhance client satisfaction were therefore not being seized. Innovation for the sponsor company is important not only for winning work in the short term but also for the exploitation of opportunities in the changing business environment and the development of new capabilities (Bayer and Gann, 2007).

Overcoming the barriers to innovation and improving project performance calls for ‘a new way of doing things’. The work environment needs to be created in such a way that the pursuit of innovation or innovation championing behaviour becomes an integral part of the process of project delivery (Bayer and Gann; 2007; Gann & Salter, 2000). That will eliminate the need for meetings for innovation champions with its attendant cost as innovative behaviour will become engrained in day to day working practices. This poses a challenge to middle managers responsible for managing project teams who would have to adopt a style of leadership that will create the enabling environment that fosters innovation. Their leadership style should encourage employees to adopt more innovative approaches to solving problems while seizing opportunities to bring added value to clients. Transformational leadership has been known to foster this kind of climate and elicit innovation (Gumusluoglu and Ilsev, 2009). Middle managers would therefore need to be helped to modify their approach to leadership and adopt more transformational leadership style in order to create the conditions for innovative behaviour to thrive. The role of middle managers in the company includes providing strategic overview of projects and undertaking regular project reviews with project managers to ensure both business and project objectives are met. This direct and regular interaction provides them the opportunity to influence project teams in the new approach to delivering projects that could enhance innovation and ultimately improve project performance. Figure 1 below illustrates the middle managerial group within the sponsor company who were engaged in this study. Although their roles have different emphases, the leadership behavioural competencies expected of them do not differ.

For the purpose of this study, the focus was on infrastructure services. The business stream employs more than a third of the company’s workforce and operates in over 40 offices across the UK and Ireland providing services primarily to central and local government clients. These include planned and routine highway maintenance services and capital schemes. The focus on this business stream is justified by the fact that the Research Engineer (RE) works in the infrastructure services of the business. Having been with the company since 2001, the RE has developed a good understanding of the operations of the business and is therefore in a good position to recommend changes that could enhance the performance of the business stream. In addition the nature of the Engineering Doctorate (EngD) requires the RE to pursue
improvement in own area of work. Besides, being the biggest business stream, the company stands to benefit more from any improvements in performance introduced as part of this study. Whereas it is recognised that various factors are responsible for improving performance in the construction professional services environment, the study focused primarily on factors that are within the control of the sponsor company.

Figure 1: Typical Organisational Structure

1.4 JUSTIFICATION FOR THE STUDY

Although research suggests behavioural concerns fundamentally influence outcomes in project settings, few behaviour-related studies have been undertaken in project based organisations (Tuuli and Rowlinson, 2009). The focus of research has traditionally been on increasing efficiencies (Muller and Turner, 2007). Leadership behaviour in general and transformational leadership in particular has long been considered an important individual factor that influences innovation and performance in the workplace (Keegan and Den Hartog, 2004; Nam and Tatum, 1997; Sarros et al., 2008; Yang et al., 2010b).

In project-based organisations, leadership behaviours exhibited by middle managers are important. Irrespective of whether innovation is top-down or bottom-up, middle managers can
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

make a significant contribution to its successful implementation. Middle managers also have the responsibility of translating strategies into action. As they are in direct contact with the frontline delivery teams, their workplace behaviours would have a direct or indirect effect on how project team members conduct themselves in delivering projects. Ultimately that is expected to reflect on project outcomes (Papers 4&5, Appendices D&E). Yet, limited research has been undertaken on this important constituency and how their workplace behaviour impacts on project success in the construction context (Styhre and Josephson, 2006). Most studies investigating the role of key actors in change initiatives in general and innovation in particular have tended to focus on top managers at the strategic level (Jung et al., 2003, 2008; Rouleau, 2005; Sarros et. al., 2008) or project managers in the project based environment and less so on middle managers (Styhre and Josephson, 2006). The emphasis of this study was therefore on the transformational leadership behaviour as a managerial competency (Turner and Muller, 2005) exhibited by middle managers and how that facilitates improved innovation and project performance.

This study will be relevant in contributing to addressing the gaps in the literature on the role of middle managers in improving innovation and project performance in construction professional services firms. Related to this is the need to identify the key factors that impact innovation and how middle managers can influence them to facilitate innovation. Moreover, it is important to establish how transformational leadership style of middle managers influence innovation and project performance directly and indirectly through other intervening variables such as climate for innovation. Furthermore, the study is relevant in identifying what specific behaviours constitute transformational leadership in the context of the sponsor company, its impact on project team members and how these behaviours could be cultivated among the middle managers. Hence the following research questions were addressed in the study:

1. What is the state of innovation in the construction industry including the sponsor company and what are the key enablers and barriers?
2. What is the role of middle managers in facilitating innovation in construction professional services firms?
3. What is the nature of the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and how do they combine to impact innovativeness and project performance?
4. How do middle managers practically exhibit transformational leadership behaviour in the workplace and how does that impact on the performance of their teams?
5. How can transformational leadership be practically developed among middle managers?

Besides contributing to the deeper understanding of the impact of middle managerial behaviour on innovation and project performance, the study will also be relevant in:

1. Addressing some of the challenges associated with the successful management of innovation in construction professional services firms;
2. Offering an opportunity to help address the perception among the sponsor company’s clients whilst advancing innovative practices among technical teams;
3. Supporting the sponsor company’s efforts to provide the environment that promotes creative thinking processes and challenge technical teams to think beyond existing boundaries while encouraging them to be more imaginative in developing multiple options in delivering projects;
4. Contributing to the advancement of knowledge on the management of innovation in the construction professional services firms particularly on the role of middle managers with responsibility for managing project teams; and
5. Contributing to the creation and dissemination of new knowledge and understanding of the impact of individual dimensions of transformational leadership on innovation and project performance.

1.5 AIM AND OBJECTIVES

A key element of the EngD programme is developing solutions to one or more identified significant and challenging practical issues within the sponsor company. The key challenge for the sponsor company was how to improve project performance while addressing client perception of the company as not being innovative. The second challenge was equipping middle managers with the necessary leadership skills to create the right environment that will facilitate this improvement. The primary aim for this study is therefore:

To improve transformational leadership behaviour among middle managers in order to foster innovation and improve project performance in a construction professional services firm. In pursuit of this aim the objectives of the project, each of which constituted a phase of the study are:

1. To critically review the literature on innovation in construction professional services firms and current practices in the sponsor company to identify opportunities for improvement.
2. To explore the processes by which middle managers influence key internal factors to facilitate innovation and ultimately impact project performance in the sponsor company.
3. To undertake quantitative validation of the nature of the relationship among transformational leadership, climate for innovation, innovation championing and project performance.
4. To undertake qualitative validation of relationship among the constructs under study and develop transformational leadership development resource.
5. To disseminate the developed transformational leadership development resource and obtain feedback from middle managers on its usefulness.

1.6 NOVELTY OF THE RESEARCH

Most studies on leadership in the project-based environment have focused on the leadership of project managers while in organisations in general, studies on leadership tend to be directed towards senior managers. This study focused on the direct and indirect role of middle managers in improving innovation and project performance. It highlights the important role they play in creating the right environment to promote higher levels of innovation in project delivery in contrast to previous negative reporting on the role of middle managers. It further explores the relationship between transformational leadership and project performance in much more detail than in previous studies which have mostly been quantitative in design and treated transformational leadership as a composite construct. This adds to the understanding of the process through which transformational leadership influences performance through
improving innovation and project performance in construction professional services firms: The leadership role of middle managers

innovation in the project environment. The novelty of the research and the unique contribution it makes to knowledge is discussed further under section 6.5.

1.7 THESIS STRUCTURE

The rest of the thesis is organised around the following chapters:

Chapter One – Has introduced the research project, provided the background to the study and has outlined the overarching aim and objectives while providing a justification for the research in the industrial and organisational context. Finally, the chapter highlighted the novelty of the study and outlined the synopsis of papers published as part of the study.

Chapter Two – Provides a review of existing work in the subject of innovation in general and particularly in the construction industry while identifying opportunities to contribute to the existing literature.

Chapter Three – Reviews a range of research methodologies and outlines the adopted methodological approach along with the justification for the selection.

Chapter Four – Provides a detailed description of the research.

Chapter Five – Outlines the key findings of the research in all five phases of the study and discusses the implications to the Sponsor Company and industry.

Chapter Six – Draws conclusions from the findings of the study, highlights the originality and contribution to theory and practice, identifies the impact on the sponsor as well as the wider industry, undertakes a critical evaluation of the research and makes recommendations for improving innovation and project performance in construction professional services environment and for future research.

1.8 SYNOPSIS OF PAPERS

Table 1.1 below provides a brief outline of published conference and journal papers included in the dissertation.
### Table 1-1: Synopsis of papers

<table>
<thead>
<tr>
<th>ID</th>
<th>Title</th>
<th>Journal/Conference</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper 1</td>
<td>Identifying the factors that influence innovation in construction Support Services Organisations: A review of The Role of Middle Management.</td>
<td>Proceedings of the CIB World Congress 2010 10-13 May 2010, The Lowry, Salford Quays, United Kingdom.</td>
<td>Published</td>
<td>The paper investigates innovation in the construction industry and identifies factors that influence innovation in the construction professional services environment.</td>
</tr>
<tr>
<td>Paper 2</td>
<td>Examining the role of middle managers in innovations: A tale of three innovations</td>
<td>Journal of Construction Innovation: Information, Process, Management. (2012) 12(1) 11-28.</td>
<td>Published</td>
<td>The paper reports on a case study of three innovative projects to explore the factors that influenced innovation in the sponsor company and examines the role of middle management in facilitating the innovations.</td>
</tr>
<tr>
<td>Paper 3</td>
<td>An exploratory analysis of the relationship between the dimensions of transformational leadership and project performance.</td>
<td>Proceedings of the 6th Built Environment Conference Association of Schools of Construction of Southern Africa (ASOCSA) Johannesburg, South Africa. 31st July – 2nd August, 2011</td>
<td>Published</td>
<td>An exploratory study to investigate the direct effect of the individual dimensions of transformational leadership of middle managers on project performance.</td>
</tr>
<tr>
<td>Paper 4</td>
<td>Examining the role of transformational leadership of portfolio managers in project performance</td>
<td>International Journal of Project Management</td>
<td>Electronically Published</td>
<td>The paper hypothesised and tested the relationships between transformational leadership, climate for innovation, innovation championing and project performance.</td>
</tr>
<tr>
<td>Paper 5</td>
<td>Understanding the effect of transformation leadership behaviour of middle managers on innovation in project based organisations</td>
<td>Proceedings of the CIB World Congress 2012 26-29 June. Centre Mont Montreal, Montreal, Canada.</td>
<td>Published</td>
<td>The purpose of this paper was to investigate how transformational leadership is practically exhibited in the work place and how that influences innovation.</td>
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1.9 SUMMARY

Whereas innovation has been considered an important means of improving performance there are also a number of barriers that organisations need to surmount to make the best of the opportunities innovation presents. Middle managers who lead project teams have an important role to play in creating the right environment that will foster innovative behaviour and ultimately lead to improved project performance. Transformational leadership has been identified as a style of leadership that can create the right environment that will encourage project team members to adopt innovative approaches to delivering their project to improve project performance. The study provides a new dimension in the study of innovation in the construction support services environment as it focuses on middle managers unlike many previous studies on innovation which focused on senior managers. This project therefore aims to help improve middle managers’ leadership behaviour to enable them promote innovation and improve project performance.
2 LITERATURE REVIEW

2.1 INTRODUCTION

The chapter provides a review of the extant literature on innovation in the construction industry while identifying some of the key barriers and enablers. The chapter defines innovation and identifies factors that influence it in the construction industry. The chapter particularly focuses on the leadership role of middle managers in influencing the key internal factors that impact on innovation and ultimately project performance in construction professional services firms. The chapter identifies gaps in the existing literature and explores opportunities for contributing to addressing this gap. It informs the research methodology adopted in chapter 3 and provides the basis for the research detailed in chapter 4.

2.2 INNOVATION IN THE CONSTRUCTION INDUSTRY

As noted under section 1.1, the contribution of the construction sector to the growth of the economy cannot be overstated. The performance of the sector will therefore have significant implications on the economy as a whole. Yet, the sector has often been criticised for delivering products and services which fall short in quality and fail to meet client expectation of price certainty and assured delivery (Lu and Sexton, 2006). This has prompted many calls for performance improvement (Egan, 1998; Fairclough, 2002; Latham, 1994). Innovation has been identified as an important means for improved performance in a rapidly changing business environment (García-Morales et al., 2008). In the construction professional services environment, successfully creating and managing knowledge provides an important means of creating value although this value creation has been called into question by clients (Lu and Sexton, 2006). The need for improvement is also being driven by the quest for more flexibility that enables firms to respond to conflicting expectations and demands from clients (Koch and Bendixen, 2005). Innovation provides a means for firms to differentiate their services in order to stay ahead of competition. Profit maximisation has also been identified as an important driving force behind efforts at innovation by construction firms (Lim and Ofori, 2007). The need for more innovation is further underscored by the fact that firms that engage in innovation tend to out-perform those that do not (NESTA, 2009).

Aouad et al. (2010) describe innovation as an open, dynamic, multidimensional and non-linear set of activities that can add value to products and services through knowledge creation if managed effectively. Innovations however take place in complex social environments making the outcomes unpredictable. Seelos and Mair (2012) noted that innovations do not always lead to positive outcomes as even proven innovations can fail when conveyed into a different context. There have been instances where efforts to introduce innovative working practices such as new Information and Communication Technology (ICT) in construction have led to declining work performance. This is in spite of the expectations of reduced cost of delivery arising from enhanced communication and reduced time and cost associated with information transfer (Peansupap and Walker, 2005). Failed innovations, nonetheless, offer opportunities for organisations to learn and improve. Seelos and Mair (2012) suggested in some circumstances, it may be more beneficial for organisations to pursue incremental improvements and refine on-going processes rather than seek completely new and innovative approaches. Timing in the adoption of innovation such as new technology is also important. Drawing on Gartner Group’s (2010) five-stage technology maturity model (“the Hype
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Cycle”), Zainon et al. (2011) explained that whereas some IT innovations such as the use of 3D imagery initially provided a basis for differentiating services, it has now become an essential tool for businesses and not having it may keep firms out of competition. It is also possible that firms can invest in a new technology that has not been trialled and tested only to realise it does not do what it claims to do. Construction organisations therefore need to carefully consider the timing of the adoption of innovations in order to realise the expected benefits and reduce the likelihood of failure.

A number of players in the industry have taken up initiatives such as improvement networks, value and knowledge management aimed at improving innovation performance although it has been noted there is more room for improvement (Blayse and Manley, 2004; Shaw, 2011). It has also been highlighted that the construction industry has been unduly criticised because the assessment of innovation has often been on the basis of traditional measures such as investment in R&D and number of patents (NESTA, 2007). Beyond these, the sector along with others often engages in what is classified as hidden innovation (NESTA, 2007). The NESTA (2007) report identified four types of hidden innovations:

Type I: Innovation similar to those traditionally measured but excluded from measurement
Type II: Innovation not having a major scientific and technological basis
Type III: Innovation created from original combination of existing technologies
Type IV: Small scale innovations, locally developed ‘under the radar’ in the course of delivery.

In the construction industry, it is common to see new solutions developed combining a number of existing technologies often from other sectors. For example, the development of real time highway inspection equipment drawing from advancement in information technology as reported in Paper 2-Appendix B will be a type III hidden innovation which can easily go unnoticed because the concept is not ‘out of the world’ (NESTA, 2007). Additionally, when teams collaborate to develop solutions to problems as happens regularly in the sector, they tend to take them as just ‘doing their job’ and the sense of innovation is often lost. Thus type IV innovations will be common in the sector. Engineering consultancies or professional services firms often play a very significant role in major innovative construction projects (NESTA 2007), which often go unnoticed. For that reason it is important that in the study of innovation in the construction industry, a detailed assessment is made of innovation in action as this study sought to do.

2.3 MODELS OF INNOVATION IN CONSTRUCTION

Drawing extensively from the innovation literature, Winch (1998) identified two basic processes associated with innovation; diffusion and implementation interfaced by the decision whether to adopt a new approach or not, suggesting this is primarily informed by perceived performance gaps relative to competition. Once a firm makes a decision to adopt a particular innovation, it is then necessary to be sure of its technical success and business benefits before the resulting product could be installed and commissioned. This approach is driven by ideas generated from outside the firm which could include leading innovators in the industry, other sectors and formal R&D activities. This model of construction innovation is referred to as top-bottom moment of adoption/implementation (Winch, 1998). In addition, construction projects are usually associated with solving specific problems encountered in the course of
project delivery. However, for problem solving to become innovation, the solutions developed for a particular project needs to be learned, codified and applied to subsequent projects (Edum-Fotwe et al., 2004; Winch, 1998). This is referred to as the bottom-up moment of problem solving or learning as shown in figure 2 below. Recent research by Fuller (2011) has nonetheless identified the ability to learn as a key concern in the construction industry.

![Two moment model of construction innovation process](image)

**Figure 2: Two moment model of construction innovation process (Winch, 1998:73)**

Slaughter’s (1998) seminal work on typologies of innovation has also been recognised and accepted among researchers as a particularly useful tool for classifying innovations in the construction industry. Slaughter (1998) identified five models of innovation relevant to the construction industry based on their degree of change from current practices and their links to other components and systems. These were:

- incremental,
- modular,
- architectural,
- system and
- radical innovation.

Slaughter (1998) distinguished between incremental and radical innovation, suggesting that these two are at the extreme ends of the innovation spectrum. According to Slaughter (1998), whereas radical innovation involves the creation of a completely new approach to solving problems based on a fresh understanding of the phenomenon; incremental innovation involves small changes which rely on the existing knowledge and experience. Radical innovation which is associated with a breakthrough in science or technology and subsequent changes in the disposition of the industry are as rare as they are unpredictable. Incremental innovations, on the other hand, are a regular occurrence with a narrow range and a limited interaction with other systems and mechanisms. Slaughter (1998) also distinguished between modular and architectural innovations. Whereas modular innovation involves a significant change in concept within one component without any changes to other constituents and systems; architectural innovation is associated with small changes in concept and relatively significant changes in linkages to other systems and components. Consequently, modular innovation can easily be implemented within an organisation as less interaction is required with other firms while architectural innovation requires changes to interacting components. System innovation
is associated with an integration of multiple independent innovations that need to work together either to improve performance or perform a new function. This type of innovation derives from a number of varying sources that need to be unambiguously linked and adapted among the components of the system.

The different models of the innovation process will thrive under different set of circumstances and will require different approaches to successfully managing them. Key organisational actors such as middle managers who manage project teams in construction professional services firms need to make the necessary adjustment to their leadership behaviour to facilitate successful delivery of innovations.

2.4 FACTORS INFLUENCING INNOVATION IN THE CONSTRUCTION INDUSTRY

Hartmann (2006) identified a number of factors influencing innovation performance broadly categorised as internal, instrumental and external. Unlike the internal and instrumental factors which are within the control of organisations, the external factors are outside their sphere of influence. Hartmann (2006) identified the key internal variables as characteristics of the organisational entity, units and members. The instrumental variables were organisational culture, organisational strategy, organisational structure/processes and conditions that foster innovation. Hartmann (2006) found that innovation diffusion was influenced by three key variables of the external environment which included the procurement form, innovation acceptance of the client and the degree of regulation. Winch (1998) referred to the external factors influencing innovation as structural features suggesting that they are important as they provide the context for innovation. Other factors that influence firm level innovation were identified by Blayse and Manley (2004) as clients, manufacturers, the structure of production, relationships between firms within the industry, procurement systems and regulations. Bossink (2004) identified other construction innovation drivers which were grouped into four characteristic categories: environmental pressure, technological capability, knowledge exchange, and boundary spanning.

Following a comprehensive review of the literature on construction innovation, Hardie and Newell (2011) grouped the internal and external factors influencing innovation into 5 key categories, namely:

- company resources,
- client and end-user influences,
- project based conditions,
- industry network and
- regulatory climate.

Company resources refer to the internal capacity and capability at the disposal of the company which can be applied to support the innovation process. These include items such as technical capabilities, capital investment, time allocation and the enthusiasm of individuals such as innovation champions (Hardie and Newell, 2011). However, where resources are made available for employees to encourage innovations but the underlying culture is not supportive of innovative behaviour, efforts to improve innovative performance are likely to fail. The environment that will enable individuals to take a degree of risk in searching for and applying
new approaches to delivering projects is an important factor that can foster innovation (Hartmann, 2006).

Client and end-user influences cover both ends of projects covering those who commission and pay for projects at the front end and those who use them at the other end. As they pay for projects they tend to have significant impact on whether innovations are implemented or not (Ivory, 2005). Unlike customers or clients for many other products or services, clients of construction projects are more involved in the process of design and implementation. Innovation may even take place in the client’s premises. This provides clients of construction projects the opportunity to exert direct and indirect influence on the prospects of projects yielding innovative solutions (Winch, 1998). Yet, the extent to which clients are able to exercise this influence positively depends on their innovation competence. Manley (2006) proposed that ‘innovation competency’ reflects an organisation’s effectiveness in understanding the environment in which it operates, and in modifying its behaviour to maximise performance (Manley, 2006: 1297). In a situation where the client is not innovatively competent, they may have an inhibiting influence on innovation performance as such clients will not place sufficient demand on suppliers to instigate and search for innovative solutions.

Project-based conditions refer to the inherent nature of projects which is primarily temporary but complex set of activities requiring careful planning and execution. It includes the need for flexibility to respond to unforeseen events that may occur in the course of project delivery to facilitate innovation (Hardie and Newell, 2011). Projects are also associated with complexities, uncertainties and risks which results from such factors as multiple stakeholders with different interests which needs to be carefully balanced. Additionally, it involves integrating the activities of multidisciplinary work teams to achieve project objectives (Ivory, 2005). The nature of the construction industry is such that for innovations to be successfully delivered, a number of organisations need to collaborate. Industry networks relates to intra-industry linkages in general including links to professional bodies, industrial bodies and organisations that independently test and verify new technologies while regulatory climate relates to regulations and laws governing activities in the construction industry (Blayse and Manley, 2004). Hardie and Newell (2011) further identified a number of sub-factors within these broad categories which are illustrated in figure 3.

As highlighted in section 1.2 the focus of this study is on the factors the company has control over and particularly explores the role of middle managers in influencing these factors to promote innovation leading to improved project performance. Middle managers could make resources including time and funds available to project teams and provide the right environment that will motivate them to take a measure of risk and adopt innovative approaches to delivering projects without being overly conscious of the impact of unintended consequences on their career. Transformational leadership style has been found to be an important approach to leading teams that could help create the right conditions for innovation to flourish (Paper 2 – Appendix B).
2.5 TRANSFORMATIONAL LEADERSHIP

Leadership could by virtue of their position, influence and access to resources impact significantly on an organisation’s decision whether to pursue a particular innovation or not. Leadership could also influence innovation and improve performance by acknowledging the differences in the problem solving approach of individual members of their team and integrating their efforts toward innovation (Basadur, 2004). Particularly, transformational leadership has been known not only to have a positive influence on innovation outcomes but also on organisational performance in general (García-Morales et al., 2008). Transformational leadership is associated with stimulating and inspiring followers to deliver extraordinary results while developing their own leadership abilities (Bass and Riggio, 2006). The leadership style has often been contrasted with transactional leadership which is associated with exchange of efforts on the part of the subordinate for rewards from the leader (Bass and Riggio, 2006). As a higher order construct, transformational leadership comprises several components (Pieterse et al., 2010).
Podsakoff et al. (1990) identified six dimensions of transformational leadership. These were; articulating vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, individualised support and intellectual stimulations. According to Podsakoff et al. (1990), by articulating vision; the leader identifies new opportunities for the unit, develops, articulates and inspires others with his or her vision and shows them how to achieve the vision. Also, by providing an appropriate model, the leader lives the espoused values which become examples to the followers to emulate. In addition, the leader fosters the acceptance of group goals by promoting team effort towards the achievement of set goals. Moreover, high performance expectation behaviour is reflected in the leader’s expressed belief in the ability of the followers to deliver excellence and high quality. Furthermore, individualised support by the leader is expressed in the show of respect and concern for the individual’s needs. Finally, through intellectual stimulation, the leader challenges the assumptions employees have about their work and encourages them to look at different ways of doing it better (Podsakoff et al., 1990; 1996).

Two facets of transformational leadership are particularly relevant to the study. These are direct and indirect transformational leadership defined in relation to how distant the subordinate is from the leader (Shamir, 1995; Yammarino, 1994). Direct leadership is exercised over the immediate subordinate. Indirect leadership occurs where the leader’s influence is experienced by subordinates at least two steps removed in the organisational hierarchy. Two aspects of indirect leadership are the bypass and the cascading effect (Yang et al., 2010a). Whereas the bypass effect involves transformational leaders directly influencing the performance of followers at least two steps removed from the leader in the organisational hierarchy, the cascading effect occurs where the leader impacts the performance of frontline employees indirectly by influencing the leadership behaviour of the immediate follower who in turn influences the performance of their subordinates. Transformational leadership can also impact performance through other intervening variables such as workplace climate (Papers 2&4, Appendices 2&4).

2.6 TRANSFORMATIONAL LEADERSHIP, CLIMATE FOR INNOVATION AND PROJECT PERFORMANCE

Bass and Riggio (2006) suggested that transformational leadership positively affects performance irrespective of whether performance was conceptualised in terms of subjective or objective measures. Yang et al. (2010b) highlighted the importance of leadership on project performance suggesting it has been one of the major issues for both research and practice. Pinto et al. (1998) suggested that transformational leadership particularly is relevant in the project-based environment as its application enables managers to transform their project teams and ultimately impact their project performance. Transformational leadership could influence performance in a number of ways. It could have a direct impact on project performance in line with research that has shown that transformational leadership behaviour of managers influences employees’ work attitude and organisational citizenship behaviour (Podsakoff et al., 1990) which in turn induces enhanced performance (Jung et al., 2003, 2008; Sarros, et al., 2008). Transformational leadership has also been associated with motivation of followers in pursuit of organisational goals (Jung et al., 2003, 2008) and can also enhance their performance directly by influencing their behaviour and by providing guidance and support (Podsakoff et al., 1996).
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

In the project environment, enhanced individual efforts and performance are expected to reflect in project performance. Transformational leadership was found to directly influence project performance in a study which investigated the impact of individual dimensions of transformational leadership on project performance (Paper 3 – Appendix C). Leadership has been highlighted as an important individual influence on innovation and ultimately project performance (Nam and Tatum, 1997; Sarros et al., 2008). Transformational leadership behaviour could therefore have a positive and direct influence on project performance.

Climate has been defined as a characteristic ethos or atmosphere within an organisation at a given point in time which is reflected in the way the members perceive, experience and react to the organisational context (Rollinson and Broadfield, 2002: 597). The study of organisational climate is relevant because employees draw conclusions on what is important to their leaders based on their observations and align their own behaviour accordingly (Kozlowski and Hults, 1987). Questions, however, remain as to whether organisational climate and culture are different ways of studying the same phenomenon (Denison, 1996) or two completely different constructs as portrayed by James et al. (2008). While some culture researchers have queried the importance of the climate construct (Ott, 1989), others have acknowledged its importance in organisational studies (Schneider, 2000). Culture research has historically focused on the evolution of social systems over time while climate research is more concerned with what impact such systems have on the individuals and groups in an organisation (Denison, 1996). Schneider (2000) sought to distinguish between the two constructs by referring to the terms employees use to describe their organisational settings (e.g. innovative) as climate and what happens to them or around them in the work place is considered the stimuli that create the climate. The author further indicated that the stories, myths and other attributes of culture come to light when employees try to explain why they think things happen the way they do. This study agrees with Schneider’s (2000) view of climate and focuses on climate for innovation.

Podsakoff et al. (1996) suggested that besides influencing their direct subordinates, leaders can impact performance indirectly by shaping the context within which they operate. Climate for innovation is created where the work context is shaped in such a manner that project managers and team members willingly explore innovative approaches to delivering projects. Transformational leadership has been linked with creativity and innovation in the workplace by helping to establish an environment that encourages staff to seek new approaches to addressing old problems without being too concerned with recrimination in event of a negative outcome (Amabile et al., 1996; Gumusluoglu and Ilsev, 2008). Project team members and project managers constantly receive signals from the organisation and their managers regarding their expectation and that plays a significant role in either promoting or inhibiting innovation and performance in general (Dulaimi et al., 2005). Jung et al. (2003) found a significantly positive relationship between transformational leadership and organisational climate supportive of innovation. According to Gumusluoglu and Ilsev (2009), leadership can influence followers’ or teams’ perceptions of a climate supportive of innovation and thereby affect their creative behaviour.

Although the general expectation was that the transformational dimension of intellectual stimulation could help create a climate for innovation (Bass and Avolio, 1994), it was rather articulating vision or visionary leadership reflected in the provision of adequate resources that Sarros et al. (2008) found to have the strongest relationship with climate for innovation. Scott and Bruce (1994) found that the quality of relationship between employees and their
managers impacted on their innovativeness as it influenced the subordinate’s perception of the work environment as supportive of innovation. Similarly, supervisors who are supportive and non-controlling help to create an environment conducive to employees’ creativity (Oldham and Cummings, 1996; Shalley and Gilson, 2004). It could therefore be deduced that transformational leaders could influence perceptions of climate for innovation through their support for innovation and provision of the necessary resources.

Support for innovation together with resource supply were both identified as the key dimensions of climate for innovation (Scott and Bruce, 1994). These were found to impact on project performance indirectly through the level of innovation on projects (Dulaimi et al., 2005). Dulaimi et al. (2005) further identified a number of factors which may constitute a supportive organisational climate: tolerance of risk, failure and mistakes, suggesting these could engender more effort from project teams to improve performance. Scott and Bruce (1994) suggested employees’ perceptions of the extent to which innovation is encouraged in the workplace and the resources that are made available will impact on their tendency to take risks and adopt innovative approaches to their work. This could ultimately influence project outcomes. In an experimental study of 54 military leaders, 94 direct followers and 724 indirect followers, Dvir et al. (2002) found among others that transformational leaders create a stronger social bond among their direct and indirect followers which helps to create the right environment that supports innovative efforts and improved performance. Transformational leaders could influence project performance by confronting and shaping the organisational context and creating an environment where project delivery teams give their best to achieve project objectives (Pawar and Eastman, 1997). It is therefore suggested that climate for innovation plays an important mediating role between transformational leadership and project performance (Paper 4 – Appendix D).

2.7 TRANSFORMATION LEADERSHIP, INNOVATION CHAMPIONING AND PROJECT PERFORMANCE

Empirical evidence has generally supported a positive impact of transformational leadership on followers’ attitude, effort, and ‘in role’ performance (Podsakoff et al., 1990) as discussed under section 2.7. However, Podsakoff and his colleagues contended that the most important effects of transformational leadership should be their impact on ‘extra-role’ rather than the ‘in-role’ performance (Podsakoff et al., 1990: 109). This view is consistent with the general expectation of what transformational leaders are supposed to achieve. Transformational leaders, according to Bass and Avolio (1994:3) motivate subordinates to do more than what they are simply required to do ‘and often even more than they thought possible’. Transformational leadership behaviour could therefore inspire project managers to do more than just delivering projects the ‘usual’ way and go the extra mile in search for new and innovative solutions to improve performance. It is possible that by modelling the kind of innovative behaviour expected, leaders could influence the innovation championing behaviour of project managers. Project managers’ innovation championing involves them actively searching for and promoting innovative approaches to delivering projects.

Leaders who exhibit transformational leadership are able to win the trust of their followers (Podsakoff et al., 1990) and with this the followers’ confidence to try new approaches to delivering projects, knowing their managers will support them should the unexpected happen. Hence project managers are more likely to exhibit innovation championing behaviour which
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

this study considers an ‘extra role’ performance when their managers or supervisors exhibit transformational leadership behaviour. Moreover, Gumusluoglu and Ilsev (2009) asserted that intellectual stimulation enhances exploratory thinking and articulating vision inspires idea generation which are both characteristics of innovation championing behaviour. It is therefore suggested that transformational leadership could positively influence innovation championing behaviour (Paper 4-Appendix D).

Whereas some researchers have found evidence of a link between innovation championing and project performance (Nam and Tatum, 1997) and business outcomes in general (Panuwatwanich et al., 2008), others such as Markham (1998) have questioned this assertion. In an earlier study examining the impact of innovation championing on project performance based on the views of project team members, Markham (1998) found no evidence in support of this view. In defence of this proposition however, Howell and Shea (2001) suggested that the contradictory findings by Markham (1998) could be attributed to the fact that the particular study investigated the impact of the team’s response to the champion’s influence tactics on project performance rather than the direct impact of championing on project performance. Indeed Markham (1998: 502) remarked that ‘the role of the champion is still vital and interesting across different types of innovation projects’. For that reason this study agrees with Howell and Shea’s (2001) assertion that champions of innovation can make a decisive contribution to innovation by actively promoting its progress through key stages to achieve desired project outcomes.

Within a construction context, this view was further supported by Dulaimi et al. (2005) who in a study of 32 project managers and 94 project team members in Singapore found that project managers exercise leadership, provide direction and take responsibility for achieving project goals. This leadership competency demonstrated by project managers has been identified as an important project success factor (Cheng et al., 2005; Dainty et al., 2004; Muller and Turner, 2007). Similarly, innovation championing behaviour exhibited by project managers was found to have contributed significantly to the success of three innovative projects investigated (Paper 2 – Appendix B). From above it could be seen that transformational leadership could indirectly impact on project performance by influencing innovation championing behaviour of project managers in a similar fashion as middle managers have been found to influence frontline employees’ performance through the transformational leadership of frontline supervisors (Yang et al., 2010a). Transformational leaders could therefore directly influence innovation and ultimately project performance through the bypass effect and indirectly through innovation championing behaviour and climate for innovation via the cascading effect as depicted in the model (figure 4) below.
2.8 TRANSFORMATIONAL LEADERSHIP OF MIDDLE MANAGERS

From the forgoing, it could be seen that leadership and particularly transformational leadership could have a significant influence on innovation and organisational performance. However, most of the studies reviewed have been based on senior managers. Within the construction industry, research on the role of transformational leadership has tended to focus on project managers (Keegan and Den Hartog, 2004). It is therefore imperative to examine if the relationship among transformational leadership, climate for innovation, innovation championing and project performance discussed above will be as true for middle managers in the construction professional services environment as they have been suggested for senior managers in the literature.

Leadership behaviours exhibited by middle managers in project environment could be important as the effect of transformational leadership has been found to be relevant at different levels of the organisational hierarchy (Yang et al., 2010a). The effect of transformational leadership at the level of organisational hierarchy on frontline employees at least two steps removed has been referred to as distant transformational leadership. Distant transformational leadership occurs where leaders influence subordinates from the distance by articulating vision, using rhetorical symbolic communication and providing example (Antonakis and Atwater, 2002; Shamir, 1995; Yang et al., 2010a). Hence the effect of leadership could circumvent hierarchical links and be experienced at lower levels of organisations (Yammarino, 1994). Middle managers act as a bridge between the strategic decision making senior managers and the operational project delivery teams. They therefore have the responsibility of translating strategies into action. As they are in direct contact with
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

the frontline delivery teams, their workplace behaviours could influence the conduct of project team members in the process of project delivery.

Torrington and Weightman (1987) noted that the role of middle managers in both the private and public sectors has received little attention from researchers and for that reason there is no comprehensive body of theoretical or empirical knowledge of the role of middle managers. The limited focus on middle managers may be explained by the prediction of the diminishing influence of middle managers in organisations (Dopson and Stewart, 1993). According to Dopson and Stewart (1993:3), ‘most writers portray the middle manager as a frustrated disillusioned individual caught in the middle of a hierarchy’. Indeed Huy (2001:73) suggested ‘the very phrase middle manager evokes mediocrity: a person who stubbornly defends the status quo because he’s too unimaginative to dream up anything better’. However, Kanter (1982) advocated a more positive view of middle managers suggesting that they will rather become more important as organisations’ productivity will be increasingly associated with the degree to which middle managers are allowed to be innovative and implement new ideas.

In the construction context one of such limited studies focusing on middle managers found they generally had a positive influence in their work situation. Whereas most of the limited literature on middle management have been based on organisations in general, studies on middle managers in the construction industry have seldom referenced the general management literature (Styhre and Josephson, 2006), highlighting a gap in the literature on middle management in the construction industry.

In conclusion, it could be seen that although there is significant empirical evidence that leadership in general impacts on various performance criteria, the impact of middle management in the construction industry remains a subject of debate and conjecture. For that reason this study sought to understand how middle managers influence innovation aimed at improving project performance in construction professional services firms particularly in view of the fact that middle managers do not control as much resources as senior managers do. The study is therefore relevant in examining how transformational leadership behaviour exhibited by middle managers influences the championing behaviour of project managers, climate for innovation and ultimately project performance as proposed in the model above.

2.9 SUMMARY

The construction industry has been subjected to a lot of criticism for poor performance. Innovation provides a means of improving performance and meeting client expectations while differentiating products and services to achieve competitive advantage. Innovation in the construction industry is also important in view of the percentage of GDP the sector contributes and the potential for savings in time, material and finance that innovative approaches in the industry can yield to firms. Whereas a number of studies have highlighted the construction sector as very conservative and risk averse, there is sufficient evidence to suggest that the issue is rather how innovation is measured. Traditional measures fail to capture most of the innovations in the sector particularly those that derive from day to day problem solving in the process of project delivery. The review identified a number of models of innovation in the construction industry suggesting that each type of innovation requires a different approach to management for successful delivery. A number of factors both internal and external to firms have been identified as influencing innovation. This study focuses on the
internal factors; leadership, climate for innovation and innovation championing behaviour. In the construction professional services environment, transformational leadership behaviour of middle managers is relevant. As they are in direct contact with project teams, it is considered their workplace behaviour would influence the performance of their teams. However, limited studies have been undertaken on the role of this key constituency in facilitating innovations and improved project performance. This study will therefore contribute to addressing the gap in literature as it focuses on the transformational leadership behaviour of middle managers and how that impacts on innovations and ultimately on project performance.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter is intended to discuss the research methodology and methods employed in the course of the study and provide justification for the approach adopted. The section initially discusses the underlying methodological considerations before outlining the methodology employed in the research.

3.2 ONTOLOGICAL AND EPISTEMOLOGICAL CONSIDERATIONS

The underlying ontological and epistemological assumptions held by the researcher was important as it informed the choice of research methodology and influenced interpretation of findings through to the conclusions drawn (Bryman and Bell, 2007). Beyond these, other factors that also influenced the research were theory, values and practical considerations.

Social ontology is concerned with the nature of social entities. The key consideration for ontological positions is whether social entities have a reality which is external and independent of the social actors or whether reality can and should be considered as social constructions formed from the perceptions and actions of social actors. Whereas the former is referred to as objectivism, the latter is called subjectivism or nominalism (Bryman and Bell, 2007; Cohen et al., 2007). The ontological stance underpinning this study is subjectivism. These ontological assumptions also give rise to two primary epistemological viewpoints.

Epistemology relates to the questions of what constitutes acceptable knowledge and the most appropriate way of enquiring into the nature of the world or reality (Bryman and Bell, 2007). The two positions on each end of a continuum are positivism and interpretivism. Positivism advocates the adoption of scientific methods to the study of social reality. Positivists believe that the social world exists objectively and externally. It also assumes that only phenomenon and hence knowledge that can be confirmed by the senses can be accepted. In addition, it assumes that knowledge is arrived at by gathering facts that provide basis for law (Bryman and Bell, 2007; Cohen et al., 2007). However, interpretivism, advocates respect for the differences between people and objects of natural sciences and encourages social scientists to appreciate the subjective meaning of social action (Bryman and Bell, 2007).

An interesting compromise between the two extreme positions is critical realism (Bryman and Bell, 2007). Critical realism incorporates aspects of both positivism and interpretivism. Critical realism acknowledges the reality of the natural order as well as the events and discourses of the social world. It asserts that the social world can be understood and changed only by developing an understanding of the structures that generate the events and discourses observed. Unlike positivism that assumes the scientist’s view of reality is an actual reflection of reality, critical realists believe the scientist’s conceptualisation is basically a way of knowing that reality. Besides, critical realists, unlike positivists are at ease to allow into explanations theoretical terms that cannot easily be observed (Bryman and Bell, 2007). According to Bryman and Bell (2007), what makes critical realism critical is that the identification of generative mechanisms offers the prospect of introducing changes that can transform the status quo which is an important aim of this study. Hence for the purpose of
understanding the role of middle level managers and introducing changes to enhance their leadership behaviour and subsequently improve project performance, the epistemological stance underpinning this study is critical realism.

3.3 RESEARCH PARADIGM

Social scientists have often keenly debated the merits of the qualitative and quantitative paradigms of research. According to Onwuegbuzie and Leech (2007), the contest has often been so divisive that many social and behavioural science graduates aspiring for academic careers are compelled to pledge allegiance to one school of thought or the other. Drawing from Rossman and Wilson (1985), Onwuegbuzie and Leech (2007) identified three major schools of thought from the quantitative-qualitative paradigm debate based on individual beliefs on whether the two approaches co-exist and can be combined. These were purists, situationalists and pragmatists. Conceptualising these on a continuum, the purists and the pragmatists lie on opposite ends and the situationalists between them. Whereas purists take the view that quantitative and qualitative methods originate from different ontological and epistemological roots and are therefore incompatible, pragmatists contend that the dichotomy between the two methods is a false one.

Advocates of pragmatism do not accept that quantitative methods are strictly positivist, neither are qualitative methods necessarily interpretivist. Pragmatists therefore advocate combining the two methods in a single study to make use of the strengths of both methods to develop a better understanding of the social phenomenon under study. Situationalists on the other hand side with purists in that they believe in the incompatibility of the two research methods although they also accept that both methods have value and suggest that one of them will be preferable at any time depending on the research question. The RE’s research paradigm is pragmatist, believing that research methods that will help address the research questions at hand from different perspectives and facilitate a better understanding of the issues is the most important consideration in the study. The pragmatic approach permits the use of qualitative interviews to develop a better understanding of how transformational leaders influence innovation while employing quantitative methods to capture the views of a number of project managers across different parts of the company. The quantitative approach also enabled the RE to meet the objective of testing the hypothesised relationships (at phase 3) among the key constructs identified in phase 1 and the qualitative case study at phase 2.

3.4 RESEARCH METHODOLOGIES/STRATEGIES

According to the Chambers Dictionary (2003), research is a systematic investigation towards increasing the sum of knowledge. The definition suggests a defined approach and a step by step process for collecting data, analysing the data, drawing conclusions and evaluating the implications on research and practice. Yin (2003) identified five key strategies for conducting research as experiment, survey, archival analysis, history and case study as detailed in table 3.1. Each of these according to the author would be useful in particular circumstances. According to Yin (2003), even though each strategy has its distinctive characteristics, there are overlaps among them. The conditions under which each of these methods could be employed are generally described as:
1. The type of research question posed,
2. The extent of control an investigator has over actual behavioural events and
3. The degree of focus on contemporary as opposed to historical events

Table 3-1: The relevant situations for different research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Question</th>
<th>Requires Control of Behavioural Events?</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case Study</td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Yin (2003: 5)

3.4.1 **EXPERIMENT**

An experiment design involves manipulating the independent variable in a study in order to determine if that influences the dependent variable. There are generally two types: laboratory and field experiments. Whereas field experiments take place in a real life setting, the laboratory one takes place in the laboratory as the name implies (Bryman and Bell, 2007).

3.4.2 **SURVEY**

Surveys gather data at a particular point in time with the aim of describing the nature of existing circumstances or determining how specific events relate. Subsequently, surveys vary in the levels of complexity ranging from developing frequency tables to analysing relationships between variables. Surveys can also be exploratory in the sense of not postulating models or assumptions in advance or confirmatory where hypotheses or causal relationships are proposed and tested (Cohen et al., 2007). Surveys facilitate the collection of data from a large number of people in different locations.

3.4.3 **ARCHIVAL ANALYSIS**

It involves the analysis of information obtained from archived materials such as statistics collected by governmental and non-governmental organisations, diaries, the mass media and historical records. It is often considered an unobtrusive method in that the researcher is removed from events being studied (Bryman and Bell, 2007).

3.4.4 **HISTORY**

Historical research involves systematically and objectively identifying, assessing and combining evidence with the intention of instituting facts and drawing conclusions from past events. The appeal of historical research lies in its ability to make use of the past to forecast the future and to apply the present to explain the past (Cohen et al., 2007).
3.4.5 **CASE STUDY**

A case study is an empirical enquiry that investigates a contemporary phenomenon within real life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin 2003: 13). A case study research strategy is very useful in situations where there are many more variables of interest than data points and consequently relies on several sources of data which can converge in the process of triangulation (Yin, 2003).

3.4.6 **ACTION RESEARCH**

Action research is a ‘constructive enquiry, during which the researcher constructs his or her knowledge of specific issues through planning, acting, evaluating, refining and learning from the experience’ (Koshy, 2005: 9). According to Koshy (2005), action research also involves the researcher learning while sharing the knowledge generated in the process with others who may also benefit from it.

3.5 **METHODOLOGY EMPLOYED AND JUSTIFICATION**

With reference to strategies discussed above, the multi-method case study research was considered the most appropriate overall strategy to meet the aim and objectives of the project as explained below. The research sought to examine the role of middle managers in facilitating innovation to improve project performance. The fundamental research question was therefore, ‘how do middle managers influence innovation in construction professional services firms’? The study was aimed at having a deeper understanding of a complex phenomenon relating to the manner such key actors as middle managers influence innovation and project performance in the workplace. The research sought not only to explore the phenomenon but also to understand it in a particular context, which is a UK based construction professional services firm. It sought a deeper understanding of contemporary events which do not require control over behaviour (Yin, 2003).

Leadership behaviour, the primary subject of the study, is largely influenced by social context and the use of quantitative method alone can hardly capture the full social dynamics (Newton, 2009). For example, Jung et al. (2008) adopted quantitative methods in their study on the impact of leadership on organisational innovation. In the project environment, Keegan and Den Hartog (2004) also adopted quantitative methods while studying the impact of the transformational leadership style of project managers on project success. Whereas these studies highlighted the positive effect of transformational leadership on organisational innovation and performance, they failed to capture the nuances associated with such a complex construct as transformational leadership and the processes through which they influence performance.

With the case study strategy both qualitative and quantitative methods were employed to provide varying perspectives on the same phenomenon. Furthermore, innovation, like many other phenomena in the construction industry, is influenced by a large number of variables which can make meaningful quantitative analysis at the onset difficult (Taylor et al., 2011). Hence qualitative data was initially captured to narrow down the variables in advance of quantitative data collection to present a better picture of the phenomenon under study. The qualitative study enabled the RE to study the phenomenon in more detail while the quantitative methods facilitated the evaluation of the phenomenon across the organisation.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

The design of the study provided the opportunity to investigate the complex interaction between middle managers and project teams adding to the understanding of how championing behaviour and climate for innovation can be influenced by middle managers. This was very helpful given that one of the requirements of the EngD project was to address a complex problem with an industry context while contributing to the body of knowledge (CICE, 2010). The ability to use varying methods of data collection was useful in such a dynamic business environment, as it implied the definition of the problem and methodology could be changed in the course of the study in response to changes in the environment to ensure the outcomes of the study were still useful to the sponsor organisation. The case study approach is also consistent with the common approach to innovation studies in the construction industry which have been dominated by case studies largely through qualitative data analysis, (Acha et al., 2005; Ivory, 2004; Nam and Tatum, 1997). Other studies have also adopted a combination of qualitative and quantitative data analyses (Salter and Gann, 2003).

3.6 CREDIBILITY AND TRUSTWORTHINESS MEASURES

Qualitative studies in general and qualitative case studies in particular have often been criticised for lack of credibility and trustworthiness (Taylor et al., 2011). Following Butterfield et al. (2005) and Tuuli et al. (2010), a number of steps were taken to build confidence in the study and its findings.

3.6.1 TRIANGULATION

Interviews, documents, artefacts and questionnaire surveys were the primary sources of data. This approach facilitated the verification of information from one source with the other. Documents and artefacts relating to the innovations studied in phase 2 (Paper 2-Appendix B) were obtained and reviewed to ensure they were consistent with the information obtained from the interviewees. Qualitative data obtained were also interpreted in the light of additional quantitative data obtained in phase 3 (Paper 4-Appendix D) in a methodological triangulation process.

3.6.2 INTERVIEW FIDELITY

The study was consistent in applying the interview protocol in all interviews undertaken during the interviews in phases 2 and 4 qualitative studies. In addition the study captured varying perspectives by interviewing staff across varying grades in order to achieve interview reliability.

3.6.3 THEORETICAL VALIDITY

The discussions of the case study findings consistently referenced previous research to express theoretical agreement and convergence in order to achieve theoretical validity.

3.7 RESEARCH METHODS AND ANALYSIS

A research method is considered a technique for collecting data which could involve completion of self-administered questionnaire, an interview or observation, (Bryman and Bell, 2007). The primary research methods employed in this five-phased study are discussed in detail below. Further details of research methods are outlined in Papers 2-5, Appendices B-E.
3.7.1 **Literature Review**

Literature review plays a significant role in research as it provides the basis for justifying the research questions and developing research designs. In addition, it informs how data is collected and analysed (Bryman and Bell, 2007). The literature review stage of this study enabled the RE to place the project within current debates and views on the subject of the study. This study involved an initial general review of literature and further review at the start of each phase throughout the project. The initial literature review involved an examination of innovation in the construction industry, the drivers of innovation, the models of innovation and identification of the key internal factors that influence innovation performance. A further review was undertaken to examine the innovation process and the role that middle management play in facilitating innovation. Findings from the literature review have been detailed in chapter 2 and in the published papers in Appendices A-E. The literature review facilitated the identification of gaps in the current approaches to managing innovation in construction professional services organisations and to propose measures aimed at improving middle managerial leadership behaviour to facilitate innovation and improve project performance in the sponsor organisation as well as in industry.

3.7.2 **Qualitative Interviewing**

Different kinds of interviews have been identified; unstructured, structured and semi-structured. Semi-structured interviews typically refer to the situation where the interviewer prepares a series of questions on a schedule with the flexibility to vary the questions in the course of the interview. Structured interviews, however, involve administering an interview schedule which ensures all participants are exposed to the same interview stimulus. With unstructured interviews, the interviewer often has a list of issues for discussion which serve as a guide and normally adopt an informal style (Bryman and Bell, 2007). A semi-structured interview approach was adopted for phases 2 and 4 of the research with guiding questions developed from literature.

Qualitative interviewing can be conducted in a one-to-one or group context. The latter has often been used interchangeably with focus group interviews. The focus group interview is considered an efficient technique as an increased amount of data is collected from several people at the same time. Besides, the group dynamics help in focusing on the most important issues as the moderator is able to assess the extent to which views are consistent and shared among the participants (Robson, 2002). The approach, however, has the disadvantage of limiting the number of questions that can be asked and requires considerable effort to manage (Robson, 2002). One focus group interview involving Technical Directors and 13 one-to-one interviews were conducted as part of the study (Paper 4 - Appendix D). The focus group interview did not only provide rich insight from very experienced staff on the role of middle managers in innovation performance but also facilitated the dissemination of the research findings from the earlier phases of the study. This method of interview was preferred due to the benefit of obtaining information which may otherwise be classified as confidential (Ghauri et al., 1995). In addition, it helped to focus on issues more specifically while allowing the flexibility to explore any new evidence emerging from the interviews. A cross-section of staff ranging from project directors, technical directors, portfolio managers, team managers, all in the middle management category, senior engineers and engineers were interviewed during the study. All interviews were recorded and transcribed verbatim for analysis.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

3.7.3 **QUESTIONNAIRE SURVEYS**

Questionnaire surveys generally provide an avenue for obtaining the views of a large number of dispersed respondents for subsequent quantitative or qualitative analysis. Questionnaires can be administered in three primary ways. Firstly, self-completion, where the respondent directly fills in the questionnaire sent by post, email or online. Secondly, face-to-face approach which is associated with the researcher asking the questions and completing the questionnaire and thirdly, telephone interview which is conducted over the phone with the researcher recording the answers (Robson, 2002). Data obtained from surveys could nonetheless be affected by the characteristics of the respondents which may vary from one to another. It also relies on respondents to be accurate without any opportunity for cross-examination. The study employed both closed and open ended questionnaires to obtain views from a cross-section of employees. Quantitative questionnaire survey was administered online at phase 3 (Papers 3 & 4 – Appendices C& D) of the study while open ended questionnaires were used at phase 5.

3.7.4 **THEMATIC ANALYSIS**

Thematic analysis is a process of analysing qualitative data which involves identifying patterns mostly reflecting on how often the phenomenon is observed in the study. (Bryman and Bell, 2007). Thematic analysis was a key method of analysis used in the study. The approach adopted was consistent with recommendations of Braun and Clarke (2006). All the interviews were recorded and transcribed verbatim. Initial codes were generated from the transcribed interview documents highlighting data which were of interest for further analysis. This was done in such a way as to ensure that meaning was not lost by taking the data out of context. The next stage of the analysis involved combining the codes into appropriate themes and sub-themes. The initial themes were refined through further analysis to identify the key themes. Thematic analysis was undertaken with the aid of tables in phase 2 (Paper 2 – Appendix B) of the study and with Nvivo version 9.2 in phase 4 (Paper 5 – Appendix E). These provided deep insight into the constructs under study particularly in relation to the workplace behaviour of middle managers and how that impacts on the innovativeness of their teams and ultimately project performance as published in Papers 2&5 – Appendices B&E.

3.7.5 **STATISTICAL ANALYSIS**

Statistical analysis involves the interpretation of data, normally in numerical form aimed at summarising and describing data collected (descriptive statistics) or investigating patterns in the data in order to draw conclusions about the population under study with due consideration to the uncertainty and randomness in observations referred to as inferential statistics (Fellow and Liu, 2003). Statistical analysis in this study were undertaken to investigate the relationships among transformational leadership of middle managers, innovation championing behaviour, climate for innovation and project performance in phase 3 of the study.

Statistical analysis for phase 3 of the study was approached in 5 primary stages using SPSS v15. The first stage of analysis focused on deriving the descriptive statistics such as the means, standard deviations and frequencies. Since the respondents surveyed worked in different streams of business (e.g. highways, rail, utilities etc.), an analysis of variance (ANOVA) was conducted as a second stage to check for significant differences in responses from the different groups. The third stage involved factor analysis of the constructs using the principal component analysis (PCA) with varimax rotation to establish the underlying dimensions of transformational leadership, climate for innovation, innovation championing.
and project performance. The fourth stage involved hierarchical multiple regression analysis to test proposed hypothesis regarding the relationship among transformational leadership of middle managers, innovation championing behaviour of project managers, climate for innovation and project performance. The final stage involved investigating the mediating effect of innovation championing and climate for innovation on the relationship between transformational leadership and project performance.

The study adopted the four-step method proposed by Baron and Kenny (1986) in testing mediation. With this approach, firstly, the independent variable (in this case transformational leadership) must be related to the mediator variables which are innovation championing behaviour and climate for innovation. Secondly, the independent variable must be related to the dependent variable, project performance. Thirdly, the mediator variable must significantly relate to the dependent variable. Finally, when the mediator variable is controlled for, the relationship (i.e. coefficient) between the independent variable and dependent variable should either no longer be significant or substantially reduced with reference to that in the second step for partial mediation to exist or the coefficient should reduce to zero where there is full mediation. In addition to the four steps above, the study further undertook a test of significance of the indirect effect of the predictor variable using Sobel’s (1982) method.

To ensure the statistical analysis provided information only relevant to the variables of interest and determined their unique contribution, control variables were included. Previous studies have identified level of education and tenure as factors influencing innovation (Oldham and Cummings, 2003; Pieterse et al., 2010; West and Anderson, 1996). Moreover, project size which has been measured by the level of project fee has been found to influence innovation (Dulaimi et al., 2005). In addition, research suggests that experience gained by project managers from being engaged in previous projects, while reflected in job tenure (Dulaimi et al., 2005), may also reflect in the age of the individual hence age was also included as a control variable (Papers 3&4 – Appendices C&D).

3.7.6 Triangulation

Triangulation is associated with the use of multiple sources or methods to improve the rigour of a study. Four types of triangulation have been identified (Robson, 2002):

- Data triangulation refers to the use of various methods to collect data;
- Observer triangulation is associated with engaging more than one observer in the study;
- Methodological triangulation is combining qualitative and quantitative approaches in a single study; and
- Theory triangulation is employing multiple perspectives or theories.

This five phased study employed both data and methodological triangulation. The output from each phase fed into and provided the input for the next phase. Phase 1 literature review provided the theoretical basis for the study. During the Phase 2 case study, data was collected primarily through interviews, document review and examination of artefacts (Paper 2 – Appendix B). Through methodological triangulation, the findings made from the survey at phase 3 were also examined in the light of evidence from the case study and the qualitative interviews in phases 2 (Paper 2 – Appendix B) and 4 respectively (Paper 5 – Appendix E) as well as evidence from the literature review in phase 1 (Paper 1 – Appendix A). Not only did this approach lead to a deeper understanding of innovation management in the organisation.
but also helped to enhance the validity and reliability of the study and facilitated more accurate conclusions.

3.8 SUMMARY AND RESEARCH PLAN

The study adopted the multi-method case study strategy with elements of action research which involved identifying key middle managerial behaviour in the workplace that facilitates innovation. The approach incorporated both qualitative and quantitative methods of data collection and analysis followed by triangulation. Table 3.2, research map, below outlines how the methodology was adapted to achieve the objectives in each phase of the study. It further outlines what research questions were addressed, tasks undertaken to address the questions, the research methods employed and the linkages to papers produced as part of the study. Figure 5 also presents a summary of the overall methodology for the study.

Table 3-2: Research map

<table>
<thead>
<tr>
<th>Phase</th>
<th>Overarching Aim</th>
<th>Primary Objectives</th>
<th>Research Questions</th>
<th>Work Tasks</th>
<th>Research Method</th>
<th>Research Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase One</td>
<td>Improving middle management leadership behaviour in order to facilitate innovation and improve project performance.</td>
<td>1. Critically review literature on innovation in construction professional services firms and current practices in the sponsor company to identify opportunities for improvement.</td>
<td>What is the state of innovation in the construction industry and the sponsor company and what are the key enablers and barriers?</td>
<td>Review of empirical and conceptual papers and practices on innovation in the construction industry as well as the sponsor company.</td>
<td>Document review Literature review</td>
<td>Paper 1</td>
</tr>
<tr>
<td>Phase Two</td>
<td></td>
<td>2. Explore the processes by which middle managers influence key internal factors to facilitate innovation and ultimately impact project performance in the sponsor company.</td>
<td>What is the role of middle managers in facilitating innovation in construction professional services firms?</td>
<td>Conducted a case study of 3 types of innovations focusing on the role of middle managers in facilitating the innovations observed</td>
<td>Case study Artefacts review Document review Thematic analysis</td>
<td>Paper 2</td>
</tr>
<tr>
<td>Phase Three</td>
<td>Phase Four</td>
<td>Phase Five</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Quantitative validation of the nature of the relationship among transformational leadership, climate for innovation, innovation championing and project performance.</strong></td>
<td><strong>What is the nature of the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and how do they combine to impact innovativeness and project performance?</strong></td>
<td><strong>How can transformational leadership be practically developed among middle managers?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveyed 112 project managers across the company followed by quantitative testing of hypothesised relationships</td>
<td><strong>Surveyed 112 project managers across the company followed by quantitative testing of hypothesised relationships</strong></td>
<td><strong>Disseminated the resource developed in phase 4 among middle managers and obtained feedback on its usefulness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pilots Questionnaire survey Statistical analysis</strong></td>
<td><strong>Interviewed a cross section of staff (13) of varying grades and a focus group discussion of 15 directors to identify how transformational leadership behaviour is practically exhibited and the impact on project team members</strong></td>
<td><strong>Action research Survey</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papers 3&amp;4</td>
<td><strong>Semi-structured interviews Action research Thematic analysis</strong></td>
<td>EngD Thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Figure 5: Summary of research and their links to published paper
4 THE RESEARCH

4.1 INTRODUCTION

This section details the research carried out in pursuit of the primary aim and objectives of the study. It outlines the five phases of the study and also reflects the five primary objectives and details the tasks and activities undertaken to meet them. The first phase comprised a review of the existing literature on innovation in the construction industry particularly in construction professional services environment. It also included a review of the sponsor company's efforts aimed at improving performance and the challenges associated with it. This was followed with a case study of three innovative projects to examine the role of middle managers. Phase 3 involved the development and testing of a model incorporating the constructs identified under phase 2. Phase 4 consisted of qualitative validation of the relationships among the constructs in the study. A leadership development resource for middle managers was also prepared and was subsequently trialled in phase 5. Further details on the research and findings are published in Papers 1-5, Appendix A-E.

4.2 PHASE 1 – REVIEW OF EXISTING LITERATURE AND INITIATIVES

The key objective for this phase was to review extant literature on innovation in construction professional services firms and current practices in the sponsor company to identify opportunities for improvement. The research questions the RE sought to address at this phase were; ‘what is the state of innovation in the construction industry and the sponsor company and what are the key enablers and barriers?’

4.2.1 REVIEW OF LITERATURE

The review of the literature involved an examination of published and unpublished work both in academia and industry. To build up an understanding of innovation management in the construction industry and make the study relevant to current discourse on innovation, various discussions were held with both practitioners and researchers. The phase involved a review of a number of models of innovation in the construction industry. The RE reviewed literature on key internal factors influencing innovation. The output of the literature review is as detailed in chapter 2 and briefly discussed in section 5.2.1. The RE also undertook thought modules (e.g. Research, Innovation & Communication) directly aimed at supporting this phase of the study. Additional literature review was carried out at the start of each phase. Literature review undertaken in this phase is published in papers 1-5, Appendices A-E and the published papers not included in this thesis (Kissi et al., 2009; Kissi et al., 2010a).

4.2.2 REVIEW OF EXISTING INITIATIVES

The RE undertook an exercise to understand current efforts being made by the sponsor company to improve innovation and project performance. This included a review of the leadership development activities and innovation management processes to ensure the output from the study complemented and added to the company’s efforts. Additionally, the study reviewed an on-going EngD programme on learning organisations in the sponsor company. The RE attended a forum of innovation champions drawn from across the infrastructure services to have a first-hand experience of the challenges associated with the group’s efforts.
to promote innovation in the company. The RE also took the opportunity to discuss some of the barriers associated with innovation with the innovation champions to inform the study. The findings are outlined in section 5.2.2.

4.3 PHASE 2 – THE ROLE OF MIDDLE MANAGERS IN INNOVATIONS

The primary objective for this phase was to explore the processes by which middle managers influence key internal factors to facilitate innovation and ultimately impact project performance in the sponsor company. Further literature review was undertaken in this phase to examine the relationships among the key internal factors and how they combine to influence innovation. Hence the key research question in this phase was; ‘what is the role of middle managers in facilitating innovation in construction professional services firms?’

This phase of the study was based on a typical division of the business located and working closely with a public sector client. The division provided highway design and maintenance services. The contract was originally for four years with a possible extension of two years. The four-year contract had about one year left at the time of the study and the company was keen to secure the extension. Every effort was therefore being made to provide services that met and exceeded the client’s expectation. The division had about 40 staff grouped into three teams. The first team provided reactive maintenance services, the second, planned maintenance services and the third team was responsible for capital improvement schemes. In order to identify the most appropriate innovations to be included in the study, a preliminary interview was held with the Divisional Director (Middle Manager). The interview focused on non-trivial innovations implemented within the last year by the division. This was to minimise inaccuracies in the data due to recall bias. Subsequently three types of innovations, one from each of the 3 teams, were selected for study. Involving each of the teams in the study was to ensure that data captured fairly represented the division. Details of the responsible project manager (PM) in each of these innovations were obtained. A pre-interview information sheet was sent to the project managers highlighting why they had been approached and what they could expect at the interview. The information sheet also provided assurances of confidentiality. The three types of innovations are briefly discussed below. Details of the innovations and the processes leading to the innovation are also published in Paper 2 – Appendix B.

The first innovation involved the development of a new system of tracking, monitoring and reporting on a large number of small schemes running concurrently to the client. This was originally being done manually. The process was time consuming and had adverse impact on productivity. The system comprised individual spreadsheets for each scheme that was kept on the project’s file tailored for the specific reporting requirement. A separate master spreadsheet was prepared and an excel programme (macro) was written to automatically pull in all the relevant information from the individual spreadsheet into the master spreadsheet for weekly reporting to the client. Although incremental in nature (Slaughter, 1998), this innovation had significant savings estimated at 10 man hours per week. At an estimated average charge out rate of £50.00, this equates to £500 of savings a week which could enhance the profitability of the division. The new approach to collating information and reporting to clients has since been promoted and tested in other offices particularly among the structural inspection teams.
The second innovation involved a change in the paving material being used for the construction of vehicle crossovers in the client’s borough. Normal paving was used on all footways except in areas normally driven over by vehicles (vehicle crossovers) where fibre reinforced slabs were used. These were however much more expensive than the normal paving slabs. According to the responsible PM, the most expensive fibre reinforced slabs were almost three times the price of the normal slabs. To test whether the use of the reinforced slabs was value for money, an experiment was undertaken using different types of paving slabs. These included normal paving slabs, fibre reinforced and steel reinforced slabs installed on varying depths of concrete in one of the busiest vehicle crossovers in the borough. After six months, it was found that the normal slabs withstood the loading as well as the fibre reinforced ones. The decision was subsequently made to use the normal slabs with a variation in the concrete base instead of the more expensive fibre reinforced ones. The decision to adopt the normal slabs across all footways meant that not only was the client going to save money from reduced cost of material but also from reduced waste. Using the same material across the full length of footways eliminated the need to cut pieces of fibre reinforced slabs to be laid in narrow sections of vehicle crossovers intermittently located along significant lengths of footway. With over £1 million spent on footway renewal across the borough annually the use of normal paving slabs instead of fibre reinforced slabs provided a potential source of substantial savings for the client. The idea is being promoted among the company’s other clients.

The third innovation involved the configuration, setting up, purchasing, testing and installation of a new system that would facilitate real time data collection and transfer from the site inspectors to the company’s server in the office. This was made possible by the development of a virtual private network (VPN) that enabled secure access to the company’s network. The VPN was necessary to bypass the existing requirement for a vasco token to access the server remotely. The system comprised of a tough book which had a 3G sim card with a mobile internet connection that could transfer real-time data. The new device also had a Wi-Fi, an in-built camera and an in-built blue tooth system. This replaced a bulky tough book double the size which had to be carried together with a camera and an external GPS unit hardly used because of its weight. It was estimated that the new system when fully functional would enhance productivity of the site inspection team by about 10% as it removed the need to collect site data and travel to the office for processing. In addition the council had more accurate information to defend claims for compensation. Other parts of the company involved in network management for other clients are exploring the use of this system.

For each innovation a face-to-face interview was set up with the responsible PMs focusing on the processes that led to the adoption of the innovation. The PMs of the three innovations studied had 4, 8 and 20 years experience in the construction industry. The study adopted semi-structured interviews with guiding questions derived from literature. The interview focused on the behaviours exhibited by the middle managers during the innovation process and how that influenced their perceptions of project environment as well as their own behaviour. Further interviews were held with the Divisional Manager of the office and the Business Unit Director overseeing the division to supplement the information gathered through the semi-structured interviews. In addition, artefacts (equipments, devices, spreadsheets and project files) associated with the innovations were reviewed as part of the data collection process. These multiple sources were to enhance the validity of the data gathered. The study adopted the thematic approach to the data analysis following the recommendations of Braun and Clarke (2006) as outlined in section 3.5.4. The final themes
related to actions and behaviour of the middle manager across the three examples of innovation which had significant influence on the PM’s perception of the work climate and hence their own innovation championing behaviour in the cause of delivering the innovations studied. Findings from this phase are outlined in section 5.3.

4.4 PHASE 3 – QUANTITATIVE VALIDATION OF RELATIONSHIPS

The primary objective for this phase was quantitative validation of the nature of the relationship among transformational leadership, climate for innovation, innovation championing and project performance. The phase also enabled the RE to capture the perceptions of the team members on the organisational climate for innovation and the leadership behaviour of middle managers and how dominant such views were across the business. The primary research questions were; ‘what is the nature of the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and how do they combine to impact innovativeness and project performance?’

Project managers in the sponsor company under study constituted the source of data as they were the closest group working with middle managers and were under their direct influence. They could therefore provide more accurate feedback on the transformational leadership of the middle managers. Moreover, since they were directly responsible for project delivery, they could provide more accurate information on project performance. An internet based questionnaire was prepared and an e-mail with the link to the questionnaire was sent to approximately 350 project managers working in three primary business streams located in about 40 offices across the UK. Respondents were initially given two weeks to respond. The response period was extended by another week. The respondents provided data on perceptions of transformational leadership behaviour of middle managers. They further assessed their own championing behaviour as well as the organisational climate. Finally, they provided data on the performance on projects they had managed.

Following detailed analysis of the responses and elimination of responses with substantial missing data, 112 fully completed responses were analysed, yielding a usable response rate of 32%. This compared favourably to similar web based surveys. A review by Shih and Fan (2008) found a mean response rate of 34% and standard deviation of 22. In total 61% of the respondents were 40 years and above. While 68% were from the highways stream of the business the remaining 32% were from the utilities and rail part of the business. Also, 51% of respondents had been with the company for five years or more and 48% of the respondents earn an average project fee of more than £80,000. Majority of respondents (80%) had a minimum of first degree qualification.

Transformational leadership was measured using Podsakoff et al.’s (1990) 22-items instrument on a 7-point likert scale (1-“Strongly Disagree” and 7-“Strongly Agree”). Examples of the items were, ‘insists on only the best performance’ and ‘has provided me with new ways of looking at things which used to be a puzzle for me’. Innovation championing behaviour was measured with Dulaimi et al.’s (2005) 21-item instrument on a 5-point likert scale (1-“Not at all” and 5-“Frequently”). Sample items were, ‘push innovation actively and vigorously’ and ‘seeks differing perspectives when solving problems’. Climate for innovation was measured with Scott and Bruce’s (1990) 22 items instrument on a 5-point likert scale (1-
“Strongly Disagree” and 5-“Strongly Agree”). Sample items included ‘creativity is encouraged here’ and ‘around here a person can get into a lot of trouble by being different’. Project performance was measured with 11-item scale multidimensional measurement of innovative project performance developed by Dulaimi et al. (2005) on a 5-point scale (1-“Not at all” and 5-“A great deal”). Sample items included ‘finish project within the budget’ and ‘enable competitive advantages to the company’. The full questionnaire is included as Appendix 1 in Paper 4-Appendix D. Other control and demographic variables such as age, tenure, average project fee, and educational level were also measured to help assess the unique contribution of the independent variables. Further details of the research undertaken in this phase of the study are set out in section 5.4 and published in Papers 3&4 – Appendices C&D.

4.5 PHASE 4 – QUALITATIVE VALIDATION AND RESOURCE DEVELOPMENT

The key objective for this phase was qualitative validation of the relationships among the constructs under study and preparing the transformational leadership development resource. The primary research questions in this phase were; ‘how do middle managers practically exhibit transformational leadership behaviour in the workplace and how does that impact on the performance of their teams?’ The RE also took the opportunity to disseminate the findings from phases 1-3 and undertook an initial assessment of the impact of the study.

This phase of the study sought a deeper understanding of the process by which transformational leadership behaviour exhibited by middle managers influence innovativeness and project performance as predicted by the model tested in phase 3 and to translate this into practice. For the reasons outlined under section 3.5, in-depth interviews in context formed the primary source of data collection in this phase (Winch, 1998; Yin, 2003). A focus group discussion comprising 15 Technical Directors (FG) and 13 individual face-to-face interviews were undertaken as part of the data collection exercise. The interviewees comprised 2 Team Managers (TM), 1 Technical Director (TD), 1 Project Director (PD) and 1 Principal Engineer (PE) all in the middle management category. In addition 3 Senior Engineers (SE) and 5 Engineers (CE) were interviewed. The interviewees were selected to ensure that there was a representation from a cross-section of grades within the company. The average time spent per interview was about 40 minutes. The interviewees were primarily from offices in and around London while the Technical Directors engaged in the focus group discussion came from over 10 offices across the infrastructure business.

The study adopted semi-structured interview approach and all interviews were face-to-face with guiding questions derived from literature. The interview focused on the six dimensions of transformational leadership behaviours exhibited by the middle managers in the workplace and how each of them influenced their perceptions of project environment and their own tendency to adopt innovative behaviour in delivering their projects. An example to measure articulating vision was, ‘how does your manager paint an exciting picture of the future to inspire you and the team’? Where the interviewees had not seen evidence of any particular dimension, they were asked about what the likely impact would be if their manager was to exhibit such behaviour. In the case of the middle managers the interview focused on their own leadership behaviour and how that impacted on their team members’ performance on projects. The study adopted the thematic approach to the data analysis using Nvivo version 9.2
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

following the process set out in section 3.7.4. Sample output from the Nvivo analysis is included as Appendix I.

The analysis involved grouping all managerial behaviours as described in the interviews and the focus group discussions according to the transformational leadership dimension they fit into. Examples of such behaviours found were also recorded. The impacts of such behaviours on the interviewees were registered alongside the behaviours. Verbatim quotations from the interviewees on the impact of transformational leadership behaviour reported were also captured and included in the last column. The process culminated in the production of table 5.2 in section 5.4.2 (Appendix H). The table provides a guide to the kind of behaviours middle managers could focus their development efforts on once it is known what dimension of transformational leadership needs to be developed. The phase also involved examining the relationship between the individual dimensions of transformational leadership, climate for innovation, innovation championing and project performance.

The focus group discussion provided the RE the opportunity to disseminate the findings from the first three phases of the study while obtaining their views on the applicability of the model developed and tested in phase 3 of the study. The participants unanimously agreed the model would be applicable in the context of the sponsor company. In this phase of the study, the RE also took the opportunity to ask the middle managers interviewed to reflect on their own behaviours in the workplace and indicate what they would do differently ‘knowing what they now knew’ from the interviews and some of the information shared prior to the interview. The question posed to the interviewees was: ‘reflecting on your own style of leadership, what are you going to be doing differently following this interview?’ The responses were captured as it reflected on the impact and level of awareness the research was creating in the sponsor organisation and discussed in section 5.5.3.

4.6 PHASE 5 – EVALUATING LEADERSHIP DEVELOPMENT RESOURCE

The principal objective for this phase was to disseminate the transformational leadership development resource developed in phase 4 and obtain feedback from middle managers on its usefulness. The primary research question in this phase was; ‘how can transformational leadership be developed among middle managers?’

In this phase, 10 middle managers were approached, 8 of whom responded positively and were engaged in the process. The participants undertook self-assessment of their transformational leadership style using an abridged form of the questionnaire used in phase 3 as outlined in Appendix F of the thesis. They each selected four of their team members to provide feedback on their leadership style. Two of the team members provided feedback on their managers using the same self-assessment questionnaire filled by the middle managers. The other two team members provided feedback using open ended questions. A sample of the open-ended feedback form is included as Appendix G. The average score of the team members’ responses were compared to the self-assessed score of the team managers. Discrepancies between the team managers’ own assessments and that of the team members were identified and highlighted for the managers’ attention. The feedback from the open ended questions were also analysed, summarised and subsequently reported back to the managers concerned. The managers were encouraged to select an area for improvement using
the resource developed at phase 4 and detailed in Table 5.2 and Appendix H. The managers were asked to evaluate the usefulness of the feedback received from their team members as well as the resources provided for improvement after they had had the opportunity to review the documents. The managers’ feedback focused on how they thought the resource was going to help them improve their leadership behaviour and how that could help improve innovation and ultimately project performance in the company. Feedback from the middle managers is set out in table 5.3.

4.7 SUMMARY

This chapter has presented the key steps taken in the 5 phases of the study to meet the objectives outlined. Phase 1 reviewed existing literature in order to identify the key internal and external factors that influence innovation in the construction industry. In addition, current performance improvement initiatives in the sponsor company were reviewed. The second phase examined the role of middle managers in innovations by reviewing three types of innovations in a division of the sponsor company. The third phase examined the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and project performance through quantitative questionnaire survey of 112 project managers across the company. Phase 4 involved qualitatively examining the effect of the individual dimensions of transformational leadership on climate for innovation, championing behaviour and project performance through a combination of individual interviews and a focus group discussion. This phase also identified how transformational leadership is practically exhibited in the workplace and how it impacts on members of project teams. The fifth phase involved an evaluation of the resource developed in phase 4.
5 FINDINGS & IMPLICATIONS

5.1 INTRODUCTION

This section presents the key findings of the study. More details on the findings from the research are set out in the relevant sections of Papers 1 – 5, Appendices A – E.

5.2 PHASE 1 – REVIEW OF EXISTING LITERATURE AND INITIATIVES

The key objective for phase 1 was to review extant literature on innovation in construction professional services firms and current practices in the sponsor company to identify opportunities for improvement. The research questions at this phase were; ‘what is the state of innovation in the construction industry and the sponsor company and what are the key enablers and barriers?’

5.2.1 PHASE 1 – REVIEW OF EXISTING LITERATURE

The findings suggested that the construction industry has been under-performing as companies in the industry consistently fail to meet client expectations. Efforts have been made both by government and individual firms to improve performance. Innovation has been identified as an important means of improving performance. The review suggested that factors internal and external to construction organisations influence innovation and hence project performance. Key external factors identified included clients, regulations, technology and the economy. Internal influences such as leadership, climate for innovation and innovation championing were also noted. For this study, more attention was paid to the internal factors since they are the ones the sponsor company is in the position to control. The findings from the literature review identified a dearth of literature on the role of middle managers in facilitating innovation and improving project performance in the construction industry. The review further identified that middle managers could have a much more significant role in facilitating innovation in view of their unique position between strategic level senior managers and operational level project delivery teams. More details of the primary literature review undertaken in this phase are detailed in chapter 2 and published in Paper 1–5, Appendices A-E.

5.2.2 PHASE 1 – REVIEW OF EXISTING INITIATIVES

The review of the sponsor company’s activities revealed a number of initiatives had been put in place to improve leadership behaviour aimed at improving performance in general. They were however not specifically aimed at improving innovation supporting behaviour among managers. Some of these are summarised in Table 5.1 below.
Table 5-1: A review of current initiatives by the company

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Primary Objective</th>
<th>Key Outcomes Sought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing the 'Company’ Way</td>
<td>Improve full range of competencies for managers</td>
<td>On-going development of leadership competencies for improved work performance</td>
</tr>
<tr>
<td>Management Development Programme</td>
<td>Provide structured development path for managers</td>
<td>Enhanced managerial performance</td>
</tr>
<tr>
<td>Frontline Managers Programme</td>
<td>Structured development for first line managers</td>
<td>Prepare first time managers and supervisors for new challenges</td>
</tr>
<tr>
<td>‘Taking the Lead’</td>
<td>Align managers to company leadership values</td>
<td>Improved management behaviour</td>
</tr>
<tr>
<td>Business Leaders Programme</td>
<td>Structured programme for the development of senior managers</td>
<td>Improved senior management performance</td>
</tr>
</tbody>
</table>

Adapted from Fuller (2011:27)

An interesting finding at this phase of the study was that the two companies (Mouchel and Parkman) that originally merged to form Mouchel have a history rooted in innovation as exemplified by the following innovative achievements and development (Mouchel website, 2010):

- introducing reinforced concrete to the UK – one of the most far-reaching inventions to shape twentieth-century civil engineering in the UK;
- in 1905, designing the Widnes to Runcorn Transporter Bridge – the first major crossing of the River Mersey;
- constructing the Royal Liver Building in Liverpool in 1909;
- developing the pre-cast concrete ‘Mulberry’ harbour with the War Office in 1943, which played a key role in the Allied invasion of Europe;
- in 1972, designing Grain Power Station in Kent, at the time the largest oil-fired power station in Europe; and
- working with the Highways Agency to pioneer the Early Contractor Involvement (ECI) form of contract in 1999 – a contract that now predominates for highways capital projects.

The company has been making efforts to promote innovation and improve performance. The firm sees innovation as a very important means by which performance can be improved to support the achievement of the corporate vision. ‘We value innovation – we want to be inventive and imaginative, and don’t allow convention or dullness to get in our way’. The above statement which is one of six core values that the company espouses demonstrates how important innovation is to the firm. It was found that the company promoted innovation through innovation champions across the company. Regional and National awards were set up to recognise and reward successful innovative projects from across the company. These
activities were deemed inadequate to produce the kind of innovative behaviour expected. More needed to be done to incorporate innovation in the day-to-day activities. The system of time booking and perception among project team members regarding what could be considered innovation constituted significant barriers to innovation.

5.3 PHASE 2 – THE ROLE OF MIDDLE MANAGERS IN INNOVATIONS

The key objective for this phase was to explore the processes by which middle managers influence key internal factors to facilitate innovation and ultimately impact project performance in the sponsor company. The research question addressed in this phase was; 'what is the role of middle managers in facilitating innovation in construction professional services firms?'

The key findings from this phase of the study suggested that innovation supporting behaviour exhibited by middle managers had a significant role to play in facilitating the innovations observed in the study. The middle manager’s behaviour was found to have influenced climate for innovation and innovation championing and ultimately project outcomes. The middle manager’s actions were seen to have contributed significantly to the development of a kind of work climate supportive of innovation where PMs were willing to try new things in the process of delivering projects. It was also found that the middle manager’s actions influenced the innovation championing behaviour of project managers. The study found that unlike top managers, the middle manager occupies a unique position in organisations by virtue of their closeness to both clients and staff and are usually the first point of call when the client had a complaint or concern about service delivery. The need to respond to clients’ concerns influenced innovative supporting behaviour in the process of developing project solutions. Middle managers were found to rely significantly on their previous experience in guiding the innovations studied to successful delivery.

There is empirical evidence to suggest that middle managers tend to stay longer in organisations than top managers (Huy, 2001), and in the process develop a sound knowledge of the business which they employ in challenging innovative ideas. Additionally, having built their careers over several years in most cases from the lower levels (Huy, 2001), middle managers tend to have more extensive networks across the company from which they can draw support in progressing innovations (Kanter, 1982). These highlight the significant impact middle managers could have on innovation in construction professional services firms contrary to previous negative reporting on their role in organisational performance. The innovation supporting behaviours of middle managers akin to transformational leadership are briefly discussed below with more details published in Paper 2 – Appendix B.

5.3.1 SUPPORT FOR INNOVATION

Evidence from the study highlights the support that the manager provided for the PMs in the process of developing the innovative solutions as a key influencer in enabling the innovations. This was demonstrated in the personal support and involvement of the manager in helping to overcome obstacles in the process of implementing the innovation. It was therefore seen that the leadership behaviour exhibited by the manager elicited the extra effort and commitment seen in the PMs. This behaviour is aligned with individualised support dimension of transformational leadership. This finding resonates with Podsakoff et al.’s (1990) contention
that the most important effect of leadership should be the ‘extra-role’ performance which in this case was seen in the PM making extra effort to search for and apply solutions in delivering the projects studied. Similarly, De Jong and Den Hartog (2007) in a study involving 12 managers in knowledge-intensive service firms found that managers’ support for innovation is associated with both the generation and implementation of ideas.

5.3.2 **Resource Supply**

The manager also provided the needed resources which helped to create a sense of a supportive climate in which the PM could do what was necessary to achieve project objectives. This was seen in the manager allowing time for the research and funds for the development. The PM felt trusted as a result of being given such funds and time required to develop the solution especially in view of the current economic conditions which in turn engendered trust in the middle manager and influenced their level of commitment to developing innovative solutions. This is consistent with individualised support dimension of transformational leadership. Podsakoff et al. (1990) asserted that leaders who are able to win the trust of their staff also build up their confidence. In turn it influences them to exhibit high levels of innovation championing. Other studies have found that in an environment where resources are readily made available, innovative outcomes are more likely to be achieved (De Jong and Den Hartog, 2007). Similar findings have been made by other studies such as Brand (1998) who found in a study based on the company, 3M, that individuals can be more creative in an environment where they are not subjected to significant time pressure. It could therefore be seen that providing adequate supply of resources did have a positive impact on the PM’s perception of the work environment as one supportive of innovation and could have accounted for the innovation championing behaviour observed in PMs.

5.3.3 **Autonomy and Freedom**

The middle manager was found to have allowed staff the room to explore and develop solutions without any restrictions. This was seen to send the message across to the PMs that the manager had confidence in them thus heightening their determination to find creative solutions and approaches to their projects. Defining the goals and expressing confidence in the PM’s ability to achieve had an effect similar to high performance expectation dimension of transformational leadership. The finding is consistent with Krause (2004) who in a study of 399 middle managers concluded that their innovative behaviour reflected in idea generation, evaluation and implementation and was significantly enhanced when given a measure of freedom and the autonomy to operate. Similarly, Oldham and Cummings (1996) suggested that non-controlling supervisors help to create an environment conducive to employee creativity.

5.3.4 **Intellectual Stimulation**

The middle managers’ actions in challenging ideas presented in the course of developing solutions could also be seen to intellectually stimulate the project managers to consider different options. Particularly, the findings suggested that during the development of the project monitoring and reporting software, the manager’s constant questioning had a positive influence on the PM’s innovative efforts. This was reflected in the PM undertaking further research in order to respond to the queries raised by the manager. Likewise, questioning and challenging behaviour were exhibited in the process of developing the site survey system. Intellectual stimulation is one of the six dimensions of transformational leadership which has been known to be linked to enhanced creativity (Jung et al., 2008).
5.4 PHASE 3 – TESTING OF RELATIONSHIPS

The primary objective for this phase was the quantitative validation of the hypothesised relationship among transformational leadership style of middle managers, climate for innovation, innovation championing and project performance. The primary research questions addressed in the phase were: ‘what is the nature of the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and how do they combine to impact innovativeness and project performance?’

The results from this phase detailed in Paper 4 - Appendix D, demonstrate that high levels of middle management transformational leadership comprising articulating a desirable vision, challenging employees to think ‘outside the box’, paying attention to the individual’s needs and concerns, fostering a commitment to organisational and project goals and showing project managers much was expected of them, have a positive direct effect on climate for innovation, championing behaviour and project performance. The result indicated transformational leadership of middle managers had a positively significant relationship with project performance and explained 10% of the variance in project performance. This is consistent with the results of Waldman and Atwater (1994) who in a study of R&D project teams found that transformational leadership at levels higher than PMs positively influence project effectiveness.

Keegan and Den Hartog (2004) found transformational leadership of managers had a positive impact on employees’ commitment and motivation which could in turn influence performance in project environment. The findings suggested that transformational leadership behaviour of middle managers could potentially bypass hierarchical links between them and the project managers and be experienced directly at the project team level and consequently impact on project performance. The direct effect of transformational leadership on performance at lower levels of organisations is also supported in previous studies (Dvir et al., 2002). Yang et al. (2010a) explained the bypass effect of transformational leadership behaviour of middle managers on the employees’ performance drawing on Bandura’s (1986) theory of social learning which posits that employees’ identification with their organisation provides an important psychological avenue through which leaders directly influence their behaviour.

The findings also point to a positive and significant relationship between transformational leadership and championing behaviour, uniquely explaining 8% of the variance in championing behaviour. This relationship has not been investigated in the project environment. However, the finding is consistent with previous studies which found transformational leadership to engender commitment, trust (Podsakoff et al., 1990, 1996), innovative behaviour among employees (Pieterse et al., 2010) and performance beyond the expected level (Bass and Avolio, 1994) all of which are consistent with innovation championing behaviour. Additionally, trust in the middle manager is likely to encourage championing behaviour among project managers in the knowledge that their managers will stand by them should their efforts fail to yield the expected results. This process has been referred to as the cascading effect of transformational leadership. The tendency for direct subordinates to imitate higher level leaders is a further psychological process through which the cascading effect of leadership happens (Yang et al., 2010a).

Although research has shown that the leadership skills of project managers influence project outcomes (Yang et al., 2010b), there is no clear indication as to the type of leadership which
will yield the desired project outcomes. The study highlights a significantly positive effect of innovation championing behaviour on project performance in line with the findings of Dulaimi et al. (2005), accounting for 16% of the variation in project performance. Similarly, Waldman and Atwater (1994) found that championing behaviour had a positive effect on project effectiveness in research and development project environment. Innovation championing behaviour provides an important avenue for enhancing project performance. By exhibiting innovation championing behaviour project managers can promote the advantages of an innovative idea, obtain approval and acquire the necessary resources from senior managers and facilitate the generation of ideas among team members. Besides, by demonstrating commitment and taking ownership of the process, project managers are likely to engender support and commitment among team members to make projects successful.

The findings also suggest that transformational leadership of middle managers exerts a positive and significant influence on climate for innovation, uniquely explaining 34% of the variance in climate for innovation in accord with findings by Sarros et al., (2008). Indeed, transformational leadership closely aligns with the determinants of innovation in the workplace such as encouragement, recognition and challenge (Gumusluoglu and Ilsev, 2009). The study further found that climate for innovation positively influenced project performance and explained 10% of the variance. This is consistent with previous research that has shown that resource availability and support from management help to create a climate for innovation which in turn induces improved performance (Scott and Bruce, 1994). In line with findings by Panuwatwanich et al. (2008) that leadership for innovation has an indirect effect on performance, the mediating roles of climate for innovation and championing behaviour in the relationship between transformational leadership and project performance were also assessed. Figure 5 below shows the relationships among the constructs.

The positive and significant relationship between transformational leadership and project performance as well as with innovation championing satisfy the first 2 conditions of mediation while that between innovation championing and project performance satisfies the third condition. Results from the regression analysis indicated that when controlling for innovation championing, the regression coefficient for transformational leadership reduced from $\beta = 0.328$ to $\beta = 0.227$, representing 31% drop. In addition, Sobel’s test confirmed the indirect effect of transformational leadership on project performance, as its positive relationship with championing behaviour was significant (Sobel’s test statistic=2.630, SE=0.024, $p<0.01$). This suggests that innovation championing partially mediates the relationship between transformational leadership and project performance. The positive relationship between transformational leadership and project performance as well as with climate for innovation satisfy the first 2 conditions of mediation while that between climate for innovation and project performance satisfies the third condition. Results from the regression analysis indicated that when controlling for climate for innovation, the regression coefficient for transformational leadership no longer had a significant relationship with project performance ($\beta = 0.210$, ns). The regression coefficient for transformational leadership reduced from $\beta = 0.328$ to $\beta = 0.210$, representing 36% reduction. Sobel’s test was further undertaken to check the indirect effect of transformational leadership. The result (Sobel’s test statistic=3.249, SE=0.030, $p<0.01$) confirmed the indirect effect of transformational leadership on project performance through its positive relationship with climate for innovation. Hence climate for innovation partially mediates the relationship between transformational leadership and project performance. Further details of the findings from the study are published in Paper 4-Appendix D.
Attempts to investigate the most influential dimension of transformational leadership found that articulating vision had the most positive and significant relationship with project performance. The study also found two components to the effectiveness of high performance expectation. Firstly, the expected goal needs to be communicated clearly and secondly, the leader needs to express confidence in the followers’ ability to achieve the goal. In a situation where the leader continually raises performance expectation levels without a corresponding expression of confidence in the followers’ ability to meet it, there could be negative consequences. The study also highlighted the significance of context in terms of the effectiveness of transformational leadership. Whereas individualised support could have a positive impact on performance, it is also possible that in a professional services environment where people value their independence (Keller, 1992), excess individualised support may be interpreted as a lack of trust in the employee’s ability to manage and deliver project objectives on their own. This could lead to a negative outcome. This may explain the non-significant relationship observed between individualised support and project performance observed as reported in Paper 3 – Appendix C.

The findings also suggested fostering the acceptance of group goals and obtaining the commitment of individuals had a positive relationship with project performance. As expected intellectual stimulation had a significantly positive relationship with project performance as challenging employees to look beyond the normal approach to delivering services impact on performance (Podsakoff et al., 1996). Further details on the direct relationship between the individual dimensions of transformational leadership and project performance are published in Paper 3 – Appendix C.
5.5 PHASE 4 – QUALITATIVE VALIDATION AND RESOURCE DEVELOPMENT

The key objective for this phase was qualitative validation of relationships among the constructs under study and developing transformational leadership development resource. This phase of the study also involved an initial assessment of the impact of the study on middle managers involved in the study. The primary research questions in this phase were; ‘how do middle managers practically exhibit transformational leadership behaviour in the workplace and how does that impact on the performance of their teams?’

5.5.1 QUALITATIVE VALIDATION

Findings from this phase confirmed the positive relationships observed in the earlier quantitative study in phase 3 and identified the individual dimensions responsible for the positive and significant relationships found. This study found that individualised support was the most influential dimension as it impacted positively on innovation championing behaviour, climate for innovation and project performance. Individualised support is discussed in detail below. Articulating vision and fostering the acceptance of group goals both positively influenced climate for innovation and project performance. High performance expectation, modelling behaviour and intellectual stimulation influenced innovation championing and project performance. The study also found that innovation championing influenced project performance. Climate for innovation influenced project performance directly and indirectly through innovation championing.

Modelling behaviour was seen to impact directly on project performance as team members sought to follow the example of the middle managers who demonstrated commitment to improving performance and shared their personal experiences. Where middle managers exhibited innovative behaviour they also indirectly impacted project performance by influencing innovation championing behaviour of PMs. High performance expectation by the middle manager motivated PMs to exhibit championing behaviour as they actively sought to develop solutions to meet the manager’s expectations. High performance expectation was also seen to elicit extra effort from team members and ultimately impacted project performance. Middle managers who challenged design solutions impacted project performance as both PMs and team members were encouraged to search for alternative solutions. Where middle managers articulated a clear vision for their teams and shared present as well as future opportunities with them, it had a settling effect on their teams and created a perception of a good environment to work and hence climate for innovation. Fostering the acceptance of group goals by putting the corporate goal in a local context and promoting team building activities influenced the climate for innovation and facilitated commitment to improving project performance. These relationships are diagrammatically represented in figure 7 below. Further details from the findings of this phase are detailed in Paper 5 - Appendix E and in Appendix H.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Figure 7: Relationship between individual dimensions of transformational leadership, innovation championing, climate for innovation and project performance

The following needs to be noted on any possible application of this diagram in other contexts:

- The dimension of transformational leadership are not arranged in any particular order;
- There is no significance to the length of the connections between the constructs;
- The evidence backing the above conclusion is detailed in Appendix G; and
- The relationships among the constructs hold in the context of this study. Care needs to be taken in applying it in other contexts given the contextual influences on innovation.

Individualised support was expressed in six primary ways listed and discussed in detail below with further details included in (Paper 5 – Appendix E):

- personal development
- respect for individual preferences
- providing challenging work
- regular interaction and feedback
- support for individuals
- recognition
Personal development
This was seen in the middle managers addressing the development needs of their staff. It was reflected in the manager making efforts to understand the strengths and weaknesses of the team and helping the team members to harness their strengths while developing other skills. The evidence suggested that middle managers allocated projects to individuals that enabled them to address their personal and professional development needs. They actively sought opportunities for their staff to work on specific projects with different clients and different parts of the business that could facilitate their development. In most cases the middle managers relied on their extensive networks across the company to find development opportunities for their teams. This was found to have a positive effect on their staff and elicited extra effort from them. This finding is consistent with suggestions by Bass and Riggio (2006) that a core element of transformational leadership is to enable followers to develop their capabilities and their own capacity to lead. According to Bass and Riggio (2006:55), ‘a major determinant factor of the effective performance of transformational leaders may be the extent to which the leaders are able to have a positive influence on followers’ development’. Sosik et al. (2004) also compared the effect of transformational leaders on their staff to that of mentoring and concluded they have similar impact particularly in providing career development guidance.

Respect for Individual Preferences
There was evidence to suggest that middle managers were conscious of and respected the individual preferences of their team members as evident in this statement by one of the Technical Directors, ‘I work with other people that if I probably showed them I expect a lot from them I will get a negative response so I show them I am very pleased when you do your best’ (FG1). Also commenting on intellectual stimulation the Technical Director stated that ‘there is a group of people who need to do what they have always done so to go and talk to them, why did you not have that great idea is not getting the best out of them. So what you want is an environment where those who can think outside the box are encouraged to do so and are appreciated and those who have the job to put these ideas into action, their work is appreciated as well’ (FG1).

It was observed that middle managers were able to work with the preferences of their team members due to their closeness to the delivery teams. This finding is consistent with Bass and Riggio’s (2006) suggestions that transformational leaders can have a greater impact by recognising, accepting and working with individual differences and preferences of their team members which in turn influences the nature of the relationship between the middle managers and their team members. In the same way, Scott and Bruce (1994) asserted that the quality of relationship that exists between employees and their managers impact on their innovativeness as it influences the subordinate’s perception of the work environment as supportive.

Challenging Work
The study found that middle managers’ effort in packaging work and allocating new challenging roles to individuals did have a positive impact on their work environment and their work performance. One Technical Director commented that ‘you will have noticed people have been given new roles, for example someone is made a team manager or another office, you can see that all of a sudden, he starts coming to the office at 7:30 in the morning and he is running around and he is working very hard and he is doing that because he is happy, he is happy and he is happy because he is stretched and he is challenged and he has challenges to face’ (FG2). Some of the team members were seen to make the extra effort in
undertaking research and finding solutions to challenging tasks or projects they had been allocated leading to increased championing behaviour and higher levels of performance. This could be explained by the fact that some people are motivated by the nature of the task or the role assigned to them in the workplace (Rollinson and Broadfield, 2002). Moreover, Keller (1992) suggested that in a professional services environment challenging work could stimulate professional development and higher levels of performance. Shalley and Gilson (2004) similarly submitted that when managers provide a challenging environment to employees it informs the perceptions of the work environment as one supportive of innovation which influence innovative behaviour in the workplace.

**Interaction and Feedback**
The study showed that team members whose managers were approachable and accessible had a good experience of the work environment as being supportive and influenced their tendency to adopt innovative solutions in project delivery. This could be seen in informal chats among the middle manager and the team members on social issues, sports and other activities unrelated to work. The need for this interaction was expressed by one interviewee, ‘managers need to have more of an office presence rather than management meetings and need to spend more time interacting with their teams to get to know them not just by filling in skill matrix but get to know their teams and their skills and what they are excellent in and what their limits are’ (PD1). Where there was more regular interaction, team members were able to bounce ideas off their managers and that was seen to encourage team members to make efforts to adopt more innovative approaches to delivering projects (Salter and Gann, 2003). The study further found that these regular interactions also afforded managers the opportunity to provide more regular feedback to their staff which was seen to have a positive impact on the staff as that put them in a position to understand where they were contributing to the expected level required of them and where they needed to do more. The findings further suggest that the more personal contact between middle manager and the delivery teams and resultant interaction tends to create an atmosphere of trust enabling the teams to explore and develop solutions as innovation champions.

**Support for Individuals**
There was evidence to suggest that where middle managers provided support and stood by staff in good and bad times, it created a sense of a good place to work. According to one of the interviewees it made the staff feel they were in the right place. Some of the interviewees stated that they had no problems at all approaching their managers with personal concerns as they were always understanding and supportive. The positive effect of this was re-echoed by one of the interviewees who commented that ‘when you treat your employee as a human and care about them in their personal life as well as their work life then they get attached to you and they want to stay with you and they want to do their best for you’ (CE2). It could therefore be seen that paying attention to the individual’s needs does not only influence the environment within which people operate but also their motivation to work harder on their projects. Providing support for individuals has been found to lead to higher levels of productivity (Podsakoff et al., 1996). Oldham and Cummings (1996) also found that employees were at their most creative when they operated in a supportive environment.

**Recognition**
The study found that when individuals were recognised for their contributions to project delivery, made to have a sense of belonging and seen as valued members of the team, their confidence and motivation were positively influenced to do more. In a particular instance one
of the interviewees undertook a project which won an award and this information was circulated to all members of the division. Asked how that impacted his work, he responded that made him feel good and wanted to do more. One interviewee commented that ‘he looks at the good things that you have done rather than the negatives. That motivates you to do better. There is always that you have not done, you cannot always get 100% so if you get 90% he focuses on the 90% instead of the 10%’ (CE4). Recognition has been previously identified as an important motivating factor in a number of studies, (Rollinson and Broadfield, 2002).

5.5.2 RESOURCE DEVELOPMENT

The study further identified the specific transformational leadership behaviours of middle managers and how it impacted on their team members by their own accounts. Table 5.2 below focuses on the transformational dimension of individualised support, how it was expressed, examples of such behaviour as identified by team members interviewed, the impact of such behaviour on the team members and relevant verbatim quotations captured during the interview. A similar compilation was undertaken for the other dimensions which have been included in Appendix H to provide a guide to middle managers on the sort of behaviours they could exhibit in the workplace to facilitate innovation and improve project performance. The verbatim quotes were obtained from the interviewees outlined in section 4.5.

Table 5-2: Table of transformational leadership dimensions, its expressions, impact and supporting quotes

<table>
<thead>
<tr>
<th>Transformational Leadership Dimension (Drivers)</th>
<th>How it was expressed (Objective)</th>
<th>Examples of such behaviour found</th>
<th>Impact</th>
<th>Quote where relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualised Support</td>
<td>Personal development</td>
<td>Allocating projects that will help staff develop other skills</td>
<td>More commitment and improved performance</td>
<td>‘feel good if you think you got an opportunity to develop and grow somehow it is good for you’ (Senior Engineer 1)</td>
</tr>
<tr>
<td></td>
<td>Working preferences</td>
<td>Respecting and working with individuals’ preferences</td>
<td>Perception of work environment is enhanced, people feel more relaxed, and output increased</td>
<td>‘I work with other people that if I probably showed them I expect a lot from them I will get a negative response so I show them I am very pleased when you do your best’ (Focus Group 1)</td>
</tr>
<tr>
<td></td>
<td>Challenging role</td>
<td>Assigning individuals new roles such as project lead</td>
<td>Increased motivation, more commitment and higher performance</td>
<td>‘you will have noticed people have been given new roles for example someone is made a team manager or another office, you can see that all of a sudden, he starts coming to the office at 7:30am in the morning and he is running around and he is working very hard and he is doing that because he is happy …’ (Focus Group 1)</td>
</tr>
<tr>
<td></td>
<td>Providing feedback</td>
<td>Having one to one discussions on the individual’s</td>
<td>Individuals become more aware of their</td>
<td>‘He shows that you can achieve that by commending you for what you have done.</td>
</tr>
</tbody>
</table>
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

<table>
<thead>
<tr>
<th>Support for Individuals</th>
<th>Performance and rewarding or critiquing where appropriate</th>
<th>Own contribution and have heightened motivation to do more</th>
<th>Personally he has commended me because my scheme won an award and he recommended and encouraged me and also asked me to do some more. (Engineer 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for Individuals</td>
<td>Paying attention to the individual’s needs and supporting them through changing personal circumstances</td>
<td>Influence the environment within which people operate and also their motivation to work harder at the job</td>
<td>'makes it a comfortable place to work and makes me feel like I am in the right place’ (Engineer 1)</td>
</tr>
<tr>
<td>Recognition</td>
<td>Acknowledging the contributions individuals make</td>
<td>Individuals feel they matter and are valued members of the team</td>
<td>'it elevates your confidence, you start acting with more confidence’ (Engineer 1)</td>
</tr>
<tr>
<td>Regular Interaction</td>
<td>Chatting with staff over issues outside work such as sports and weekend social activities</td>
<td>Creates a friendly atmosphere within which team members are able to exchange ideas. This ultimately influences performance</td>
<td>'managers need to have more of an office presence rather than management meetings and need to spend more time interacting with their teams to get to know them’ (Project Director 1)</td>
</tr>
</tbody>
</table>

5.5.3 Initial Assessment of Impact of Study
Impact of study as assessed during the interview revealed an increased awareness of the issues and factors that influence innovation. The following were the verbatim responses captured during the interview of the 4 middle managers among the 13 interviewees outlined under section 4.5 to the question; ‘reflecting on your own style of leadership, what are you going to be doing differently?’

The first middle manager was relatively new in the role and was in the process of building his project team based in different offices. He indicated the new information received had highlighted the need to instil innovativeness in his team’s delivery effort stating that ‘it probably highlighted to me some of the areas I need to improve on because I know I have had some of this discussion with my manager as well, but because of the way you have asked some of the questions, it has gotten me to view things differently … I would like to think that will help me to be able to focus and go off in a different direction and build the team focusing on some of the areas that I am lacking at the moment and I will need to talk to some of the team members a little bit more and try to instil it in them also’.

The second middle manager highlighted the need to communicate regularly with project teams as the key lesson learnt through the interaction when he stated ‘It is a good question in terms of some of the questions you have asked me, I have tried to be honest where we don’t do them. Perhaps the last thing you mentioned there about innovation, for example I don’t
think we share information across, for me it just highlighted to me that there are always areas that we need to improve on. I think it’s always comes to communication’.

One of the project directors also indicated he was going to modify his own approach to leading project teams ‘the interview has got me to think about my own style of managing project teams and have considered what I can do differently to enhance innovation’. Inspiring project teams was also identified by another interviewee who indicated that ‘what will be key for me is to inspire and then to influence my team’. The statements above reflect the impact of this project in raising awareness and prompting middle managers to reflect on their behaviour and identify areas for improvement.

5.6 PHASE 5 – EVALUATION OF LEADERSHIP DEVELOPMENT RESOURCE

This phase of the study involved middle managers evaluating the usefulness of the transformational leadership development resource prepared in phase 4 and the feedback the managers received from their team members on their transformational leadership behaviour discussed in section 4.6. The primary research question in this phase was; ‘how can transformational leadership be developed among middle managers?’

The findings from the study in this phase are summarised in table 5.3 below.

- The findings indicate that 7 of the 8 (87.5%) volunteers either agreed or strongly agreed the resource was clear. The only volunteer who disagreed made suggestions to improve the clarity some of which have been taken on board. These were to label the ‘dimensions of transformational leadership’ as ‘leadership drivers’ and ‘how it was expressed’ as ‘objectives’.

- 7 of the 8 (87.5%) volunteers agreed or strongly agreed the resource will be useful for developing innovation supporting behaviour among middle managers. Although one volunteer disagreed, it was on the basis that the respondent believed the resource will be useful to all staff irrespective of their level in the organisational hierarchy.

- All (100%) of the volunteers either agreed or strongly agreed that the feedback received from the team members were going to be useful to them in developing their transformational leadership behaviour.

- 7 of the 8 (87.5%) volunteers either agreed or strongly agreed they could see how the resource provided could help them to develop their leadership skills.

- 6 of the 8 (75%) volunteers either agreed or strongly agreed the resource would help develop an environment supportive of innovation.

- 6 of the 8 (75%) volunteers either agreed or strongly agreed the resource could help middle managers to develop an environment that will foster innovation championing behaviour.

- 6 of the 8 (75%) volunteers either agreed or strongly agreed the resource could help develop an environment supportive of innovation. Although one volunteer disagreed,
it was due to the loss of opportunity to apply the resource as the contract he was working on had come to an end.

- 5 of the 8 (62.5%) volunteers either agreed or strongly agreed the resource could help improve innovative performance in the company. Again one person disagreed in view of lack of opportunity while 2 neither agreed nor disagreed.

Table 5-3: Summary of feedback on leadership development resource

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree or disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The information on the use of this resource is clear</td>
<td>✓</td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤⬤</td>
<td>⬤⬤</td>
</tr>
<tr>
<td>I think the information will be useful to Team managers and Technical/Project Directors who lead project teams</td>
<td>✓ Will be useful to all staff</td>
<td></td>
<td></td>
<td>⬤⬤⬤</td>
<td>⬤⬤⬤⬤</td>
</tr>
<tr>
<td>I find the feedback received useful</td>
<td></td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤⬤</td>
<td>⬤⬤</td>
</tr>
<tr>
<td>I can see how the resource provided will help me improve my leadership style</td>
<td></td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤⬤</td>
<td>⬤⬤</td>
</tr>
<tr>
<td>The information will help me create the right environment to promote innovation in the company</td>
<td></td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>I think the information will help encourage our project teams to adopt more innovative approaches to project delivery</td>
<td></td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>I think this information will improve innovative performance in the company</td>
<td></td>
<td></td>
<td></td>
<td>⬤⬤⬤⬤</td>
<td>⬤</td>
</tr>
</tbody>
</table>

Please provide any other comment that will help make this work more useful to the company

Having digested the table, I feel it is a very concise method to document how to change behaviours in the company to inspire innovation and improved working practices. I feel it is simple and easily understood which will enable all colleagues to adopt it in the working day. The table columns are well set out so it takes you from left to right in steps to show you how the behaviour can be implemented and what the effects will be.

I could envisage this simple table becoming standard tool by which Mouchel could influence its employees to improve their behaviours and have a positive impact on colleagues.

Good Work!!
MM1
I think this project and the outcomes of it will be invaluable to the development of ‘managers’ into leaders. This will hopefully be the catalyst to developing a succession plan for future leaders, also.

Glad I took part.

MM2

Alignment and integration with other tools/programmes already in place so that it doesn’t become ‘yet another management toolkit’; Would be useful to get more intrinsic/applied theories into the Managing the Mouchel Way programme. I can see how this would fit with the mentoring/coaching style promoted in Mouchel and the Career Builder Model.

MM3

I feel it is key that managers use this style of guidance. It’s clear and helps easily identify key areas of attention with examples on how to overcome them.

Good work JK

MM4

Thank you for the information and the feedback from the team members. It is valuable and should help me and team managers and team leaders going forward.

Despite all the above, I believe that most employees do not always tend to appreciate what innovation is and worst still, when innovation actually happens on their projects. I believe that will only change with taking some of the issues raised above on board but more importantly, the company adopting and fostering the issue of innovation from top down, something which Grant Rumbles (Chief Executive of the sponsor company) has already stressed during his messages on MPortal and the recent presentations/tour of offices.

MM6

From above, it could be seen that the resource developed and the feedback received from their staff could be very useful for developing transformational behaviour and consequently improve climate for innovation, innovation championing and project performance. Similar findings were made by Kelloway et al. (2000) who in a study involving 40 leaders and 180 subordinates found both training and feedback equally enhanced subordinates’ perceptions of the leaders’ transformational leadership behaviour. Some of the comments received for improving the leadership development resource related to how it could be amended to make it easier to be understood and applied. Others related to the need to incorporate the resource into existing tools for leadership development in the sponsor company as detailed in table 5.3.

5.7 IMPLICATIONS FOR SPONSOR

The project has highlighted the important role middle managers have in promoting innovation and project performance. Ultimately, this impacts on organisational performance. It has been useful in raising awareness and understanding of the importance and role of innovation in the sponsoring organisation. Middle managers are now more aware of the impact of their workplace behaviour on the performance of their staff. They are more conscious of the need
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

to create the right environment in the workplace that will encourage their team members to adopt more innovative approaches to delivering projects.

Practical guidance has been provided to enable middle managers develop transformational leadership behaviour. These include self-assessment and team-assessment tools which will provide middle managers the opportunity to receive feedback from their team members as set out in Appendices F&G. For some middle managers, this tool has formed part of the formal appraisal process and the feedback obtained has been used to agree on development objectives with senior managers. This could be extended to other middle managers.

There is a heightened awareness of the need for project team members and particularly project managers to exhibit innovation championing behaviour and actively seek better approaches, better processes, new technology and new products in delivering their projects. The innovation championing assessment tool (Appendix F) can also be used in a similar fashion as the middle management tool to assist with the development of innovation championing behaviour. Through various dissemination activities, project teams have developed a better understanding of innovation acknowledging that it does not have to be a separate activity but one that can and should be pursued in the course of delivering projects. Moreover, innovative activities do not necessarily have to add to the cost of projects but could involve adopting new processes that could actually reduce the cost of delivery and improve client satisfaction levels. This is particularly important given increasing client demands and competition which has driven down profit margins.

The study has provided practical tools (Appendix F) for the sponsoring company to be able to monitor the organisational climate for innovation and to be able to take the necessary measures to ensure that the conditions are right to foster innovation. The project performance tool (Appendix F) also provides a means for evaluating project performance which can be incorporated into the project review process. The tool is multidimensional in nature and captures the interest of different project stakeholders and includes measures on innovation.

The study compliments a recently completed EngD study on learning organisations aimed at helping the organisation to learn how to learn in order to facilitate the capturing and sharing of the knowledge and ideas from innovative projects across the company. It is worth noting that the sponsoring company’s continued support for this project in spite of the harsh economic circumstances is a testament to the anticipated benefit of the project. The expectations of the benefits from the project to the sponsor company is consistent with the result of previous studies which suggests that increasing awareness of issues and stimulating employees to think differently about those issues have the ability to improve their innovative behaviours (De Jong and Den Hartog, 2007).

The sponsor company needs to acknowledge and recognise the contribution of middle managers in promoting innovation and improving project performance. They need to be encouraged to cultivate transformational leadership behaviour which could inspire project teams to look beyond personal interests and actively participate in the organisation’s efforts to improve innovation and performance. Middle managers need to show more individualised support behaviour by providing career and personal development opportunities for employees and spending time interacting with them.
In addition, they need to provide regular feedback to project teams, acknowledge and recognise them when they have done a good job in order to boost their morale. Moreover, middle managers need to treat their team members as individuals taking their personal preferences into consideration in dealing with them. These could influence the work climate as one which is supportive and elicit extra effort from them to improve performance. Furthermore, they need to draw more on their experience in challenging solutions developed by their project teams in order to encourage them to think differently about old problems and develop innovative solutions to improve project performance.

Innovation championing is currently a role assigned to a few selected people across the company. The sponsor company should encourage all project managers and team members to adopt innovation championing behaviour. The pursuit of innovative approaches needs to become an integral part of the day-to-day activities associated with project delivery. Middle managers need to create the right environment that will engender this kind of behaviour among project team members. Middle managers need to inform and model the type of innovative behaviour expected from their team members to improve performance.

**5.8 IMPLICATIONS FOR INDUSTRY**

Although it is recognised that innovation is an important means of improving performance, the review of the literature on innovation in the construction industry reveals that the industry is conservative and risk averse compared to others (Reichstein et al. 2011). A number of changes in the business environment such as economic downturn, health and safety regulations and environmental concerns have compelled construction firms to engage in innovation. However, research shows there is little practical help for improving innovation performance. This could be due to limited research on innovation in the construction industry (Gann and Salter, 2000; Shaw, 2011).

To improve innovation performance, firms in the industry need to understand the processes associated with innovation within their context. They also need to be in the position to identify the key factors that influence innovation and how they can be combined to overcome the barriers to innovation and enhance performance. Firms that wish to improve innovative performance need to create the enabling environment that will motivate their project delivery teams to explore and develop innovative solutions, capture and share new ideas to facilitate learning. The need for organisations to create a climate for innovation is further underscored by the fact that the processes and procedures associated with the successful management of projects tend to stifle innovation (Keegan and Turner, 2002). Additionally, in project-based environments, individuals have to be accountable for the time spent in the office with a system of booking every minute to a specific project. In such an environment, any activity which has an uncertain outcome is not likely to be encouraged.

The feedback from this study has revealed that middle managers who have direct responsibility for managing the project teams including project managers have an important role in creating the right environment that encourages innovation championing behaviour from key project team members such as project managers to enhance project performance. For that reason, it is important that organisations make efforts to cultivate transformational leadership among middle management in order to foster innovation and improve performance. In the current difficult economic environment where most companies are shedding jobs, there
is a tendency for middle managers to bear a disproportionate part of job losses (Floyd and Wooldridge, 1994). However, as this study shows, middle managers play a significant role in meeting organisational performance improvement goals. The loss of middle managers may therefore result in the loss of important knowledge and skill which could otherwise be harnessed for improved innovation and project performance.

Management could seek to facilitate innovation by making the necessary resources such as funds, materials, information and specialist personnel available to support the innovation. A sustained support for innovation could lead to enhanced organisational effectiveness associated with long-term improved performance. It is therefore important that innovation is encouraged as part of the everyday practice in the workplace and middle managers have an important role in making this possible. Finally, the output from this study provides a practical guidance and a suitable starting point for other construction professional firms that wish to improve innovation and project performance.

5.9 SUMMARY

This chapter has presented the key findings from the 5 phases of the study. Phase 1 literature review identified leadership, climate for innovation and innovation championing behaviour as the primary internal influencers of innovation. It was found that the sponsor company made efforts to improve leadership behaviour in order to improve performance in general but not necessarily for enhanced innovation. Findings from the second phase indicated that innovation supporting behaviour exhibited by middle managers influenced the work climate positively and engendered innovation championing behaviour from project managers. The third phase examined the relationship among transformational leadership of middle managers, climate for innovation, innovation championing and project performance. It was found that transformational leadership behaviour of middle managers directly impacted project performance as well as indirectly through climate for innovation and innovation championing. Findings from the third phase qualitatively validated the relationships among the key constructs hypothesised and tested in phase 3. Individualised support was found to be the most influential dimension at it positively impacted on all the other three constructs. The phase also identified how transformational leadership is practically exhibited in the workplace and how it impacts on members of project teams. This was developed into a leadership development resource that can be used to help middle managers improve their transformational leadership behaviour. Phase 5 involved an evaluation of the resource developed in phase 4. All 8 volunteering middle managers agreed the resource will be useful to middle managers and other staff in developing the right behaviours in the workplace to improve innovation and project performance.
6 CONCLUSIONS

6.1 INTRODUCTION

This final chapter outlines how the research aim and objectives have been met by the various research activities carried out and highlights the key contributions to knowledge and practice. It further presents a critical evaluation of the research and makes recommendations for future research, the sponsor company and industry.

6.2 REALISATION OF AIM AND OBJECTIVES

The project was intended to improve middle management leadership behaviour to facilitate innovation and improve project performance in a construction professional services environment. The project focused on reviewing literature on innovation, diagnosing current practices within the sponsor organisation, identifying and validating the relationship among the factors that influence innovation, developing a resource for improving leadership and evaluating the usefulness of the resource developed. Table 6.1 below presents a summary of how the research satisfied the aim and objectives set out in section 1.4 of this thesis.

Table 6-1: Primary objectives, research questions, key findings and evidence

<table>
<thead>
<tr>
<th>Primary Objectives</th>
<th>Research Question</th>
<th>Findings</th>
<th>Evidence</th>
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| 1. To critically review extant literature on innovation in construction professional services firms and current practices in the sponsor company to identify opportunities for improvement. | What is the state of innovation in the construction industry and the sponsor company and what are the key enablers and barriers? | • The construction industry has been subjected to a lot of criticism for delivering products and services that fail to meet clients’ expectations.  
• Innovation provides an avenue for improving performance.  
• The review identified key internal influencers of innovation as leadership, climate for innovation and innovation championing behaviour.  
• A key challenge for construction firms including the sponsor company is creating the enabling environment that promotes innovative behaviour among project teams.  
• Leadership behaviour has a significant role to play in creating this kind of environment.  
• Innovation research has however tended to focus on senior managers and less so on middle managers who directly manage project teams.  
• Hence there is a dearth of literature on the role of middle managers in influencing innovation and | ✅  ✅ |


| 2. Explore the processes by which middle managers influence key internal factors to facilitate innovation and ultimately impact project performance in the sponsor company. | What is the role of middle managers in facilitating innovation in construction professional services firms? | • Middle managers’ innovation supporting behaviour impacts innovation by influencing the climate for innovation and the innovation championing behaviour of project managers.  
• The primary innovation supporting behaviour found to impact on innovation were support for innovation, resource supply, intellectual stimulation, autonomy and freedom.  
• Middle managers draw on their unique position and close contact with clients and project teams to influence innovation.  
• Middle managers also draw on their personal experience and contacts across the company to facilitate and promote innovation.  
• The role of middle managers in improving performance needs more recognition.  
• Middle managers need to be more aware of the impact of their workplace behaviour on the performance of their teams.  
• Middle managers need to be supported to develop innovation supporting behaviour to improve innovativeness and project performance.  
• The study has introduced a new dimension in the study of leadership by focusing on middle managers and examining the process by which they influence innovation.  
• Middle managers could impact positively on organisational performance contrary to previous negative reporting on this important constituency. |

| 3. Quantitative validation of the hypothesised relationship among transformational leadership, climate for innovation, innovation championing and | What is the nature of the relationship among transformational leadership of middle managers, climate for innovation and innovation? | • The study demonstrates that the bypass effect of leadership holds in the project environment as transformational leadership of middle managers had a direct effect on project performance, bypassing the influence of project managers.  
• In addition the mediating influence of climate for innovation and championing behaviour supports the cascading effect of transformational leadership. |
## Conclusions

| Project performance. | Championing and how do they combine to impact innovativeness and project performance? | Leadership in project settings. | • Middle managers need to influence project performance by modelling the kind of innovative behaviour expected in the workplace.  
• Middle managers need to take steps to support innovation and provide the necessary resources including time to create the right climate that could lead to improved project performance. |
|---|---|---|---|
| 4. Qualitative validation of relationship among the constructs under study and development of transformational leadership development resource. | How do middle managers practically exhibit transformational leadership behaviour in the workplace and how does that impact on the performance of their teams? | • The study identified specific behaviours practically exhibited in the workplace under each dimension of the transformational leadership and how that impacts on their team members.  
• A resource to help middle managers build up transformational leadership was developed in the process.  
• This study found that individualised support was the most influential dimension impacting on innovation championing behaviour, climate for innovation and project performance.  
• Middle managers could therefore focus on developing individualised consideration to enhance performance  
• Individualised consideration was expressed in;  
  - supporting personal development of staff  
  - respecting the preferences of individuals  
  - providing challenging work  
  - interacting with and providing feedback to employees  
  - support for individuals  
  - recognising the contribution of employees  
• The study in this phase contributes to theory as it introduces a new approach to the study of transformational leadership by qualitatively investigating the impact of the individual dimensions of transformational leadership on climate for innovation, innovation championing and project performance. | ✓ |
| 5. Disseminate the transformational leadership development resource prepared in phase 4 and obtain feedback | How can transformational leadership be practically developed among middle managers? | Team members’ qualitative and quantitative feedback were found to be a useful means of helping middle managers identify their leadership development needs.  
• Feedback provides an important avenue for leadership development.  
• Middle managers could obtain regular feedback from team members to | ✓ |
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

6.3 CONTRIBUTION TO KNOWLEDGE AND PRACTICE

Whereas several empirical studies have confirmed the significant role leadership play in fostering innovation, little attention has been paid to the leadership role of middle managers in the construction professional services environment. Huy (2001) noted that the role of middle managers in effecting changes in organisations to improve performance has largely been underestimated and unnoticed. There is therefore a dearth of literature on middle managers in the construction industry and this study contributes to filling that gap.

This study identified that innovation supporting leadership behaviour exhibited by middle managers was instrumental in creating the right environment that encouraged the innovation championing behaviour of the project managers and ultimately the innovation outcomes. The study revealed that the different dimensions of transformational leadership exhibited by middle managers impacted performance in different ways. This is an area that has not been previously explored qualitatively. For example, this study found that individualised consideration impacted on employees’ perception of the work climate, their innovation championing behaviour and ultimately their work performance. The underlining mechanism for the effect of individualised consideration was the motivating effect on people who had their needs and concerns addressed. The study has also identified how transformational leadership can practically be exhibited in the workplace by middle managers in their day to day work to enhance innovation championing and climate for innovation which ultimately influences project performance.

While it is considered that project managers’ innovation championing behaviour impacts project performance, not much is known about what factors influence innovation championing behaviour. This study has identified transformational leadership behaviour of middle managers as one key factor having a significantly positive impact on the innovation championing behaviour of project managers. The study has demonstrated that the bypass effect of transformational leadership is applicable in the project environment as transformational leadership of middle managers had a direct effect on project performance, bypassing the influence of project managers. In addition, the mediating influence of championing behaviour and climate for innovation between transformational leadership of middle managers and project performance also supports the cascading effect of transformational leadership in project settings. The RE is not aware of any study that has explored the bypass and cascading effect of transformational leadership in the project environment. The study has identified how specific dimensions within the transformational leadership construct influence innovation in the construction professional services context.
Beyond that the study has highlighted the particular actions which constituted each dimension and how they influenced the performance of project team members. Whereas a number of researchers have written off middle managers and downplayed their role in improving performance in organisations (Rouleau, 2005), this study has highlighted the important role they play in enabling innovation. The study also goes further to explore in more detail how middle managers influence innovation and project performance. Unlike top managers, the middle manager occupies a unique position in organisations by virtue of their closeness to both clients and staff. By this closeness, middle managers are able to provide a safe psychological environment or work climate for members of their team trying new approaches and developing new solutions to existing problems. The study further suggests that the more personal contacts between the middle manager and project managers and consequent interaction tends to create an atmosphere of trust where project managers are able to explore and develop solutions as innovation champions. This close association also provides opportunities for middle managers to contribute to and support the development of solutions drawing from their own experiences.

There is empirical evidence to suggest that on the average, middle managers tend to stay longer in organisations than top managers (Huy, 2001), and develop a sound knowledge of the business in the process which they employ in facilitating innovation. This could happen through their challenge of design solutions or facilitating innovations drawing on their extensive network across the organisation built over the years. Whereas middle managers are thought to be stuck between the often competing expectations of top management and subordinates (Dopson and Stewart, 1993; Styhre and Josephson, 2006), this study considers that they occupy a unique position that provides them an opportunity to influence the work environment in a more positive way. The study therefore provides a better understanding of how middle managers could practically influence innovation and performance in the project environment. Finally, the study provides a model that can be tested, refined and applied in the wider construction industry context to improve performance through innovation.

6.4 CRITICAL EVALUATION OF RESEARCH

As mentioned in section 1.5, the project aimed at improving middle managerial leadership behaviour to facilitate innovation and improve project performance. A number of challenges were encountered in the course of the study, the most significant being the frequent organisational changes in the sponsor company in response to the changing economic circumstances. These changes resulted in the RE having to change three Industrial Supervisors in the four year period. Whereas these did not impact very much on the overall aim of the project, it resulted in delays while waiting for a new supervisor to be appointed. This was necessary to ensure the project still had higher level managerial support. The numerous organisational changes also impacted on the ability of the RE to implement the interventions developed and to make an objective assessment of the impact of the project on the sponsor organisation. For that reason the study relied on subjective assessment of the project impact. The frequent organisational changes also impacted on the number of volunteers who could be engaged in this study. The study involved some people known to the RE for data, particularly in assessing the project’s impact on the sponsor company. However, the same interview protocol was used throughout the data collection process and all data obtained were checked against others in the data triangulation process to minimise bias. The
RE also had to change one Academic Supervisor in the course of the study due to resignation although that did not have a significant impact on the progress of the study. The study has been based solely on the sponsor company which statistically cannot be representative of all construction professional services firms in the construction industry although the size and diversity of the company mitigates this limitation. Interviews formed an important source of evidence in phases 2 and 4 of the study as they helped to focus directly on the issues under investigation. Interviews, however, cannot easily be replicated. Moreover, the PMs self-reporting on their role in the innovations studied in the Phase 2 case study could have introduced bias. This is due to the tendency for the interviewees to overstate their own involvement while downplaying the contribution of others. It was nonetheless considered that since the focus of the study was on middle managers and not on the PMs, this would have had limited impact on the result of the study. In addition, other sources of data were employed in the study to ensure data triangulation.

The cross-sectional nature of the study implies that no definitive causal inferences can be drawn among the constructs under study. For example, although the findings suggest that transformational leadership had a positive effect on climate for innovation, it is also possible that the nature of the work environment could have influenced the leadership behaviour of the middle managers. This was mitigated by undertaking theoretical examination of the constructs in order to draw conclusions on the nature and direction of the relationships among them (García-Morales et al., 2008).

In the Phase 3 quantitative study, the PMs provided responses on their own innovation championing behaviour, project performance, climate for innovation and transformational leadership of middle managers, making the data liable to common source bias. This is however not considered a major issue as PMs reported on middle managers’ leadership style and not their own behaviour. Besides, they reported on project performance and not their personal performance and are therefore likely to be more objective under such circumstances. Data obtained from surveys could also be affected by the characteristics of the respondents which may vary from one to another. It also relies on respondents to be accurate without any opportunity for cross examination. This was partly mitigated by incorporating control variables in the data collection and analysis.

### 6.5 RECOMMENDATIONS

#### 6.5.1 RECOMMENDATIONS FOR FURTHER RESEARCH

- In view of the limitations inherent in this project it is recommended that future research could focus on an industry wide survey to confirm the generalisability of the relationships among the factors identified in this study of a single but large project organisation.

- Other research teams could be encouraged to test the proposed model linking transformational leadership of middle managers to climate for innovation, innovation championing and project performance in different organisational contexts.

- Future studies could also adopt longitudinal research design and practically implement interventions focusing on developing transformational leadership in middle managers and studying the impact on perceptions of climate for innovation, innovation
championing and project performance over time to confirm the causality among the constructs.

- This study has introduced a new approach to the study of the effect of transformational leadership by qualitatively examining the impact of individual dimensions and how they influence climate for innovation, innovation championing and project performance. The impact of individual dimensions on project performance was also quantitatively analysed. Future studies could adopt quantitative approach in investigating the effect of individual dimensions of transformational leadership on climate for innovation and innovation championing behaviour.

- Findings from this study also present an opportunity for further research into different organisations across the construction sector in order to identify how middle managers influence innovations in the different settings.

- In addition, research into personal and contextual characteristics that moderate the effect of middle managers’ transformational leadership behaviour could provide more insight into factors that enhance middle managers’ innovation supporting behaviour.

- Future studies should be based on a larger sample and could also include impact of key external factors such as clients, technological changes, regulations and other external influences identified in this study.

- Furthermore, future studies could obtain data on transformational leadership, innovation championing and project performance from different sources to control common source bias or include measures of social desirability to check the bias. Team members could provide feedback on project managers’ championing behaviour while project managers in turn provide feedback on middle management leadership behaviour. Project performance could then be objectively measured over time by incorporating the views of clients and possibly users of projects.

- Finally, it is possible that the results for this study could vary for different typologies of innovation. For example, leadership behaviour required to successfully deliver a radical innovation may vary from that required for incremental innovation. Future studies could therefore examine whether the impact of the middle managerial behaviour will vary with the type of innovation being implemented.

6.5.2 RECOMMENDATIONS FOR SPONSOR COMPANY

- There is need for a greater recognition of the role of middle managers in improving performance in the construction industry in view of the unique position they occupy. Being a link between the strategic senior managers and the operational delivery teams, their role in facilitating innovation is important both in bottom up and top down innovation.

- Middle managers should therefore be helped to develop transformational leadership behaviour and be more aware of the impact of their own behaviour on the innovative performance of their staff.
• Project teams should be educated to have a better understanding of what constitutes innovation and be able to capture them where they have occurred and share the knowledge to improve performance of the company.

• Innovation should be promoted in such a way that project teams incorporate efforts to constantly search for new and better ways of delivering projects whether by adopting new designs, processes or materials for improved project or service delivery.

• The need for project teams to account for their time limits the opportunities for them to research into options in delivering projects. It is important that adequate time and space are provided for project teams to enable them explore and develop innovative solutions to improve project performance.

• In the current economic environment, formal training may not offer the most cost effective training solution. Feedback from team members on their leadership behaviour could be equally effective in improving leadership style.

6.5.3 **RECOMMENDATIONS FOR INDUSTRY**

• Construction professional services firms need to support middle managers in their bid to provide the right environment that will encourage project teams and particularly project managers to seek and adopt innovative solutions without being too concerned about recriminations should the unexpected happen.

• They should be helped to identify their leadership needs and resources made available to them to address those needs. This could be done through the formal appraisal process.

• The measurement of project performance in the industry has largely been on the basis of the traditional measures of quality, programme and budget. Project performance measures could adopt the multi-dimensional approach taking into consideration both short and long-term measures including innovation. This could also be incorporated in standard project review processes which most organisations employ.

• Most businesses in the industry, like the sponsor company, are organised around business units with separate profit and loss centres. The need for these businesses to meet profit targets implies that should considerable resources be expended in pursuing an innovation which could be beneficial to the whole company; the division could be at risk of not meeting its commercial targets. It is therefore important for companies to make resources available at the local level to ease this burden and facilitate innovations.

• Innovation needs to be included in the corporate strategy and practically supported from the top hierarchies of organisations beyond just stating it in the set of values as important.
• Training providers in the industry need to take note of the positive impact transformational leadership could have in the project environment and develop training packages that will help them identify their training needs and cultivate transformational leadership behaviours.

• Finally, policy makers in the industry need to give greater attention to incorporating transformational leadership behaviours into the essential set of behavioural competencies managers in the construction industry need to develop beyond their technical skills.

6.6 SUMMARY

This project was aimed at improving middle managers’ leadership behaviour to facilitate innovation and improve project performance. To achieve the above aim the RE carried out:

• a review of existing literature and practices
• an exploratory case study to identify how middle managers influenced innovation
• quantitative validation of hypothesised relationships among the key influencers
• quantitative validation of the relationships and preparation of leadership development resource and
• evaluation of the usefulness of the leadership development resource.

Whereas the role middle of managers have mostly been down-played, findings from this study point to a more positive role for middle managers in construction professional services environment. The study suggests the unique position of middle managers between the strategic and operational levels of the organisational structure and provides them the opportunity to influence both bottom up and top down innovation. The findings further suggest that middle management transformational leadership behaviour influences climate for innovation, innovation championing behaviour and ultimately, project performance. Findings from the study have implications for both the sponsor organisation and the industry, particularly in relation to the role of middle managers in enhancing organisational performance. The study contributes towards understanding the impact of individual dimensions of transformational leadership behaviour in facilitating innovation and improving project performance. It further identifies the specific behaviours that will comprise transformational leadership in the construction professional services context and how they can be practically exhibited in the workplace. The study recommends that construction firms provide support to middle managers to enable them develop transformational leadership. In addition, it recommends that future studies should adopt a longitudinal research strategy and involve more organisations in the industry in order to validate the findings from this study.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


APPENDIX A PAPER 1

Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Identifying the factors that influence innovation championing behaviour in construction support services organisations: A review of the role of middle management

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Abstract

Innovation has been considered an important means by which organisations seek to achieve advantage over competition and for improving performance in today's highly competitive business environment. A number of factors have been identified as influencing innovation in project-based construction organisations. These include internal factors such as organisational culture, climate, leadership style and exogenous influences such as clients. Although research recognises how important it is for senior management to create an environment conducive to innovation, there is little understanding of how these internal and external factors interact to impact on innovativeness. This paper reviews relevant literature on innovation, organisational culture, organisational climate and leadership style while examining how they combine with external factors to promote innovation in construction support services organisations. The study particularly focuses on the role of key organisational actors with responsibility for developing a climate to facilitate innovation at the divisional or business unit level. The review reveals that efforts to develop a climate that promotes innovation championing behaviour among project managers will be influenced by the organisational culture, leadership style and the extent of external influence on project delivery. The study further reveals the importance of middle managers in promoting innovation. A methodology is presented for examining the role of this key managerial constituency and the ways in which they can enable or impede the innovation process.

Keywords: construction support services, innovation championing, innovation climate, middle management, organisational culture

Introduction

Innovation has become an important source of competitive advantage as it provides an avenue by which organisations can differentiate their products or services (Dulaimi, Nepal and Park, 2005). While innovation in the construction industry has mainly been driven by developing solutions to problems encountered on site, others have been motivated by the aspiration to improve performance, (Dulaimi et al, 2005). Profit maximisation has also been identified as an important driving force behind efforts at innovation by construction firms (Lim and Ofori, 2007). A common criticism of the construction industry has been that, firms often deliver products and services which fall short in quality and fail to meet client expectation of price
certainty and assured delivery (Lu and Sexton, 2006). This has prompted many calls for performance improvement in the industry (Latham, 1994; Egan, 1998). Innovation can be an important means of improving performance across the industry. In a professional services environment, successfully creating and managing knowledge provides an important means of creating value although this value creation has been called into question by clients (Lu and Sexton, 2006).

Calls have also been made for enthusiastic and committed individuals to spearhead innovation in the construction industry referred to as ‘champions’ (Nam and Tatum, 1997; Dulaimi et al, 2005). In the project environment Dulaimi et al (2005) among others have identified the project manager as key in this regard, suggesting that they should exhibit certain behaviours in order to positively influence project performance. A number of individual and situational factors have been identified as influencing the effectiveness of championing behaviour and therefore the resultant direct or indirect impact on the level of innovation and project performance. Significant among them is the ‘climate for innovation’ which is manifested in support for innovation (Dulaimi et al, 2005).

Based on a critical literature synthesis, this paper proposes a model within which leadership style, organisational culture and other exogenous influences combine to create a ‘climate for innovation’ that impacts on the innovation championing behaviour of the project managers. This study will contribute to on-going debate about the nature of the relationship among these key factors identified above and their impact on innovation and project performance in UK construction support services environment. Due to space limitation, the exogenous influences on innovation will be discussed in greater detail in a future paper.

**Conceptual Model**

Following literature review aimed at exploring the factors that promote successful innovation in a project setting; leadership, organisational culture, organisational climate and other external factors including the client were identified as key, (Jung et al, 2003, 2008; Ahmed, 1998; Ivory, 2005). Whereas a number of studies have investigated the relationship between organisational culture and innovation (e.g. Hartmann, 2006), leadership and innovation (e.g. Jung, Wu & Chow, 2003, 2008) and client and innovation (e.g. Ivory, 2005), there is little understanding of how these factors combine to impact on innovation in the context of UK based construction support services organisations. Also, most organisational studies examining leadership style have tended to focus on senior managers (e.g. Sarros et al, 2008; Jung et al, 2003, 2008) with little attention paid to middle management. Moreover, whereas these constructs are known to influence innovation in organisations, not much is known about how this actually takes place.

This study will seek to fill these gaps by proposing a model that integrates the leadership, organisational culture and exogenous influences on innovation constructs, investigating how they impact on ‘climate for innovation’ and hence the innovation championing of project managers and project performance as depicted in Figure 1 below. The model proposes that innovation is a product of the transformational leadership style of middle managers, the organisational culture for innovation and exogenous influence on innovation. These influences combine to create a ‘climate for innovation’ within which the project manager operates. The climate in turn influences the championing behaviour of project managers and consequently their tendency to adopt innovative approaches to design and project delivery and hence project performance. The model also proposes that these constructs individually
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

impacts on championing behaviour directly. The model further suggests that leadership will influence innovation championing through the organisational culture and through the relationship that is built with external stakeholders of projects. It is also suggested that a direct relationship exists between championing behaviour and project performance. The sections that follow provide details on each of the constructs incorporated in the model, outline the justifications for their inclusion and the suggested relationships among the constructs.

Figure 1: Conceptual Model

**Climate for Innovation**

Climate has been defined as a characteristic ethos or atmosphere within an organisation at a given point in time which is reflected in the way the members perceive, experience and react to the organisational context (Rollinson and Broadfield 2002: 597). Human cognition is said to play an intervening role between environmental stimuli and how people respond to the stimuli. This cognition is the psychological meaning that individuals associate with the environment. Within the work environment, these meanings that employees ascribe to their work environment such as jobs, co-workers, leaders among others is described as psychological climate (James et al 2008, Kissi et al, 2009). Climate in organisational studies is essential because employees draw conclusions regarding what is important to management from what they observe rather than what is said and take steps to align their own priorities with what they perceive to be important to the organisation. It could therefore be said that these perceptions of priorities serve the purpose of providing direction and orientation for employees in deciding where to channel their energies, abilities and efforts (Schneider et al, 1994) and determine their motivation, attitudes and behaviour, (Kozlowski and Hults, 1987). Moreover, perceptions of the work environment impact on the creativity of individuals in the organisation and ultimately on innovation (Amabile et al, 1996).

Innovation generally involves a social psychological process as it is the product of social relationships and complex system of interaction (Lu and Sexton, 2006). This interaction mainly takes place among the members of the project team including the client and the project manager and can manifest itself in a form ‘climate’ (Panutwanich et al, 2008). Consistent with Schneider and Reichers’ (1983) recommendation that for climate studies to deliver meaningful and useful results they should be facet specific, this study will focus on ‘climate for innovation’ within the ‘design’ environment as opposed to the construction phase where most innovation studies in the industry have focused. In this paper ‘climate for innovation’ incorporates leadership for innovation, organisational culture for innovation and the external influences on innovation as elaborated below.
Organisational Culture for Innovation

Organisational culture has been defined in many ways by different researchers. This study defines culture as the fundamental values and beliefs held and shared by members of an organisation that provide boundaries for choices, clarifies expectations and provide a platform for collaboration (Kissi et al., 2009: 78). The role of culture in organisational performance has been well documented (e.g. Sarros et al., 2008). The competing values framework developed by Quinn and Rohrbaugh (1983) has been a very important tool for assessing the effectiveness of organisations on many dimensions including innovation and flexibility. The model formed the basis for Cameron and Quinn (1999) typology of culture which included; clan, hierarchy, adhocracy and market cultures. According to the authors the adhocracy culture stresses external positioning combined with a high degree of flexibility and presents a dynamic, highly creative and entrepreneurial environment in which individual initiative and risk taking is highly recommended. In such an environment, visionary leadership combined with innovation and risk taking is desirable. These organisations are held together by a commitment to experimentation and innovation while success is measured by the production of unique, innovative products and services, (Cameron and Quinn, 1999).

In a study of 181 architectural and engineering design professionals, Panutwanich et al (2008) found that organisational culture mediated between leadership for innovation and team climate for innovation and concluded that without a culture of innovation associated with support and encouragement, innovative ideas are not likely to yield the desired outcomes and realise its full potential. It is therefore important that organisations do not only incorporate innovation in their values and policy statements but also take steps to create a culture for innovation that can be perceived and experienced by the members of the organisation. Sarros et al (2008) supported this view, suggesting that a competitive, performance-oriented organisational culture has a positive relation with climate for innovation. The study also found that organisational culture mediates the relationship between transformational leadership style and organisational climate for innovation further buttressing the importance of culture is in promoting innovation. In that direction this study would expect that adhocracy culture which is associated with flexibility and risk taking will play a very important role in promoting innovation championing, innovative approaches to developing projects and ultimately project performance and that effort to develop an innovative climate will be difficult if not impossible in a situation where the underlying culture is unsupportive of innovation.

Leadership Style and Innovation

Leadership style has been highlighted as an individual factor exerting significant influence on innovation in organisations either directly or indirectly through other intervening variables such as culture and climate (Nam and Tatum, 1997; Jung et al, 2003, 2008; Gumusluoglu and Ilsev, 2008; Kissi et al, 2009). Transformational leadership has been associated with change of culture and motivation of people in pursuit of organisational goals, employee satisfaction and organisational productivity (Jung et al, 2008). Panutwanich et al (2008) also highlighted the important role that leadership for innovation plays in creating a climate for innovation by influencing organisational culture that support innovation. The study suggested that organisations could raise leaders for innovation by cultivating transformational leadership among their managers and supervisors. There is however evidence to suggest that culture could also influence the behaviour of managers. Leadership could also indirectly influence innovation through the client as they interact with existing and prospective client to identify how services or products need to change to enhance client satisfaction, (Waldman and Bass,
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

1991). The authors further noted that ‘the major innovative turn-arounds of organisations occur when senior executives take the trouble to visit at length with their prospective customers and clients to find out what is good and what is bad about the firm’s current products and services’ (Walderman and Bass, 1991: 174). Bass and Avolio (1994) submitted that through intellectual stimulation, transformational leaders question assumptions and by so doing stimulate their followers’ efforts to be innovative, creative and approach old situations in new ways. Through idealised influence, the leader earns credit with the followers by placing their needs ahead of their own, shares risks with them and avoids public criticisms of individuals who make mistakes. This engenders a greater willingness on the part of the followers to take risks and adopt more innovative approaches to delivering projects.

Studies on leadership have primarily focused on top management with little attention paid to middle management and less so in the construction industry (Kissi et al, 2009). Styhre and Josephson (2006) in a study of 13 construction site managers drew a comparison between site managers in the construction industry and middle managers in other industries and found that they generally had a positive experience of their work situation. Although the sample size was small and therefore the findings cannot be generalised, it highlights a departure from many other negative reporting on middle managers (Dopson and Stewart, 1993). The study also revealed the gap in literature on middle management in the construction industry (Kissi et al, 2009). Moreover, most of the literature on middle management has been based on organisations in general while studies on site managers or middle managers in the construction industry have seldom referenced the general management literature (Styhre and Josephson, 2006; Kissi et al, 2009). Notwithstanding the conflicting views on middle management, they play an important and central role in ensuring organisational and project objectives are achieved (Styhre and Josephson 2006; Kissi et al, 2009). Hence it can be hypothesised that the leadership style exhibited by middle managers will influence the perceptions of climate for innovation which will in turn influence the innovation championing behaviour of project managers and hence project outcomes.

**Innovation Championing**

Championing behaviour is defined as ‘the project manager’s observable actions directed towards seeking, stimulating, supporting, carrying and promoting innovation in the project’ (Dulaimi et al, 2005: 566). Drawing from Dulaimi et al (2005), project managers’ (PM’s) championing role could be said to be very important. PMs can provide direction and leadership towards the attainment of project goals. As the leader of the delivery team, the PM can sell and persuade innovative ideas to the other partners in the project, obtain their buy-in, coordinate input from other parties involved in the project such as sub-consultants and facilitate the implementation of ideas introduced into the project. Also, when PMs demonstrate their commitment in the innovation process by working hard on it and taking responsibility as well as a measure of risk, it may be enough to overcome the inertia and resistance and provide the needed encouragement to others associated with the innovation. The PM is however unlikely to take the risks associated with innovation if they perceive the organisation and the managers are risk averse and do not support innovation.

In a study of construction projects based in Singapore, Dulaimi et al (2005) surveyed 32 project managers and 94 project team members, in an effort to identify the key situational and individual factors that influence championing behaviour. The study concluded that unlike the manufacturing and R&D organisations, PM’s championing role in construction is multifaceted and important in promoting innovation as well as achieving project objectives.
The findings also suggested that the PM’s role should be complemented by individual factors such as the PM’s competency and professionalism and situational factors such as sufficient supply of resources and an environment, climate or culture that is conducive to foster and promote the PM’s role as a champion of innovation. Dulaimi et al’s (2005) study made a significant contribution and highlighted a number of important issues in the study of innovation in construction especially in project environment. However the small sample size used means the result cannot be generalised. The time element associated with innovation outcomes is also missing as the research was cross-sectional in design. Also, PMs selected team members to be interviewed. The likelihood is that PMs selected the people who are more likely to provide good feedback on their role. Besides, the PM’s self-reporting of their influence tactics may introduce bias into the result. Furthermore, the data collected was based on perceptions instead of actual observable practices. Although this study focused on site works, the principles will be applicable in the design environment. This study will expect innovation championing to have a positive relationship with the level of innovation and hence project performance.

**Innovation and Project Outcomes**

Dodgson, Gann and Salter (2008) essentially defined innovation as “the successful commercial exploitation of new ideas. It includes the scientific, technological, organisational, financial and business activities leading to the commercial introduction of new (or improved) product or service” (Dodgson et al, 2008:2). Among other avenues innovation in the construction industry takes place during project execution primarily through personal exchanges among designers (Salter and Gann, 2003) which makes innovation difficult to plan (Bayer and Gann, 2007) and highlights the need to create the right environment to facilitate such exchanges.

The ability of project-based design, engineering and construction firms to meet changing demands from clients and improve performance through innovation management is closely linked to the development of technical capabilities, (Gann and Salter, 2000; Kissi et al, 2009) which is considered to be embodied in the staff of the organisation (Bayer and Gann, 2007). Given the high level of internal divisions in project-based firms (Gann and Salter 2000), it could be argued that each identifiable division or business unit will have their unique ability to innovate which will be consistent with their internal characteristics (Kissi et al, 2009). Such internal characteristics as cooperative behaviour, service offer together with external factors including innovation acceptance of clients will influence innovative performance (Hartmann, 2006). Following a review of literature, this study will define innovation as the generation or adoption of ideas, design concepts or delivery processes, new to the adopting organisation which when implemented will yield a reduction in cost and/or time associated with project delivery and improve the quality of the final output with a high level of client satisfaction. In view of the fact that each division within the organisation under study serves a different client and have a different set of internal variables such as middle managers, culture and clients this study would expect that innovation performance will vary from one division of firms to another.

Whereas a linkage has been established between PM’s championing and project performance in the manufacturing, such a linkage has not been categorically established for the construction industry, (Dulaimi et al, 2005). Innovation championing has been found to be linked to the level of innovation and project performance (Dulaimi et al, 2005; Howell and Shea, 2001) and business outcomes in general (Panuwatwanich et al, 2008). This linkage has
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

however been questioned by Markham (1998), whose earlier studies examined the impact of championing on project performance from the perspective of the team members and found no support for this proposition. Markham’s (1998) contradictory findings could be ascribed to the fact that the study sought to investigate the impact of the team’s response to the champion’s influence tactics on project performance instead of the champion’s direct impact on project performance, (Howell and Shea, 2001). Given the contested nature of this hypothesised relationship, it will be interesting to explore if indeed there is and the nature of this relationship between championing behaviour and project performance in the context of UK based construction support services organisations.

In line with the observation that different stakeholders have different expectations of projects and that project success has a different meaning to each of them, a multi-dimensional approach to measuring project performance will be adopted in this study (Shenhar and Levy, 1997; Kissi et al, 2009). The project outcomes to be measured will extend beyond the traditional financial measures (Salter and Torbett, 2003) and will include both subjective and objective measures such as client and staff satisfaction, profitability and project delivery to budget and programme (Kissi et al, 2009).

Methodology
Yin (2003) identified five main strategies of conducting research as experiment, survey, archival analysis, history and case study. The choice of method depends on the type of research question posed, extent of control over actual behavioural events and how contemporary the events are. This research seeks a deeper understanding of contemporary events which does not require control over behavioural events. The research questions have generally been posed as “how and why questions” and seeks a deeper understanding of a complex phenomenon of how key actors influence innovation in a construction support services organisation. Then case study approach is therefore considered most appropriate. Moreover a case study method is more suitable for research work if; “the research aims not only to explore certain phenomena but to understand them within a particular context”. (Collis and Hussey, 2003: 69).

The aim at this stage will be to explore if other factors other than those mentioned above at this stage will influence innovation championing behaviour and for that matter the level of innovation. The output from this stage will be a refined model. The revised model will be tested by a survey of a sample of project managers across the company. The first phase of the study will primarily employ semi-structured interviews, direct observations and documents review. These multiple sources will enhance the validity of data gathered. Interviews form an important source of evidence in case studies as they help to focus directly on the case study topic and are more insightful, (Yin, 2003). This notwithstanding, interviews do have some weaknesses described as questioner bias, response bias, inaccuracies due to bad recall and reflexivity which results when the interviewee gives answers the interviewer expects to hear, (Yin, 2003). In order to overcome these weaknesses associated with interviews other sources of information will be used to validate the findings.

Two cases involving project teams working from different offices and under different contract will be studied in this research. One of the selected cases is a partnering contract and the other is a framework contract. Project managers will be interviewed on the transformational leadership of middle managers, organisational culture and client influence on innovation, level of innovation and project performance. Secondary sources of information such as project records, minutes of project meetings, records of client feedback interviews and project review
records will be used to complement the information obtained through the semi-structured interviews. Evidence obtained from the various sources will be compared while examining how they reflect on the phenomenon being studied. A database will be created in the form of audio recording and notes taken from the interviews, newspaper cuttings and website pages among others. To enhance the reliability of the research, a chain of evidence will be kept from the research questions to the conclusion, (Yin, 2003).

Subsequent to the interviews, quantitative data will be obtained through surveys. This will be used to test the revised model. The organisational culture of the organisation will be investigated using the Organisational Culture Assessment Instrument (Cameron and Quinn, 1999) as the dimensions of organisational culture to be investigated is well aligned with the dimensions incorporated in the competing values framework. The leadership style of middle managers (divisional managers) will be assessed from the point of view of project managers using the four dimensions of transformational leadership, (Bass and Avolio, 1994). These four dimensions have been known to favourably predict innovation performance in many studies (e.g. Sarros, 2008 et al; Jung et al, 2008). A set of questions will be derived from literature to test the influence of client on innovation championing behaviour of project managers and the level of innovation. Structural equation modelling will be undertaken to determine the structure of the factors at the same time as examining the relationship among the constructs comprising the model (Panuwatwanich et al, 2008). A further set of survey data will be collected after one year in an effort to establish causal inferences among the constructs.

Conclusion
Findings from this review suggest that innovation has become a very important source of competitive advantage for organisations including those in the construction industry. A number of factors internal and external to organisations as well as individual and situational appear to influence innovation within UK based construction support services organisations. These include leadership, organisational culture, climate for innovation and other exogenous influences such as clients. Whereas much research has been undertaken individually on leadership, culture and client and how they influence innovation, little is understood of the interrelationship among these constructs and how they together influence the project manager’s perception of the ‘climate for innovation’, their championing behaviour and ultimately project performance. This review reveals that transformational leadership will impact on innovation by influencing the climate for innovation which in turn act on championing behaviour of project managers and ultimately project performance. Leadership could also influence innovation championing through the client as they interact with existing and prospective client to identify what needs to change on existing offerings. Efforts to create an innovative climate will also be influenced largely by the culture within the organisation. Evidence from the literature reviewed suggests that change initiatives to introduce more innovative practices in the construction industry are hindered by the project-based nature of the industry and the multiple stakeholders with interest in construction products.

Most of the studies reviewed employed cross-sectional approach and therefore fail to track the process of developing climate for innovation and how it ultimately impacts on performance. This study proposes a longitudinal approach to address this gap. Moreover the leadership aspect of previous studies rather focused on top managers. It is surprising to find how few studies have focused on middle management given the important role they play in either promoting or resisting change efforts in organisations. This study will therefore contribute to a better understanding of how middle managers can influence the environment within which
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

project managers operates and ultimately impact on project performance. From the foregoing, it could be concluded that this study will be relevant in addressing such research questions as:

- what is the relationship between transformational leadership style of middle managers and innovation championing of project managers?
- does culture moderate this relationship?
- does championing behaviour of project managers impact on project performance?

These questions will be addressed as part of an on-going investigation to examine how the leadership style of middle managers interact with and shape the culture of a construction professional services to create a climate for innovation.

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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

APPENDIX B  PAPER 2

Examining middle managers’ influence on innovation in construction professional services firms: a tale of three innovations

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Abstract

Purpose – The purpose of this paper is to explore some of the factors that influence innovation in construction professional services firms. The paper examines the role of middle managers who have responsibility for developing the right conditions that foster innovation at the business unit level.

Design/methodology/approach – A theoretical framework was initially developed through a synthesis of the literature. Using a case study approach, three types of innovation were explored to illustrate the role and influence of middle managers in fostering and exploiting innovations.

Findings – Findings from the study suggest that middle managers’ innovation supporting behaviour influence innovation outcomes by helping to develop a climate for innovation that influence championing behaviour among project managers.

Research limitations/implications – The study was based on a single United Kingdom-based construction professional services firm. Nevertheless, the research contributes to the call for more qualitative approaches to understanding leadership research in construction.

Originality/value – Limited research has been undertaken on the impact of leadership on construction innovation beyond senior managers. This paper seeks to contribute to addressing this gap in literature by highlighting the significant role middle managers play in enabling innovation in construction professional services firms contrary to well publicised negative views on middle managerial roles.

Keywords Construction professional services, Innovation championing, Innovation outcomes, Leadership behaviour, Middle managers

Paper type Research paper
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Introduction
The construction industry has been subjected to criticisms for delivering products and services which fall below clients’ expectation of quality, price certainty and assured delivery (Lu and Sexton, 2006). The need for improvement has been recognised not only by researchers but also governments. For example, the UK Office of Government Commerce (OGC, 2007) through the achieving excellence in construction initiative has advocated innovative approaches to delivering construction projects. For most firms both in construction and other industries, innovation has become an important source of competitive advantage as it provides an avenue by which they can differentiate their products or services (Dulaimi, Nepal and Park, 2005). Innovation in the construction industry has been driven by a number of factors: developing solutions to problems encountered on site, aspirations towards improved performance (Dulaimi et al, 2005), the need to respond to conflicting expectations from clients (Koch and Bendixen, 2005; Kissi et al 2009) and profit maximisation, (Lim and Ofori, 2007). The need for change is made more urgent by the current economic circumstances which have seen many companies pursuing a dwindling number of business opportunities.

The concept of innovation has been variously defined by researchers and other stakeholders. It has been considered as ‘the development and implementation of new ideas by people who over time engage in transactions with others within an institutional context’ (Van de Ven, 1986: 604). This highlights the interactive nature of the innovation process. Slaughter (1998) defined innovation as ‘the actual use of nontrivial change and improvement in a process, product or system that is novel to the institution developing the change’ (Slaughter, 1998: 226). Innovation in the construction industry involves both products and processes (Ivory 2005). Whereas products move along the supply chain to clients or markets, process innovation is associated with a reduced cost and improved quality (Ivory, 2005). Improvements in the form of enhanced or new approaches to delivering projects are important to achieving project objectives and improving performance in the industry to meet clients’ expectation. Thus this paper considers innovation as the generation or adoption of ideas; design concepts or delivery processes, new to the adopting organisation, which when implemented will yield a reduction in cost and/or time associated with project delivery and improve the quality of outcomes.

According to Tidd, Bessant and Pavitt (2005), the innovation process involves three primary stages; scanning, selecting and implementing. Effective management of the process is influenced by a number of contextual variables (Scott and Bruce, 1994; Hartmann, 2005) both internal and external to organisations. These present challenges to firms in the management of the innovation process as they seek to make sense of the complications and risks associated with the phenomena, (Tidd et al., 2005).

Research has identified external factors such as, regulation, clients and manufacturers among others as key influencers of innovation (Blayse and Manley, 2004). The focus of this study is however on the internal factors that facilitates innovation in professional services context. Key internal influences on innovation include leadership both at the organisational and project level as well as organisational climate (Dulaimi et al., 2005; Jung, Wu and Chow, 2008; Sarros, Cooper and Santora, 2008). The impacts of these factors on innovation have been investigated individually by various researchers. For example, the relationship between leadership style and innovation has been investigated by Jung et al., (2008), organisational climate and innovation by Ekvall and Ryhammar (1998), and innovation championing and innovation outcomes by Dulaimi et al. (2005). However the interplay of these factors and how
they combine to influence innovation in the context of construction professional services firms is yet to be explored, (Kissi et al., 2010).

Moreover, most organisational studies examining leadership impact on organisational performance in general and innovation in particular have tended to focus on senior managers (e.g. Sarros et al, 2008; Jung et al, 2003, 2008) and less so on middle management (Kissi et al., 2010a, 2010b; Styhre and Josephson, 2006). This has prompted calls for more investigation into the impact of leadership beyond senior managers on organisational performance, (Newton, 2009).

In response to this call, the focus of this paper is on middle managers and how their behaviour in the workplace influences innovation. The primary proposition of this study is that leadership behaviour and actions directly impact follower behaviour and performance (Dvir et al., 2002) and indirectly influence performance by shaping the environment or climate within which the followers operate (Podsakoff, Mackenzie and Bommer, 1996). Based on evidence from three types of innovation, this study examines how middle managers influence the innovation championing behaviour of project managers and ultimately innovation outcomes. It contributes to the on-going debate about the nature and impact of innovative behaviour of leadership at different levels of the organisational hierarchy.

Consistent with Dopson, Stewart and Risk (1992), middle managers in this study are those above first level supervision but below the senior managers responsible for strategic decisions such as business unit directors. Within the case study company the middle managers are Divisional Directors (DD) who run the division’s profit and loss account and have direct supervisory responsibility over project managers.

The rest of this paper initially discusses some of the primary internal factors that influence innovation in construction, introduces the research methods after which the three types of innovations studied are presented. Key findings and their implication on the construction industry and future research are then discussed.

**Theoretical Background**

*Leadership Climate for Innovation and Innovation Championing*

Leadership has been highlighted as an important individual influence on innovation (Nam and Tatum, 1997; Sarros et al., 2008). Leaders can support creativity and innovation in the workplace by helping to establish an environment that encourage staff to seek new approaches to addressing old problems without being concerned about recrimination in event of a negative outcome (Amabile et al, 1996; Gumusluoglu and Ilsev, 2008; Kissi et al, 2009). Leadership has also been associated with motivation of followers in pursuit of organisational goals (Jung et al, 2003, 2008; Bass and Avolio; 1994), organisational citizenship behaviour (Podsakoff et al, 1996), trust, (Podsakoff et al, 1990), and employee commitment (Keegan and Den Hartog, 2004).

Bass and Avolio (1994) opined that through intellectual stimulation, transformational leaders question assumptions and thereby stimulate their followers’ efforts to be innovative, creative and approach old situations in new ways. However in a study of 1158 managers in Australian private sector organisations, Sarros, et al. (2008) found that intellectual stimulation did not
show as strong a relationship with organisational climate for innovation as expected. The findings suggested that visionary leadership reflected in the provision of adequate resources, funding, personnel, time for creative activities and rewarding innovation rather had the strongest relationship with climate for organisational innovation. Although the study was quantitative in design and did not actually involve a detailed investigation in context, it highlighted the importance of resource provision in facilitating innovative behaviour.

Other studies have found that the quality of relationship that exists between employees and their managers impact on their innovativeness (Scott and Bruce, 1994), as it influence the subordinate’s perception of the work environment as supportive of innovation. Moreover when managers provide support, make resources available, challenge employees’ thinking and provide autonomy, it informs the perceptions of the work environment as one supportive of innovation leading to the creation of a climate for innovation (Scott and Bruce, 1994; Shalley and Gilson, 2004), which influence innovative behaviour in the workplace. Such an environment has been found to foster innovation championing behaviour of project managers (Dulaimi, 2005) and subsequently innovative performance (Howell and Shea, 2001).

However, most studies investigating the role of leadership in change initiatives in general and innovation in particular have tended to focus on top managers (Rouleau, 2005). Torrington and Weightman (1987) noted that the role of middle managers in both the private and public sectors has received little attention from researchers and for that reason there is no comprehensive body of theoretical or empirical knowledge of the role of middle managers. The limited focus on middle managers may be due to the prediction of the diminishing influence of middle managers in organisations (Dopson and Stewart, 1993). According to Dopson and Stewart (1993:3), ‘most writers portray the middle manager as a frustrated disillusioned individual caught in the middle of a hierarchy’. Indeed Huy (2001:73) buttressed this view suggesting that ‘the very phrase middle manager evokes mediocrity: a person who stubbornly defends the status quo because he’s too unimaginative to dream up anything better’. However, Kanter (1982) advocated a more positive view of middle managers suggesting that they will rather become more important as organisations’ productivity will increasingly be associated with the degree to which middle managers are allowed to be innovative and implement new ideas.

In construction one of limited studies focusing on middle managers was undertaken by Styhre and Josephson (2006). In a study of 13 construction site managers the authors drew a comparison between site managers in the construction industry and middle managers in other industries and found that they generally had a positive influence in their work situation. Whereas most of the literature on middle management have been based on organisations in general, studies on site managers considered as middle managers in the construction industry have seldom referenced the general management literature (Styhre and Josephson, 2006; Kissi et al, 2009), highlighting a gap in the literature on middle management in the construction industry.

From the forgoing, it could be seen that although there is significant empirical evidence that leadership in general impact on various performance criteria, the impact of middle management remains a subject of debate and conjecture. For that reason this study sought to understand how middle managers influence innovation performance in construction professional services firms. Given that middle managers may not have as many resources at
their command as senior managers; how are they able to influence the work environment and how does that in turn influence championing behaviour of project managers?

Research Methodology

Design of Study
This research sought to examine the role that middle managers’ play through their day to day activities to facilitate innovation in the workplace. The fundamental research question was therefore ‘how do middle managers influence innovation in construction professional services firms’? The study was aimed at having a deeper understanding of a complex phenomenon relating to the manner such key actors as middle management influence innovation performance in the workplace. The research had an interpretive focus and sought not only to explore the phenomenon but also to understand it in a particular context, which is a UK based construction professional services firm. It sought a deeper understanding of contemporary events which does not require control over behaviour (Yin, 2003).

Moreover, leadership behaviour, the primary subject of the study is largely influenced by social context and the use of quantitative method can hardly capture the full social dynamics (Newton, 2009). Furthermore, innovation, like many other phenomena in the construction industry is influenced by large number of variables which can make meaningful quantitative analysis difficult (Taylor, Dossick and Garvin, 2011). Finally there is currently no theory linking the leadership behaviour of middle managers and the championing behaviour of project managers by which hypothesis can be made and tested. The qualitative case study approach was therefore deemed most appropriate (Yin, 2003). The design of the study provided the opportunity to investigate the interaction between middle managers and project managers adding to the understanding of how championing behaviour of project managers can be influenced by middle managers.

This approach is consistent with the common approach to innovation studies in the construction industry which have been dominated by case studies largely through qualitative data analysis, (Acha, Gann and Salter, 2005; Ivory, 2004; Nam and Tatum, 1997). Few studies have also adopted a combination of qualitative and quantitative data analysis (e.g. Salter and Gann, 2003).

Data Collection and Analysis
The study was based on a division of the company. The particular division of the business was selected because it represents a typical division of the business being located and working closely with the public sector client. In order to identify the most appropriate innovations to be included in the study, a preliminary interview was held with the DD. The interview focused on non-trivial innovations implemented within the last year by the division. This was to minimise the impact of recall bias in the data collection process. Subsequently three types of innovations, one from each of the three teams, were selected for study. Involving each of the teams in the study was to ensure that data captured fairly represented the whole division. Details of the responsible PM in each of these innovations were obtained. A pre-interview information sheet was sent to the project managers highlighting why they had been approached and what they could expect at the interview. The information sheet also provided assurances of confidentiality.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

For each innovation a face-to-face interview was set up with the PMs focusing on the processes that led to the adoption of the innovation. The PMs of the three innovations studies had 4, 8 and 20 years experience in the construction industry. The study adopted semi-structured interviews with guiding questions derived from literature. The interview focused on the behaviours exhibited by the middle managers during the innovation process and how that influenced their perceptions of project environment as well as their own behaviour. Further interviews were held with the DD of the office and the Business Unit Director who oversees the particular division to supplement the information gathered through the semi-structured interviews. In addition artefacts (equipments, devices, spreadsheets and project files) associated with the innovations were reviewed as part of the data collection process. These multiple sources were to enhance the validity of the data gathered.

The study adopted the thematic approach to the data analysis following the recommendations of Braun and Clarke (2006) as briefly discussed below. All the interviews were recorded and transcribed verbatim. Initial codes were generated from the transcribed interview documents highlighting data which were of interest for further analysis. This was done in such a way to ensure that meaning was not lost by taking the data out of context. The next stage of the analysis involved combining the codes into appropriate themes and sub-themes with the help of tables. The initial themes were refined through further analysis to identify the key themes across the three innovations. The final themes related to actions and behaviour of the middle manager across the three examples of innovation which had significant influence on the PM’s perception of the work climate and hence their own championing behaviour.

Credibility and trustworthiness measures
Qualitative studies in general and case studies in particular have often been criticised for lack of credibility and trustworthiness (Taylor et al, 2011). Following Butterfield et al. (2005) and Tuuli, Rowlinson and Koh (2010), a number of steps were taken to build confidence in the study and its findings as outlined below.

Triangulation in the data collection
Interviews, documents and artefacts were the three primary sources of data. This approach facilitated the verification of information from one source with the other. Documents and artefacts relating to the innovations were obtained and reviewed to ensure they were consistent with the information obtained from the project managers through interviews.

Interview fidelity
The study was consistent in applying the interview protocol. In addition the study captured varying perspectives beyond that provided the PMs by interviewing the DD and the BUD in order to achieve interview reliability.

Theoretical validity
The discussions of the case study findings consistently made references to previous research to express theoretical agreement and convergence in order to achieve theoretical validity.

Findings

Background to Cases
The company on which the study was based employed about fourteen thousand staff across the UK, Middle East and Australia. The company primarily provide highway design and
maintenance services for public sector clients. The company had a term consultancy contract with a Local Authority in London and provided highway design and maintenance services. The contract was originally for four years with a possible extension of two years. The four year contract had about one year left and the company was keen to secure the extension. This was very important to the company especially in the light of the prevailing unfavourable economic circumstances and therefore every effort would be made to provide services that meet and exceed the client’s expectation. The division had about 40 staff grouped into three teams. The first team provided routine reactive maintenance services, the second team undertook planned maintenance services and the third was responsible for capital improvement schemes. The contract had 17 key performance indicators (KPIs) used as benchmarks when evaluating service delivery. These included delivering design and supervising implementation (by the term contractor) to programme and budget. The three innovations that were the subject of this study are briefly described below.

**1st Innovation: Development of project monitoring and reporting software**

The highways capital improvement team was responsible for developing and monitoring the implementation of a large number of small projects on behalf of the client. The conditions of the contract dictated that weekly progress updates were provided to the client. To meet this requirement the project manager had to go through individual project spreadsheets set up for over 50 small schemes in order to update the master reporting sheet. The alternative was to talk to the individuals running the projects to obtain the information needed to update the master spreadsheet manually before reporting to the client. This process was labour intensive. Moreover it was prone to errors, due to gaps in the knowledge of the person updating the spreadsheet and often did not have the most current information the client required. This led to occasional complaints from the client to the DD. In addition, the terms of the contract were such that majority of projects were charged on fixed fee basis and the client would not pay any more than the already agreed fee for the service. It was therefore in the interest of the firm to develop a means of meeting the client’s requirements more efficiently. These problems prompted a search for a better and more cost effective means of providing the service.

Following discussions between the PM and the DD, the need for a new approach became evident. The DD commissioned the PM to lead on the development of a new system of capturing, monitoring and reporting on all the schemes concurrently to the client. The PM undertook research to find out about similar systems in use elsewhere and identified a number of options for discussion with the DD. Following trials of a number of options and consultation with the staff the DD and PM settled on a solution which was agreeable to the team members and met the requirements of the client.

The new system comprised of individual spreadsheets for each scheme tailored for the specific reporting requirements kept on the electronic project folder. A separate master spreadsheet was prepared in line with the desired output and an excel programme (macro) was developed to automatically extract all the relevant information from the individual spreadsheet into the master spreadsheet for weekly reporting to the client. Although the system met the requirements, there was a sense from the PM that it could have been developed further and more advanced software could have been used. However that would have meant getting more central IT involvement which according to the PM could have delayed the process.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Although incremental in nature (Slaughter, 1998), this innovation had significant savings estimated at 10 man hours per week. At an estimated average charge out rate of £50.00, this equates to £500 of savings a week which could enhance the profitability of the division. The new approach to collating information and reporting to clients has since been promoted and trialled in other offices particularly among the structural inspection teams.

2nd Innovation: Introduction of new paving material
The planned maintenance team within the firm was responsible for general maintenance works including the re-paving of footways to remove trip hazards. On footways which had crossovers the client generally recommended the use of fibre reinforced slabs by their contractor. This is in line with standard industry practice that where footway resurfacing works were undertaken as part of the maintenance programme, standard paving slabs were used for the footways and in the areas which doubled up as driveways, different materials such as fibre or steel reinforced slabs were used. The conventional wisdom was that fibre reinforced slabs were more durable and able to withstand the stresses of being driven on better than normal paving. These were however much more expensive than the normal paving slabs. The PM in charge of the planned maintenance programme believed the use of fibre reinforced slabs was not good value for the money spent and that laid under the right conditions the normal paving slabs will perform as well as the fibre reinforced slabs. The PM indicated this approach had been adopted by his previous employer and worked successfully.

To test this assertion, the PM with the support of the DD recommended that an experiment was conducted using different types of paving slabs. The selected materials included standard footway, fibre reinforced and steel reinforced paving slabs. Since planned maintenance was directly funded by the Council and therefore required cabinet approval, the client took an active interest in this process in view of the potential it offered for making savings. As a resident of the borough, the client employed his local knowledge to help identify a suitable location for the experiment. The PM actively promoted the innovation and built up support from the client’s contractor by pointing the benefits to the contractor. The fibre reinforced paving slabs were harder to cut than the normal slabs and could potentially save on cutting blades.

The team selected a very wide crossover in front of a block of maisonettes for the experiment. The different types of slabs were laid in stripes on varying depths and mixes of concrete and left for use. After six months, the team assessed the performance of each type of slab. It was found that the normal slabs withstood the pressures as well as the fibre reinforced ones. The decision was subsequently made to use the normal slabs across the borough. According to the PM the most expensive fibre reinforced slabs were almost three times the price of the normal slabs. Besides saving the client money in terms of cost of material, the decision to adopt the normal slabs across all footways meant that there was going to be further savings as the need for cutting pieces of fibre reinforced slabs to be laid in narrow sections of vehicle crossovers intermittently located along significant lengths of footway was eliminated yielding further savings. With about £1 million pounds spent on footway renewal across the council annually the use of normal paving slabs in place of fibre reinforced slabs provided a potential source of substantial savings for the client. The idea is being promoted among the company’s other clients.
3rd Innovation: The development of site survey system

The routine highway maintenance section of the organisation has a team that undertakes site inspections and where defects were detected work request order was raised with the contractor for remedy. The contract specified electronic data collection process that captured information on site and downloaded the data in the office. The system used comprised of a bulky tough book, a separate camera and an external Global Positioning System (GPS) system. This equipment carried by the site inspection team was so heavy that some members of the team had resorted to traditional pen and paper approach for capturing site data. The team then came back to the office and entered the data collected unto the server. This introduced inaccuracies in the data and had the potential of undermining evidence of site inspections should there be a claim against the council from any member of the public. The client occasionally observed the inspection team without the necessary equipment and complained to the DD about non-compliance with contractual requirements.

Upgrading the existing system was impossible as the technology was at the end of its life. This prompted the search for a new solution that the site based team was willing to use and that would satisfy the client’s requirements. The initial idea for the solution was suggested by the Business Unit Director having seen a similar system demonstrated by the Rail Division of the company. The intended objective at the onset was to have a system that was able to capture site conditions including pictures that will be directly linked to the specific location using GPS. This would be invaluable in disputing claims.

The PM, having technology background was tasked by the DD with finding a workable solution. The DD allowed time for the research and provided adequate resources and funds for the development. The PM undertook considerable research and presented a number of options for discussions with the DD. A preferred solution was subsequently agreed and the PM was commissioned to develop it further. The process involved the configuration, setting up, purchasing, testing and installation of a system that would facilitate real time data collection and transfer between a team of site inspectors and the database on the company’s server in the office. In the course of developing the system, other functionalities including the development of a Virtual Private Network (VPN) that enables secure access to the company’s network were incorporated although that was not initially a requirement of the system. The VPN was necessary to bypass the existing requirement for a vasco token to access the company’s server externally. The new system comprised of a tough book with a 3G sim card and a mobile internet connection that could transfer real-time data. The new device also had a Wi-Fi, an in-built camera and an in-built blue tooth system which replaced the existing separate components.

In the course of developing the solution, there was significant resistance from a section of the user community that according to the PM were sceptical about it. The PM however showed tenacity in overcoming the obstacles and expressed confidence in the system while actively promoting its implementation. A number of trials were done with the site team in order to build their confidence in the new system. The PM also showed optimism about the success of the innovation while others were pointing to the reasons why it would not work.

The PM with support from the DD made use of his internal and external network of contacts to progress the innovation. The external network included; Panasonic, suppliers of the hardware; Comfirm, suppliers of data base services; Vodafone, mobile internet network
service providers. The relevant internal contacts included the users, central IT services and the technology division of the company who developed the VPN software. The new system was expected to enhance the efficiency of site inspections as information will be picked up once and the site team will not have to travel to and from the office to collect and download data. Not only was this solution going to enhance the company’s sustainability credential but also working in real time would introduce efficiencies in service delivery and time savings while increasing the accuracy of data collected. It was estimated that the new system when fully functioning would enhance productivity of the site inspection team by about 10% as it removes the need to collect site data and travel to the office for processing. In addition the council will have more accurate information to defend claims for compensation. Other parts of the company that involved in network management for other clients are exploring the use of this system.

Discussions
The key themes relating to actions and behaviours exhibited by middle managers in the innovations studied as identified across the three innovations studied are discussed below.

**Support for Innovation**
Evidence from the study highlights the support that the DD provided for the PMs in the process of developing the innovative solutions as a key influencer in enabling the innovation. This was demonstrated in the personal support and involvement of the DD in helping to overcome obstacles in the process of implementing the innovation. Specifically the PM for the third innovation reported of difficulties in getting the needed support from Central IT in order to progress the development of the system. This was reported to the DD who used his contact with the IT Business Partner to secure the commitment of the IT team to the project. This gave the PM the sense that efforts to develop the new system were supported by the DD and contributed to the perception of an environment or climate supportive of the innovative effort which facilitated the successful implementation of the innovation. Similarly, the findings suggest that the level of interest reflected in personal involvement in testing options in the course of developing the first and third innovations influenced the sense of personal responsibility and resilience exhibited by the PMs in overcoming resistance from the users of the system. This finding is consistent with Podsakoff et al. (1990) contention that the most important effect of leadership should be the ‘extra-role’ performance rather than the ‘in-role’ performance of their teams. It could therefore be seen that the leadership behaviour exhibited by the DD elicited the extra effort and commitment seen in the PMs.

This finding also resonates with studies undertaken by De Jong and Den Hartog (2007) who in a study involving 12 managers in knowledge-intensive service firms found that manager’s behaviour of supporting innovation is associated with both the generation and implementation of ideas. Similarly, Oldham and Cummings (1996) in a study of 171 employees in two manufacturing facilities found that the employees were at their most creative when they operate in a supportive environment.

**Resource Supply**
The DD also ensured the necessary resources were provided which helped to create a sense of a supportive climate in which the PM could do what was necessary to achieve the innovation objectives. This was seen in the DD allowing time for the research and funds for the development especially in the third innovation which required substantial resource investment. Speaking of the DD’s contribution to the development of the site survey system,
the PM indicated that the DD’s effort in securing financial resources from the business unit director for the development felt empowering. The PM for the project monitoring and reporting system similarly reported that the DD allowed enough time within normal working hours to research on and develop the system. This contributed to the PMs feeling trusted as a result of being given such funds and time required to develop the solution especially in view of the current economic conditions. The findings suggest that this in turn engendered trust in the middle manager and influenced their level of commitment to developing innovative solutions. Podsakoff et al., (1990) asserted that when leaders are able to win the trust of their followers, they will have the confidence to exhibit higher levels of commitment to organisational goals. It is considered this translated into the championing behaviour among project managers in seeking and promoting new and innovative approaches to delivering projects with the knowledge that their managers will support their efforts.

Similar findings have been made by other studies such as Brand (1998) who found in a study based on 3M that individuals can be more creative in an environment where they are not subjected to significant time pressure. De Jong and Den Hartog (2007) also found that in an environment where resources are readily made available, innovative outcomes are more likely to be achieved. It could therefore be seen that providing adequate supply of resources did have a positive impact on the PM’s perception of the work environment as one supportive of innovation and could have accounted for the innovation championing behaviour observed in PMs in promoting and implementing the innovations.

**Autonomy and Freedom**
The DD was found to have allowed staff the room to explore and develop solutions throughout the process without any restrictions on what the team could and could not do in improving services. This was seen to send the message across to the PMs that the DD had confidence in them thus heightening their determination to find creative solutions and approaches. The PM for the second innovation acknowledged that the space and freedom for the team to experiment with different materials was a significant factor in the decision to pursue the use of different paving materials. Similarly, the PM for the third innovation expressed satisfaction in being offered the opportunity to find a solution.

The role of autonomy and a measure of freedom in creating a perception of a climate that facilitate innovation has been highlighted by a number of researchers. Krause (2004) in a study involving 399 middle managers in Germany based organisations from various sectors found that their innovative behaviour reflected in idea generation, evaluation and implementation was enhanced when their superiors granted them freedom and autonomy. Similarly Oldham and Cummings (1996) suggested that supervisors who are supportive and non-controlling help to create an environment conducive to employee creativity.

**Intellectual Stimulation**
The middle managers’ actions in challenging ideas presented in the course of developing solutions could also be seen to intellectually stimulate the project managers to consider different options. Particularly the findings suggest that during the development of the project monitoring and reporting software, the DD’s constant questioning had a positive influence on the PM’s innovative efforts. This was reflected in the PM undertaking further research in order to respond to the queries raised by the DD. Similarly questioning and challenging behaviour were exhibited in the process of developing the site survey system. In response to the challenge from the DD to demonstrate the benefit of the proposed solution the PM
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

prepared a business case in support of the preferred solution which was useful for securing funding. The finding is consistent with the result of De Jong and Den Hartog (2007) which suggests that increasing awareness of issues and stimulating employees to think differently about those issues have the ability to improve their innovative behaviours.

Besides adding to the empirical evidence of the role of leadership in enabling innovation, the significance of this study lies in providing an added dimension to the manner in which middle managers influence innovation in the context of a professional services firm. Whereas a number of researchers have written off middle managers and downplayed their role in improving performance in organisations, (Rouleau, 2005), this study highlights the important role they play in enabling innovation. Unlike top managers, the middle manager occupies a unique position in organisations by virtue of their closeness to both clients and staff, (Huy, 2001). The DD was the first point of call when the client had a complaint or concern about service delivery as seen from this study. The evidence suggests that the need to respond to client’s concerns influenced innovative supporting behaviour in the process of developing solutions that meets client’s requirements (Kanter, 1982; Waldman and Bass, 1991). This role is even more important in a rapidly changing business environment where organisations must meet and exceed an increasing client expectation.

By their closeness to the staff, middle managers are able to provide a safe psychological environment or work climate (Huy, 2001) for members of their team trying new approaches and developing new solutions to existing problems. The study further suggests that the more personal contact between the middle manager and project managers and consequent interaction tends to create an atmosphere of trust where project managers are given the space and autonomy to explore and develop solutions as innovation champions, (Kelley and Hyunsuk, 2010). This close association also provides opportunities for middle managers to contribute to and support the development of solutions drawing from their own experience.

While calls have been made for enthusiastic and dedicated individuals referred to as ‘innovation champions’ to promote innovation in the construction industry (Nam and Tatum, 1997; Dulaimi et al, 2005), there is also the need to create climate for innovation primarily through resource supply and support for innovation (Scott and Bruce, 1994) to foster their innovation championing behaviour. According to Lu and Sexton (2006) innovation generally involves a social psychological process as it is the product of social relationships and complex system of interaction. This interaction among middle managers and their teams manifests itself in the form of ‘climate’ (Kissi et al, 2009; Panutwanich et al, 2008). Creating the right climate is therefore essential as employees draw conclusions regarding what is important to management from what they observe rather than what is said. Consequently, they align their own priorities and behaviours with what they perceive to be important to the organisation (Kissi et al, 2009; Kozlowski and Hults, 1987).

However, investigations conducted by Keegan and Turner (2002) into project based organisations in various sectors including the engineering sector on their approach and attitude towards innovation revealed that irrespective of the industry, project based organisations do not create a climate conducive for innovation. ‘The findings suggested that the processes and procedures associated with the successful management of project serve to stifle innovation.’ The efficient use of personnel time has become the critical criteria against which all projects were judged and the measurement system focused all efforts on making people accountable for their time’ (Keegan and Turner, 2002: 375). In such an environment
internal procedure changes will be necessary to create a climate favourable to innovation which will encourage staff to adopt innovative approaches to their work. Middle managerial role in facilitating such changes becomes important as seen in this study.

There is empirical evidence to suggest that on the average, middle managers’ tend to stay longer in organisations than top managers (Huy, 2001), and develop a sound knowledge of the business in the process which they employ in challenging innovative ideas as noted in this study. Moreover, having built their careers over several years in most cases from the lower levels (Huy, 2001), middle managers can build more extensive networks across the company that they can draw support from in progressing innovations (Kanter, 1982). Such networks help to facilitate innovation as demonstrated in the third innovation with the involvement of the IT team in this study.

Whereas middle managers are thought to be stuck between the often competing expectations of top management and subordinates (Dopson and Stewart, 1993; Styhre and Josephson, 2006), this study considers that this also provides them an opportunity to influence the work environment. The findings from this study add to the observation made by Styhre and Josephson (2006) that middle managers in the construction industry have a positive experience of their work contrary to previous negative reporting on middle managers. Beyond that, this study highlights how middle managers could exert more positive influence on their work environment and facilitate innovation in construction professional services environment. As they are directly in touch with the project managers, their actions and behaviour will influence their perception of the work environment. When project managers perceive the environment as supportive of innovation, their championing behaviour and willingness to adopt new approaches to delivering project is enhanced. This ultimately impact innovation outcomes.

Conclusions
Whereas several empirical studies have confirmed the significant role leadership play in fostering innovation little attention has been paid to the role of middle managers. This study examined how the leadership behaviour exhibited by middle managers influence innovation in a construction professional services organisation.

This study has identified that innovation supporting leadership behaviour exhibited by the middle manager was significant in creating the right environment that encouraged the championing behaviour of the project managers and ultimately the innovation outcomes observed. This was essentially seen in the middle manager supporting innovation, providing the necessary resources and autonomy as well as challenging project managers in the process of implementing the innovations. The middle manager essentially made use of the closeness to project managers to influence their innovation championing behaviour in advancing innovation and further promoted innovation drawing from own knowledge of the business and social network across the company. Huy (2001) submitted that the role of middle managers in effecting changes in organisations to improve performance has largely been underestimated and unnoticed. This study concludes that middle managers have a significant role to play in facilitating innovation and improving performance in construction professional services firms and advocates recognition of the role of middle managers in organisational performance.

This study has a number of implications for construction professional services firms. In view of the influence middle managers can have on the work environment, it is important that
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

organisations make effort to cultivate innovation orientated leadership among middle management in order to foster innovation and improve performance. In difficult economic environment, there is a higher a tendency for middle managers to bear a disproportionate part of job loses (Floyd and Wooldridge, 1994), however as this study shows middle managers play a significant role in meeting organisational objectives and the loss of middle managers may result in the loss of important knowledge and skill which could otherwise be harnessed for improved performance.

Construction professional services firms also need to ensure that they support middle managers to provide the climate supportive of innovation that will encourage project managers to seek innovative solutions. The evidence from the study points to the need for construction organisations to put in place a system that will enable innovations to be assessed and supported at least in part by the company centrally. The need for divisions to meet profit targets implies that should considerable resources be expended in pursuing an innovation, the division will be at risk of not meeting targets. For this reason, it is likely that mostly incremental innovations will be initiated at a divisional or business unit level as seen in this study. A central innovation team to assess innovative ideas and provide the necessary funds and other resources required to pursue it could ease the burden on the individual business units and could encourage more innovations.

The need for innovation in projects for improved performance and enhanced learning within the industry requires that project managers are equipped with the relevant skills and given the right level of authority and support to make them effective innovation champions. In addition middle managers’ awareness on the impact of their actions and behaviour on the workplace environment and subsequently project managers’ championing behaviour needs to be raised. Management could seek to facilitate innovation by making the necessary resources such as funds, materials, information and specialist personnel available to support the innovation. A sustained support for innovation could lead to enhanced organisational effectiveness associated with long term improved performance. It is therefore important that innovation is encouraged as part of the everyday practice in the workplace and middle managers have an important role in making this possible.

There are limitations associated with this study in spite of the significant findings. It has been based on one company which statistically cannot be representative of all professional services firms in the construction industry. Also, interviews formed an important source of evidence in this study as they helped to focus directly on the case study topic and provided more insightful information Yin (2003). Interviews however, cannot easily be replicated. Moreover the PM’s self-reporting of their role in the innovations studied could have introduced bias due to the tendency for them to overstate their own involvement while downplaying the contribution of others. However, since the focus of the study is on middle managers and not on the PMs, it is considered this would have had very limited impact on the result of the study. In addition, other sources of data were employed in the study. In spite of the small sample size the result from this study provides an insight into the avenues through which middle managers can influence innovation in construction professional services firms. The results also presents an opportunity for further research into different organisations across the construction industry in order to identify how middle managers influence innovations in the different settings. In addition research into personal and contextual characteristics that moderates the effect of middle managers innovation supporting behaviour could provide more insight into factors that enhance middle managers innovation supporting behaviour.
References


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

APPENDIX C  PAPER 3

Exploratory analysis of the relationship between transformational leadership of middle managers and project performance

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ABSTRACT

Purpose of this paper
The purpose of this exploratory study was to investigate the effect of the individual dimensions of transformational leadership of middle managers on project performance.

Design/methodology/approach
Following a review of the extent literature on the role of transformational leadership on performance, data was obtained from a survey of 112 project managers for statistical analysis.

Findings
Five dimensions of transformational leadership; articulating vision, fostering commitment, high performance expectation, individualised support, intellectual stimulation and four components of project performance; achieving project efficiency, enhancing company image, promoting learning and improving team performance were extracted. Articulating vision, intellectual stimulation and fostering commitment were found to be the most important dimension of transformational leadership influencing project performance.

Research limitations/implications
The cross-sectional nature of the study implies that no definitive causal inferences could be drawn between the dimensions of transformational leadership and project performance. A longitudinal or experimental design in future studies could help establish causality.

Practical implications
The study highlighted the dimensions of transformational leadership project based organisations should develop in their middle managers in order to improve project performance.

What is original/value of paper
Whereas most research on leadership in project management have focused on the leadership of project managers, this study highlights the significant direct impact middle managers could have on project performance. It further explores the relationship between transformational leadership and project performance in much more detail than in previous studies.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

**Keywords:** middle managers, project performance, project based firms transformational leadership

**INTRODUCTION**

The need for projects to meet and exceed the expectations of increasingly demanding clients and achieve business performance objectives has seen many researchers and practitioners in search for factors that influence project success. Leadership behaviour has been recognised as one of such factors, (Yang, Huang and Wu, 2010a).

In project based organisations, leadership research has largely focused on the leadership style of project managers and less so on middle managers who appoint and supervise project managers. With few notable exceptions (e.g. Muller and Turner, 2007; Cheng et al., 2005) this important constituency has largely been ignored in leadership research in the project environment. These middle managers often run business units or divisions within which the project managers operate, and often act as project directors.

Most research on transformational leadership have focused on the impact of the leader behaviour on immediate subordinate (Bruton and Lau, 2008). Very few studies have investigated the influence of transformational leadership at levels beyond the immediate supervisor (Yang, Zhang and Tsui, 2010b). In that direction the study examines the influence of middle managers as distinct from that of project managers who directly run projects. Moreover, most research have investigated transformational leadership as a composite construct without a detailed examination of the individual dimensions of transformational leadership responsible for the observed or measured success criteria (Podsakoff et al, 1990).

This paper forms part of an on-going study which seeks to contribute to addressing this gap in literature. The emphasis of the study is on the transformational leadership behaviour as a managerial competency (Turner and Muller, 2005) exhibited by middle managers and how that influences project performance. The study further examines the individual dimensions of transformational leadership which have significant relationships with aspects of project performance. Findings from this study could deepen the theoretical support for the impact of middle management transformational leadership on project performance in project based organisations.

Subsequent sections discuss the suggested relationships among the key constructs derived from extant literature and their role in influencing project performance. Statistical analyses conducted to investigate the relationships are presented. Preliminary findings and their theoretical and practical implications are subsequently discussed.

**THEORETICAL BACKGROUND**

**Project Performance**

The subject of project success has been widely debated among project management researchers with little agreement as to what constitutes project success. Various measures have been proposed for measuring the performance of projects. The most common among
these is delivery to programme, budget and quality (Keller, 1992; Shenhar and Levy, 1997). Project outcomes have also been measured on the basis of financial performance (Salter and Torbett, 2003). Beyond these traditional measures, it is recognised that projects generally have different stakeholders with each having a different expectation of the project. Project performance measures will therefore have a different meaning to each of the stakeholders. Shenhar and Levy (1997) identified four dimensions of project performance measures. These include project efficiency, impact on the customer, business success and the future. Whereas project efficiency measures relate to short term traditional measures such as delivery to programme and budget, preparing for the future relates to building competencies to enhance future performance.

**Transformational Leadership and Project Performance**

The role of leadership in organisational performance has been studied for several decades. In a review of the leadership literature, Turner and Muller (2005) identified six primary schools of thoughts. Significant among them was the visionary school which comprises primarily of the transactional and transformational leadership styles. Transactional leadership epitomises the traditional leadership approach and focuses on the exchange between the leader and the employee of rewards for expected performance (Yang et al., 2010). Transformational leadership in contrast is an approach to leading that changes followers, causing them to look beyond self-interest in favour of the group’s objectives by modifying their ideals and values (Pieterse et al, 2010). It is associated with stimulating and inspiring followers to deliver extraordinary results (Bass and Riggio, 2006).

As a higher order construct, transformational leadership comprises of several components (Pieterse et al, 2010). Podsakoff et al (1990) identified six dimensions of transformational leadership. These were articulating vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations and intellectual stimulations. According to Podsakoff et al. (1990), by articulating vision, the leader identifies new opportunities for the unit, develops, articulate and inspires others with his or her vision and shows them how to achieve the vision. Also, by providing appropriate model, the leader lives the espoused values which become examples to the employees. In addition, the leader fosters the acceptance of group goals by promoting team effort towards the achievement of set goals. Moreover, high performance expectation behaviour of the leader is reflected in the leader’s expressed belief in the ability of the employees to deliver excellence and high quality. Furthermore individualised support by the leaders is reflected in the show of respect and concern for the individual’s needs. Finally through intellectual stimulation, the leader challenges the assumptions employees have about their work and encourage them to look at different ways of doing it better (Podsakoff et al., 1990). The impact of transformational leadership on performance has been investigated in various organisational contexts over the years with different success criteria. These include project effectiveness (Keller, 1992), innovation (Jung, Wu & Chow, 2008), groups (Dvir et al., 2002) and commitment to change (Lo, et al., 2010).

In spite of the large number of empirical studies there is limited research in the context of the project based organisations (Turner and Muller, 2005; Yang et al., 2010). The few studies undertaken in this context have mainly focused on the leadership style of project managers and not on middle managers. Moreover, the findings from such studies have been mixed. For example, Keegan and Den Hartog (2004) reported less preference for transformational
leadership among project managers compared to line managers. Muller and Turner (2007) however, indicated that the impact of transformational leadership will be dependent on the type and complexity of the project. The authors further suggested that Keegan and Den Hartog (2004) could have had a different result had they investigated transformational leadership in more complex projects. By extension, transformational leadership theory will benefit from an examination from a different hierarchical level in the project environment. In addition this study will be relevant as it examines whether the individual dimensions of transformational leadership style of middle managers influences different dimensions of project performance. Given the dearth of literature specifically examining the individual dimensions of the two constructs, rather than proposing and testing hypothesis, this study sought to explore and report on the emergent relationships among them.

Consistent with Yang et al (2010), this study assumes that middle manager’s influence on performance is distinct from the influence that project managers may have on the performance of project teams and therefore focuses on the impact of middle managers’ influence on project performance.

METHODOLOGY

Sample and procedure

Project managers in the organisation under study constituted the source of data. The focus on a single organisation allowed for the control of other influences on project performance such as organisational culture. In addition the organisation under study operates in a number of industries enabling integration of views from different sectors without the need to engage a number of different companies in the study. An internet based questionnaire was prepared and an e-mail with the link to the questionnaire was sent to approximately 350 project managers working in three primary business streams located in about 40 offices across the UK. Respondents were initially given two weeks to respond. There was an extension of one week. The respondents provided data on their perceptions of transformational leadership behaviour of their line managers (middle managers). They also provided data on the average performance rating of projects they have managed. There were 112 usable responses as outlined in Table 1 below.

Measures

Transformational leadership was measured using Podsakoff et al’s (1990) 22-items instrument on a 7 point likert scale (1-“Strongly Disagree” and 7-“Strongly Agree”). Examples of the items included ‘insists on only the best performance’, ‘has provided me with new ways of looking at things which used to be a puzzle for me’ and ‘paints an interesting picture of the future for our group’. Project performance was measured with 11-item instrument multidimensional measurement of project performance developed by Dulaimi et al. (2005) on a 5-point scale (1-“Not at all” and “A great deal”). Sample items included ‘finish project within the budget’ and ‘enable competitive advantages to the company’. Control and demographic variables such as age and tenure were also measured.
Factor Analysis

Exploratory factor analysis using principal component analysis with VARIMAX orthogonal rotation method was undertaken to confirm the number of factors underlying the constructs and determine the pattern of loadings. The 112 cases included in the analysis met and exceeded the minimum sample size of 100 required to meet the minimum recommended cases to variable ratio of 5:1 for each construct (Hair et al., 2006, Panuwatwanich et al., 2008). The Kaiser-Meyer-Olkin (KMO) measures were between 0.833 and 0.902; exceeding the recommended minimum of 0.6 (Field, 2009) and highlighting a high level of sampling adequacy.

Respectively, 5 and 4 factors of transformational leadership and project performance were extracted explaining 83.19% and 76.75% of the variance in the constructs. The Cronbach’s alpha (reliability coefficients) of all the scales ranged from 0.718-0.950; exceeding 0.7 level which is generally considered as good (Hair et al., 2006, Panuwatwanich et al., 2008).

Correlations

Tables 99.2 below shows the descriptive statistics and zero-order correlations among the dimensions. With the exception of individualised support which surprisingly did not have a relationship with any of the project performance dimensions the rest of the dimensions of transformational leadership had positive and significant relationships with project performance.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Table 99.2 Descriptive Statistics and Inter-correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>0.48</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>Job Tenure</td>
<td>0.5</td>
<td>0.5</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>3</td>
<td>Individualised Support</td>
<td>4.72</td>
<td>1.35</td>
<td>0.04</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fosters Commitment</td>
<td>4.9</td>
<td>1.38</td>
<td>0.09</td>
<td>0.04</td>
<td>.69**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Articulates Vision</td>
<td>5.09</td>
<td>1.3</td>
<td>0.08</td>
<td>0.05</td>
<td>.55**</td>
<td>.82**</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Intellectual Stimulation</td>
<td>4.34</td>
<td>1.42</td>
<td>0.07</td>
<td>0.03</td>
<td>.39**</td>
<td>.62**</td>
<td>.65**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enhance Company Image</td>
<td>5.16</td>
<td>1.22</td>
<td>.2*</td>
<td>0.04</td>
<td>.26**</td>
<td>.56**</td>
<td>.61**</td>
<td>.484**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Improving Team Performance</td>
<td>3.64</td>
<td>0.76</td>
<td>-0.1</td>
<td>.258**</td>
<td>0.18</td>
<td>.19*</td>
<td>.24**</td>
<td>.23*</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Project Effective Promote</td>
<td>3.48</td>
<td>0.72</td>
<td>-0.1</td>
<td>-0.12</td>
<td>0.1</td>
<td>.26**</td>
<td>.36**</td>
<td>.27**</td>
<td>0.12</td>
<td>.65**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Promote Learning</td>
<td>4.07</td>
<td>0.78</td>
<td>-0.1</td>
<td>0.05</td>
<td>0.03</td>
<td>.22*</td>
<td>.25**</td>
<td>.26**</td>
<td>0.04</td>
<td>.38**</td>
<td>.4**</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Learning</td>
<td>3.68</td>
<td>0.66</td>
<td>-0.1</td>
<td>-1.194*</td>
<td>0.18</td>
<td>.25**</td>
<td>.27**</td>
<td>.25**</td>
<td>.19*</td>
<td>.57**</td>
<td>.48**</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Notes: *p<0.05; **p<0.01. Sample size=112 individuals. Control variables are coded as follows: Age is coded 0=less than 40, 1=over 40. Job tenure is coded 0=less than 5 years; 1=more than 5 years.

Fostering commitment was found to have had positive and significant relationships with the project performance dimensions of enhancing company image (r=0.19, p<0.05), improving team performance, (r=0.26, p<0.01) project efficiency (r=0.22, p<0.05) and promoting learning (r=0.25, p<0.01).

Articulating vision was found to have had positive and significant relationships with the project performance dimensions of enhancing company image (r=0.24, p<0.01), improving team performance, (r=0.36, p<0.01) project efficiency (r=0.27, p<0.01) and promoting learning (r=0.25, p<0.01).

Intellectual stimulation had positive and significant relationships with enhancing company image (r=0.23, p<0.05), improving team performance, (r=0.27, p<0.01) project efficiency (r=0.26, p<0.01) and promoting learning (r=0.25, p<0.01). High performance expectation only had a positive and significant relationship with promoting learning (r=0.19, p<0.05).

DISCUSSIONS

Whereas transformational leadership has been known to impact on performance, the result in the project environment has been inconsistent. The result from this study supports a positive link between transformational leadership of middle managers and project performance. This is consistent with the result of Bass and Atwater (1990) who in a study of R&D project teams found that transformational leadership of higher level managers positively influenced project effectiveness.
The findings suggest that transformational leadership behaviour exhibited by middle managers could potentially bypass hierarchical links between middle managers and project managers and be experienced directly at the project team level and consequently impact on project performance. The direct effect of transformational leadership on performance at lower levels of organisations is supported in previous studies (e.g. Dvir et al., 2002; Yang et al., 2010).

The study found that project managers’ perception of the middle managers’ behaviour in articulating vision had the most positive and significant relationship with all the dimensions of project performance. This finding is consistent with a number of studies on transformational leadership that has identified articulating vision as very important factor of transformational leadership with significant impact on organisational performance (Sarros et al., 2008; Yang et al., 2010).

The non-significant relationship between high performance expectation and project performance dimensions except promoting learning is somehow surprising given that other studies have found a link between this dimension and performance in general. However similar findings were made by Podsakoff et al. (1996) who suggested that there are two components to the effectiveness of high performance expectation. This comprises of communicating the high performance expectation clearly and expressing confidence in the followers’ ability to achieve the expectation. According to Podsakoff et al. (1996), in a situation where the leader continually raises performance expectation levels without a corresponding expression of confidence in the followers’ ability to meet it, there could be negative consequences. This could explain the findings in this study.

Individualised support was expected to have a positive relationship with project performance as employees who perceive their leaders to provide support tend to be more productive (Podsakoff et al., 1996). However it is also possible that in a professional services environment where people value their independence (Keller, 1992), too much of individualised support may be interpreted as a lack of trust in the employee’s ability to manage and deliver project objectives on their own and lead to a negative outcome. This may explain the non-significant relationship observed.

The findings also suggest that fostering the acceptance of group goals and obtaining the commitment of individuals have a positive relationship with all the dimensions of project performance. As expected intellectual stimulation had a significantly positive relationship with project performance as challenging employees to look beyond the normal approach to delivering services impact on performance Podsakoff et al. (1996).

**Practical/managerial implications**

The findings from the study have a number of important practical implications for project based professional services firms and particularly for middle managers. Their position offers them an opportunity to influence the perceptions of their teams. To enable middle managers to play their role effectively, it’s important that they are helped to develop transformational leadership style for improved performance.

Particularly it’s important that middle managers are able not only to formulate vision but also
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

articulate it clearly to the teams. This will provide project teams a sense of purpose which has been found to be linked to improved team/project performance (Keller 1992). Middle managers promoting high performance expectations will also need to express the confidence in their teams that they are also able to achieve what is expected of them. Moreover individualised consideration should be practiced with care to ensure that project team members do not mis-interpret that support to mean a lack of trust.

Limitations and future research

In spite of the significant findings in this study, it is not without limitations. The cross-sectional nature of the study implies that no definitive causal inferences could be drawn between the dimensions of transformational leadership and project performance. A longitudinal design in a future study will be useful in establishing causality. It is also worth noting that the assessment of the transformational leadership of middle managers and project performance were both provided by the project managers making this study liable to common source bias. However this is not considered a major issue as project managers reported on middle managers’ leadership style and not their own. Also the project managers reported on project performance and not their personal performance and are more likely to be more objective. This notwithstanding, it will be interesting to have future studies obtain data from different sources and adopting more objective measures of project performance.

CONCLUSIONS

As previously highlighted, leadership research in project management has been focused primarily on the leadership style of project managers. This study has investigated the direct impact of middle managers on project performance bypassing project managers.

This study suggests that when middle managers articulate a desirable vision for their business unit and each employee sees how the performance of their individual projects fit into the larger organisational goal, they will be willing to make the necessary commitment to achieving the organisation’s project objectives. Future studies could adopt the longitudinal approach in order to establish causality.

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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


APPENDIX D  PAPER 4

Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Examining the role of transformational leadership of portfolio managers in project performance

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Research into the role of transformational leadership in project based organisations has generally focused on project managers or senior managers and less so on portfolio managers who oversee multiple projects to achieve business objectives. This study examines the impact of transformational leadership behaviour of portfolio managers on project performance directly and indirectly through other intervening variables such as climate for innovation and innovation championing. Using a questionnaire survey, data were obtained from 112 project managers in a UK project based organisation. Transformational leadership behaviour of portfolio managers was found to have a positive and significant relationship with project performance. Innovation championing and climate for innovation both partially mediated the relationship between transformational leadership and project performance. The study confirms the importance of portfolio managers in enhancing project performance and identifies the need for project based organisations to cultivate transformational leadership behaviour among them for enhanced performance. It also highlights the need for further exploration of the role of portfolio managers in improving project performance.

**Keywords:** Championing behaviour, Climate for innovation, Portfolio managers, Project performance, Transformational leadership

1. Introduction

The need for organisations to respond to the rapidly changing and often conflicting expectations from clients and remain competitive in the current harsh economic environment has resulted in a continuous search for innovative approaches aimed at improving project performance (Kissi et al., 2009; Koch and Bendixen, 2005). Although research suggests behavioural concerns fundamentally influence project performance, limited behaviour-related research has been undertaken in project organisations (Tuuli and Rowlinson, 2009). The focus of research has traditionally been on deriving efficiencies (Muller and Turner, 2007). Leadership behaviour in general and transformational leadership in particular has long been considered an important individual factor that influences innovation and performance in the workplace (Keegan and Den Hartog, 2004; Yang, Huang and Wu, 2010b). Most studies investigating the impact of transformational leadership in organisational performance have however tended to focus on senior management (e.g. Jung et al., 2003, 2008; Sarros, Cooper and Santora, 2008) or project managers and less so on middle level managers generally and portfolio managers in particular (Kissi et al., 2009, 2010a; Styhre and Josephson, 2006). In project-based organisations, leadership behaviour of portfolio managers is important in facilitating improved project performance. Portfolio managers in this study are middle level managers running divisions of the company under study. Their role involves having strategic overview of projects led by different project managers which are not necessarily inter-related. Their primary aim is to ensure business objectives are achieved. They are distinguished from programme managers in that programme management involves managing a group of related
projects in a coordinated way to achieve benefits not possible if managed individually (PMI, 2004). In the context of this study, the projects could be coming from different clients. Portfolio managers have the responsibility of ensuring projects collectively meet the organisation’s and the clients’ objectives. They also hold regular project progress review meetings with project managers. As they are in regular contact with the project managers, it is expected their workplace behaviours would have a direct or indirect effect on how project managers and project team members conduct themselves in delivering projects. Ultimately that is expected to reflect on project outcomes. However, limited research has been undertaken on this important constituency and their impact on project success, (Cheng et al, 2005; Jonas, 2010; Muller and Turner, 2007). The emphasis of our study is therefore on the transformational leadership behaviour as a managerial competency (Turner and Muller, 2005) exhibited by portfolio managers and how that influences project performance directly as well as indirectly through other intervening variables.

This study draws from the concept of direct and indirect transformational leadership defined in relation to how distant the subordinate is from the leader (Shamir 1995; Yammarino, 1994). Two aspects of indirect leadership underlie this study; the bypass and the cascading effect (Yang, Zhang and Tsui, 2010a). The bypass effect is where transformational leadership directly influences the performance of followers further removed from the leader in the organisational hierarchy while the cascading effect of transformational leadership occurs where the leader impacts on the performance of frontline employees indirectly by influencing the leadership behaviour of the immediate follower who in turn influences the performance of their subordinates. Leadership can also impact performance through other intervening variables such as workplace climate.

The study sought to contribute to a better understanding of the mechanisms through which transformational leadership behaviour of portfolio managers influence project performance. Our study had three primary objectives. Firstly, to investigate the direct effect of transformational leadership of portfolio managers on project performance bypassing project managers. Secondly, to investigate the cascading effect of transformational leadership on project performance by influencing the innovation championing behaviour of project managers, and thirdly, to examine the effect of transformational leadership on project performance acting through the work place climate. Consistent with Schneider and Reichers’ (1983) suggestion that climate studies should be facet specific to yield meaningful and useful results, we focused on ‘climate for innovation’. Climate for innovation is considered as creating the enabling environment that encourages project team members to adopt innovative approaches to delivering projects. Innovation championing behaviour in this study is defined as ‘the project manager’s observable actions directed towards seeking, stimulating, supporting, carrying out and promoting innovation in the projects (Dulaimi, Nepal & Park, 2005: 566). Project outcomes have often been measured on the basis of financial, budget and quality performance (Salter and Torbett, 2003; Shenhar, Levy and Dvir, 1997). Beyond these traditional measures, we recognise that projects generally have different stakeholders with varying expectations and views on project success (De Wit, 1988). Project performance in this study is therefore multi-dimensional in nature incorporating both short and long term measures (Dulaimi et al, 2005; Shenhar et al., 1997). In subsequent sections we discuss the hypothesised relationship among the key constructs derived from extant literature, outline the statistical analyses undertaken and present key findings together with their theoretical and practical implications.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

2. Theory and hypotheses

2.1 Transformational leadership
Transformational leadership is an approach to leading that changes followers, causing them to look beyond self-interest in favour of the group’s objectives by modifying their morale, ideals and values, (Pieterse et al, 2010). It is associated with stimulating and inspiring followers to deliver extraordinary results while developing their own leadership abilities (Bass and Riggio, 2006). As a higher order construct, transformational leadership comprises several components (Pieterse et al, 2010). Podsakoff et al (1990) identified six dimensions of transformational leadership. These were articulating vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, individualised support and intellectual stimulations. According to Podsakoff et al. (1990), by articulating vision, the leader identifies new opportunities for the unit, develops, articulates and inspires others with his or her vision and shows them how to achieve the vision. Also, by providing an appropriate model, the leader lives the espoused values which become examples to the followers to emulate. In addition, the leader fosters the acceptance of group goals by promoting team effort towards the achievement of set goals. Moreover, high performance expectation behaviour of the leader is reflected in the leader’s expressed belief in the ability of the followers to deliver excellence and high quality performance. Individualised support by the leaders is expressed in the show of respect and concern for the individual’s needs. Finally through intellectual stimulation, the leader challenges the assumptions employees hold about their work and encourages them to look at different ways of doing it better (Podsakoff et al., 1990, 1996).

2.2 Transformational leadership, innovation championing and project performance
Leadership in general and transformational style of leadership particularly has been highlighted as an important individual factor exerting significant influence on performance in organisations directly or indirectly through other intervening variables such as culture and climate (Gumusluoglu and Ilsev, 2009; Jung et al, 2003, 2008; Kissi, Dainty and Liu, 2012a). Particularly, transformational leadership has been associated with motivation of followers in pursuit of organisational goals (Jung et al, 2003, 2008), organisational citizenship behaviour (Podsakoff et al, 1996), employee commitment (Keegan and Den Hartog, 2004) and work attitude (Podsakoff et al., 1990) which in turn induces enhanced performance (Jung et al., 2003, 2008; Sarros, et al., 2008). Pinto et al., (1998) suggested that transformational leadership is relevant in the project based environment as it enables managers to transform their project teams and ultimately impacts project performance. Yang et al. (2010b) highlighted the importance of leadership on project performance suggesting it has been one of the major issues for both research and practice. Research has shown that transformational leadership positively affect performance irrespective of whether it was conceptualised in terms of subjective or objective measures (Bass and Riggio, 2006). The effect of transformational leadership has been found to be relevant at different levels of the organisational hierarchy (Yang et al., 2010a). The effect of transformational leadership at higher levels of organisational hierarchy on frontline employees at least two steps removed has been referred to as distant transformational leadership. Distant transformational leadership occurs where leaders influence subordinates from the distance by articulating vision, using rhetorical symbolic communication and providing an example for them to follow (Shamir, 1995; Yang et al., 2010a). Transformational leadership behaviour could also enhance the performance of subordinates directly by influencing their behaviour and by providing support (Podsakoff et al., 1996). Hence the effect of leadership could circumvent hierarchical links
and be experienced at lower levels of organisations (Yammarino, 1994). It is therefore possible for portfolio managers to influence project performance directly, bypassing project managers in the same way as transformational leadership of middle managers have been found to directly influence the performance of frontline employees (Yang et al., 2010a). We therefore propose that;

**Hypothesis 1:** Transformational leadership behaviour of portfolio managers positively influences project performance.

Empirical evidence has generally supported a positive impact of transformational leadership on followers’ attitude, effort, and “in role” performance (Podsakoff et al., 1990). However, Podsakoff and his colleagues contended the most important effects of transformational leadership should be their impact on “extra-role” rather than the “in-role” performance (Podsakoff et al., 1990; 109). Transformational leaders, according to Bass and Avolio (1994:3) motivate subordinates to do more than what they are simply required to do “and often even more than they thought possible”. Besides directly impacting distant followers’ performance, research suggest leadership can also indirectly influence performance through their immediate subordinate leaders who are linked to the distant followers (Antonakis and Atwater, 2002; Yang et al., 2010a). It is possible that by modelling the innovative behaviour expected, portfolio managers can influence the innovation championing behaviour of project managers. Moreover, Gümüsloğlu and Ilsev (2009) asserted that intellectual stimulation dimension of transformational leadership enhances exploratory thinking and articulating vision inspires idea generation both of which are characteristics of innovation championing behaviour. Research suggests the transformational leadership behaviour exhibited by portfolio managers could inspire project managers to do more than just delivering projects the “usual” way and go the extra mile in search for new and innovative solutions. Furthermore, leaders who exhibit transformational leadership are able to win the trust of their direct followers (Podsakoff et al., 1990) and with it an increased confidence to try new approaches to delivering projects with the knowledge of their managers’ support. Hence project managers are more likely to exhibit innovation championing behaviour where portfolio managers exhibit transformational leadership. For that reason we posit that;

**Hypothesis 2:** Transformational leadership behaviour of portfolio managers positively influences the innovation championing behaviour of project managers.

Calls have been made for enthusiastic and dedicated individuals called “innovation champions” to promote innovation (Nam and Tatum, 1997; Dulaimi et al. 2005, Kissi et al, 2010b). In the project setting, Dulaimi et al. (2005) considered the project manager’s role as key in this respect adding that certain behaviours they exhibit could positively influence innovation and project outcomes. Whereas some researchers have found evidence of the link between innovation championing and project performance (Nam and Tatum, 1997) and business outcomes in general (Panuwatwanich et al, 2008) others such as Markham (1998) have questioned this assertion. In an earlier study examining the impact of championing based on the views of project team members, Markham (1998) found no evidence in support of this link. In defence of this proposition however, Howell and Shea (2001) suggested the contradictory findings by Markham (1998) could be attributed to the fact that the particular study investigated the team’s response to the champion’s influence tactics rather than the champion’s direct impact on project outcomes. Indeed Markham (1998: 502) remarked that “the role of the champion is still vital and interesting across different types of innovation
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

projects”. For that reason we support the assertion of Howell and Shea’s (2001) that champions of innovation can make a decisive contribution to innovation by actively promoting its progress through key stages. Within a construction context, this view was further supported by Dulaimi et al (2005) who in a study of 32 project managers and 94 project team members in Singapore found that project managers exercise leadership, provide direction and take responsibility for achieving project goals. This leadership competency demonstrated by project managers has been identified as an important project success factor (Cheng et al., 2005; Dainty et al., 2004; Muller and Turner, 2007). Similarly, Kissi et al. (2012a) found the innovation championing behaviour exhibited by project managers was primarily responsible for the success of the projects investigated. From above it could be seen that transformational leadership could indirectly impact on project performance by influencing innovation championing behaviour of project managers in a similar fashion as middle managers have been found to influence frontline employees’ performance through the transformational leadership of frontline supervisors (Yang et al 2010a). We therefore posit that;

Hypothesis 3: Innovation championing behaviour of project managers partially mediates the relationship between transformational leadership behaviour of portfolio managers and project performance

2.3 Transformational leadership, climate for innovation and project performance
Climate has been defined as a characteristic ethos or atmosphere within an organisation at a given point in time which is reflected in the way the members perceive, experience and react to the organisational context (Rollinson and Broadfield 2002: 597). The study of organisational climate is important as employees draw conclusions regarding what is important to their leaders based on their observations and take steps to align their own priorities with their perceptions of what is important to the organisation. In the workplace the psychological meaning individuals associate with the stimuli received from their leaders play an intervening role between the stimuli and their response (James et al., 2008, Kissi et al., 2009). Project team members and project managers constantly receive signals from portfolio managers regarding their expectation, particularly during project reviews. Such signals play a significant role in influencing performance. According to Podsakoff et al. (1996), besides the influence on their direct subordinates, leaders can also influence performance indirectly by shaping the context within which they operate. Climate for innovation is created where the context is shaped and made conducive for project managers and team members to explore innovative approaches to delivering projects without being overly concerned about recrimination in event of negative outcomes. A key element of climate for innovation is the leader’s support for innovation (Scott and Bruce, 1994).

Jung et al. (2003) found a significantly positive relationship between transformational leadership and organisational climate supportive of innovation. Kissi et al. (2012a) also found that leadership behaviour was instrumental in creating the right environment that fostered the successful delivery of the innovative projects investigated in a study of three innovative projects. Sarros et al. (2008) further identified the transformational leadership dimension of articulating vision, reflected in the provision of adequate resources had a strong influence on climate for innovation. Scott and Bruce (1994) suggested that the quality of relationship between employees and their managers influence their perception of the work environment as supportive of innovation and impact on their innovativeness. Similarly supervisors who are supportive and non-controlling help to create an environment conducive to enhanced
employee creativity and performance (Kissi et al., 2012a; Oldham and Cummings, 1996; Shalley and Gilson, 2004). It is expected that the transformational leadership dimension of individualised consideration exhibited by portfolio managers could help in building good relationships while providing the needed resources to influence perceptions of climate for innovation. Hence we propose that;

**Hypothesis 4:** Transformational leadership behaviour of portfolio managers positively influences project manager’s perceptions of climate for innovation

Scott and Bruce (1994) identified the key dimensions of climate for innovation as support for innovation and resource supply. These were found to impact on project performance indirectly through the level of innovation (Dulaimi et al., 2005). Scott and Bruce (1994) suggested employees’ perceptions of the extent to which innovation is encouraged in the work place and the resources that are made available will impact their perception of the organisational climate and influence their tendency to take risks and adopt innovative approaches to their work which could influence project outcomes. Perceptions of organisational priorities inform how project members channel their energies, abilities and efforts (Schneider et al, 1994; Kissi et al, 2009) and determine their motivation, attitudes and behaviour, (Kozlowski and Hults, 1987) in the course of delivering project. In a study involving 12 managers in knowledge-intensive service firms, De Jong and Den Hartog (2007) found that creating the environment supportive of innovation is associated with both the generation and implementation of ideas which could impact on performance. Similarly, Oldham and Cummings (1996) in a study of 171 employees found that the employees were at their most creative when they operated in a supportive environment. In such a supportive environment project teams will also be encouraged to try new approaches to delivering projects without being overly concerned about possible recriminations should the unexpected happen, (Kissi et al., 2012a). This could ultimately influence project outcomes. Furthermore, Pawar and Eastman (1997) suggested that leadership can achieve organisational goals by confronting and reshaping context. In the same way, it is suggested that portfolio managers can influence project performance by shaping the organisational context and creating an environment where project delivery teams give their best to achieve project objectives. We therefore propose that;

**Hypothesis 5:** Climate for innovation partially mediates the relationship between transformational leadership of portfolio managers and project performance.

3. Research method

3.1 Sample and procedure
The objectives of the study were to examine ways by which portfolio manager’s transformational leadership behaviour influence project performance directly as well as indirectly through intervening constructs as hypothesised above and shown in the research model in Fig 1. We considered quantitative data collection and testing of hypotheses as the most suitable approach to achieve the objectives. The organisation under study employed about 8,000 staff based in 40 offices across the United Kingdom with a turnover of about £500 million. The company which also has businesses in the Middle East and Australia operates in diverse markets broadly grouped into three segments, namely; government services, regulated industries and infrastructure services organised into divisions. The
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

company’s current key activities include planning, designing, maintaining and operating the physical and administrative infrastructure that supports modern society.

![Conceptual diagram of leadership behavior and project performance relationships](image)

**Figure 1**: Conceptual relationship between transformational leader behaviour of portfolio managers, potential mediators and project performance.

It is associated with infrastructure ranging from roads and railways, through water and energy, to local government property, schools, back-office support functions and also offers management consultancy services. Project managers in the organisation were the source of data. Project managers were selected as they constitute the closest group portfolio managers work with and are under their direct influence. They could therefore provide more accurate feedback on the transformational leadership of the portfolio managers. Moreover, since they are directly responsible for project outcomes, they could provide accurate information on project performance. An internet based questionnaire was prepared and sent via an e-mail link to approximately 350 project managers working across the UK. Respondents were initially given two weeks to respond. At the end of the two weeks, we extended the response deadline by another week. The respondents provided data on their observation of transformational leadership behaviour of portfolio managers. They further assessed their own championing behaviour and the organisational climate. Finally they provided data on the performance of their projects. The sources of the instruments used in the study are discussed in the next section. Following elimination of responses with substantial missing data, we analysed 112 completed responses, representing a usable response rate of 32%. This compares favourably to other web based surveys. Research findings suggest a mean response rate of 34% and standard deviation of 22 for all web based surveys (Shih and Fan, 2008). Table 1 outlines the characteristics of the respondents.
3.2 Measures

We measured transformational leadership using Podsakoff et al.’s (1990) 22-items instrument on a 7 point Likert scale (1-“Strongly Disagree” and 7-“Strongly Agree”). The choice of Podsakoff et al.’s (1990, 1996) transformational leadership measurement instrument was informed by the fact that the most recognised alternative, the Multifactor Leadership Questionnaire (MLQ) has been found to lack the ability to distinguish between the various dimensions of transformational leadership implying they are not easily discerned by followers (Careless, 1998). Moreover the instrument has been validated and used in the project environment (Yang et al., 2010b). We also measured championing behaviour with Dulaimi et al.’s (2005) 21-item instrument on 5 point Likert scale (1-“Not at all” and 5-“Frequently”). Project performance was measured with 11-item scale developed by Dulaimi et al. (2005) on a 5-point scale (1-“Not at all” and “A great deal”). Climate for innovation was measured with Scott and Bruce’s (1994) 22 items instrument on a 5 point Likert scale (1-“Strongly Disagree” and 5-“Strongly Agree”). The same instruments were used by Dulaimi et al., (2005) in
measuring climate for innovation in their study. These instruments have therefore been validated in the project setting. In addition Dulaimi et al.’s (2005) project performance measures were adopted as they were multidimensional in nature and incorporated both long and short term measures of project performance. Moreover adopting the instrument would enable us to compare the result of this study with that of Dulaimi et al., (2005). The instruments used in the study are included in Appendix 1. Control and demographic variables such as age, tenure, average project fee, and educational level were also measured. Previous research on innovative behaviour identified level of education as positively influencing innovation championing behaviour. In addition project size which has been measured by the level of project fee has been found to influence levels of innovation and ultimately project performance (Dulaimi et al., 2005). Moreover research suggests experience gained by project managers from being engaged in previous projects (Dulaimi et al., 2005) whilst reflected in job tenure may also reflect in the age of the individual hence age was included in the control variables. The inclusion of these control variables enabled us to determine the unique contribution of the variables of interest in the study.

3.3 Statistical methods
We approached the analysis of the data in four steps. Since the project managers who were surveyed worked in different streams of business, we conducted an analysis of variance (ANOVA) to check for significant differences in responses from the different groups. The responses from the infrastructure services of the business which had the highest number of responses was treated as one group and checked against the others. We found no significant differences. We therefore combined the responses in subsequent analysis. The second stage involved factor analysis of the constructs using the principal component analysis with varimax orthogonal rotation to establish the dimensionality of transformational leadership, climate for innovation, innovation championing behaviour and project performance. The third stage involved hierarchical multiple regression analysis to test proposed hypotheses regarding the relationship among transformational leadership of portfolio managers, innovation championing behaviour of project managers, climate for innovation and project performance. We also investigated the mediating effect of championing behaviour and climate for innovation on the relationship between transformational leadership and project performance. In testing the mediated relationship we adopted the 4 steps method proposed by Baron and Kenny (1986). Firstly, the independent variable in this case transformational leadership must be related to the mediator variable, championing behaviour or climate for innovation; secondly, the independent variable must be related to the dependent variable (i.e. project performance); thirdly, the mediator variable must significantly relate to the dependent variable; finally when the mediator variable is controlled for, the relationship (i.e. coefficient) between the independent variable and dependent variable should either no longer be significant or substantially reduced with reference to that in the second step for partial mediation to exist or the coefficient should reduce to zero where there is full mediation. In addition to the four steps above, we further undertook a test of significance of the indirect effect of the predictor variable following the procedures outlined by Sobel (1982).

4. Results and analysis

4.1 Factor analysis, correlations and control variables
Exploratory factor analysis using principal component analysis with VARIMAX orthogonal rotation was undertaken to confirm the number of factors underlying the constructs in the proposed model and to determine the pattern of loadings. The 112 cases included in the
analysis met and exceeded the minimum sample size of 100 required to meet the recommended cases to variable ratio of 5:1 for each construct (Panuwatwanich et al., 2008). As detailed in Table 2 the Kaiser-Meyer-Olkin (KMO) measures ranged between 0.833-0.902, exceeding the recommended figure of 0.6 (Field, 2009), highlighting a high level of sampling adequacy.

Table 2: Summary of Exploratory Factor Analysis results

<table>
<thead>
<tr>
<th>Construct</th>
<th>KMO*</th>
<th>Variance Explained (%)</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational Leadership</td>
<td>.902</td>
<td>83.19</td>
<td>.85-.95</td>
</tr>
<tr>
<td>Fostering Commitment (7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual Stimulation (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Performance. Expectation (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulating Vision (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individualised Support (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Championing Behaviour</td>
<td>.814</td>
<td>49.8</td>
<td>.71-.84</td>
</tr>
<tr>
<td>Leads Innovation (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dem. commitment (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulates Innovation (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate for Innovation</td>
<td>.861</td>
<td>47.23</td>
<td>.80-.89</td>
</tr>
<tr>
<td>Support for Innovation (11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Supply (7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Performance</td>
<td>.833</td>
<td>76.75</td>
<td>.72-.92</td>
</tr>
<tr>
<td>Enhancing Company image (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Development (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Efficiency (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote Learning (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the basis of a combination of Eigen values and scree plots we extracted 5 factors of transformational leadership from 20 items, 3 factors of championing behaviour from 19 items, 2 factors of climate for innovation from 18 items and finally 4 factors of project performance from 11 items. These factors respectively explain 83.19%, 49.8%, 47.23% and 76.75% of the variance in the constructs. All items with factor loading of less than 0.5 were eliminated from further analysis in order to ensure the final items were representative of each factor (Field, 2009). Consequently, we removed 2 items from the championing behaviour measures and 4 items from the climate for innovation measures. Comparing the dimensions of transformational leadership in this study to the original instrument by Podsakoff et al. (1990), the sub-dimensions ‘modelling behaviour and ‘fostering acceptance of group goals’ loaded unto one factor which we labelled “fostering commitment” in this study. Consistent with the original study 2 and 3 factors of climate for innovation and innovation championing respectively were extracted. Four factors of project performance were extracted in this study although no factor analysis was undertaken in Dulaimi et al.’s (2005) original study. The Cronbach’s alpha (reliability coefficients) of all the scales ranged from 0.71-0.95 exceeding 0.7 level which is generally considered good (Panuwatwanich et al., 2008). Cronbach’s alpha
greater than 0.8 is considered excellent (Field, 2009). Our focus in this study was to understand the relationships among the constructs as a whole as opposed the impact of the individual dimensions. For that reason we used the composite constructs in further analyses. The use of the aggregated factors is consistent with previous studies using similar constructs, (Jung et al. 2003, 2008; Dulaimi et al., 2005; Sarros et al., 2008).

Table 3 shows the descriptive statistics and zero-order correlations among the dimensions of the control variables and the composite constructs. With the exception of the relationship between transformational leadership and climate for innovation and which had relatively stronger correlation than expected, all the relationships were consistent with the anticipated patterns of hypothesized relationships. These demonstrate the instruments used effectively discriminated between the constructs.

Table 3: Descriptive Statistics and Inter-correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.48</td>
<td>0.50</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>0.50</td>
<td>0.50</td>
<td>0.23**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Education</td>
<td>0.82</td>
<td>0.38</td>
<td>-0.16*</td>
<td>-0.02</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Fees</td>
<td>0.48</td>
<td>0.50</td>
<td>0.03</td>
<td>0.06</td>
<td>0.03</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>4.84</td>
<td>1.08</td>
<td>0.12</td>
<td>0.05</td>
<td>0.00</td>
<td>0.10</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Championing</td>
<td>3.94</td>
<td>0.42</td>
<td>0.05</td>
<td>0.04</td>
<td>0.01</td>
<td>0.30**</td>
<td>0.33**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate for Innovation</td>
<td>2.95</td>
<td>0.60</td>
<td>0.03</td>
<td>0.04</td>
<td>-0.16*</td>
<td>-0.03</td>
<td>0.57**</td>
<td>0.15</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Project Performance</td>
<td>3.72</td>
<td>0.56</td>
<td>-0.14</td>
<td>-0.17*</td>
<td>0.07</td>
<td>0.24**</td>
<td>0.33**</td>
<td>0.44**</td>
<td>0.30**</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes: *p<0.05; **p<0.01. Sample size=112 individuals. Control variables are coded as follows: Age is coded 0=less than 40, 1=over 40. Job tenure is coded 0=less than 5 years; 1=more than 5 years. Education is coded 0=less than degree, 1=degree and above. Project fees is coded 0=less than 80k, 1=80k and above.

4.4 Tests of hypotheses

Since 7 and 5 point Likert scales as well as categorical measures were combined in the study, standardised betas are reported and used in the test of hypotheses. Hypothesis 1 stated that transformational leadership behaviour of portfolio managers is positively related to project performance. Results of the regression analysis are detailed in Table 4 below. In step 1, only the control variables were included in the model. Of the control variables, project fees came out as a significant predictor ($\beta =0.237$, p<0.05). The control variables explain 6% of the variance in project performance. The result of step 2 indicates that transformational leadership have a significant and positive relationship with project performance ($\beta=0.328$, p<0.001) and explains 10% of the variance in project performance. Hence hypothesis 1 is supported.
Table 4: Regression analysis of transformational leadership as a predictor of project performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Project Performance</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>B</td>
</tr>
<tr>
<td>Age</td>
<td>-.105</td>
<td>.106</td>
<td>-.095</td>
<td>-.145</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.174</td>
<td>.106</td>
<td>-.159</td>
<td>-.180</td>
</tr>
<tr>
<td>Level of Education</td>
<td>.012</td>
<td>.136</td>
<td>.009</td>
<td>.014</td>
</tr>
<tr>
<td>Project Fees</td>
<td>.260</td>
<td>.103</td>
<td>.237*</td>
<td>.232</td>
</tr>
<tr>
<td>Transformational</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.092</td>
<td>0.197</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in R-Squared</td>
<td>0.092</td>
<td>0.105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Change</td>
<td>2.628*</td>
<td>13.528***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOVA (F)</td>
<td>2.628*</td>
<td>5.061***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.057</td>
<td>0.158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unique Variance</td>
<td>0.057</td>
<td>0.101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p<0.05; **p<0.01, ***p<0.001. Sample size=112 individuals.

Hypothesis 2 proposed a positive and significant relationship between transformational leadership behaviour and innovation championing behaviour of project managers. Table 5 outlines the results of the regression analysis. The first model with only the control variables had project fees as the only significant variable (β=0.281, p<0.01). The control variables explain 5% of the variance in championing behaviour. Step 2 involved the addition of the transformational leadership variable which indicates a significant and positive relationship with championing behaviour (β=0.291, p<0.01). Hypothesis 2 is therefore supported with transformational leadership uniquely explaining 8% of championing behaviour.

Hypothesis 3 suggested that championing behaviour mediates the relationship between transformational leadership and project performance. The results for hypotheses 1 and 2 satisfy the first two conditions for mediation as outlined by Baron and Kenny (1986). From Table 6, championing behaviour has a positive relationship with project performance (β=0.348, p<0.05) thus satisfying the third condition for mediation. Controlling for championing behaviour in the hierarchical regression in step 3 from table 6 showed the regression coefficient for transformational leadership reduced from β=0.328 in Table 4 to β=0.227, representing 31% drop. In addition, Sobel’s test confirms the significance of the indirect effect of transformational leadership on project performance as a result of its positive relationship with championing behaviour (Sobel’s test statistic=2.630, SE= 0.024, p<0.01). This confirms championing behaviour partially mediate the relationship between transformational leadership and project performance, thereby supporting hypothesis 3.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Table 5: Regression analysis of transformational leadership as a predictor of championing behaviour

<table>
<thead>
<tr>
<th>Variables</th>
<th>Championing Behaviour</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>B</td>
</tr>
<tr>
<td>Age</td>
<td>0.034</td>
<td>0.082</td>
<td>0.040</td>
<td>0.006</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>0.007</td>
<td>0.082</td>
<td>0.008</td>
<td>0.003</td>
</tr>
<tr>
<td>Level of Education</td>
<td>-0.011</td>
<td>0.106</td>
<td>-0.010</td>
<td>-0.010</td>
</tr>
<tr>
<td>Project Fees</td>
<td>0.237</td>
<td>0.080</td>
<td>0.281**</td>
<td>0.218</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.082</td>
<td>0.165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in R-Squared</td>
<td>0.082</td>
<td>0.083</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Change</td>
<td>2.31</td>
<td>10.255**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOVA (F)</td>
<td>2.31</td>
<td>4.063**</td>
<td></td>
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</tr>
<tr>
<td>Adjusted R²</td>
<td>0.046</td>
<td>0.124</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unique Variance</td>
<td>0.046</td>
<td>0.078</td>
<td></td>
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</tr>
</tbody>
</table>

Notes: *p<0.05; **p<0.01, ***p<0.001. Sample size=112 individuals.

Table 6: Regression analysis of the mediation effect on championing on project performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Project Performance</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>B</td>
</tr>
<tr>
<td>Age</td>
<td>-0.105</td>
<td>0.106</td>
<td>-0.095</td>
<td>-0.123</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-0.174</td>
<td>0.106</td>
<td>-0.159</td>
<td>-0.178</td>
</tr>
<tr>
<td>Level of Education</td>
<td>0.012</td>
<td>0.136</td>
<td>0.009</td>
<td>0.018</td>
</tr>
<tr>
<td>Project Fees</td>
<td>0.260</td>
<td>0.103</td>
<td>0.237*</td>
<td>0.237*</td>
</tr>
<tr>
<td>Championing Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.092</td>
<td>0.253</td>
<td>0.298</td>
<td></td>
</tr>
<tr>
<td>Change in R-Squared</td>
<td>0.092</td>
<td>0.161</td>
<td>0.046</td>
<td></td>
</tr>
<tr>
<td>F Change</td>
<td>2.628*</td>
<td>22.149***</td>
<td>6.656*</td>
<td></td>
</tr>
<tr>
<td>ANOVA (F)</td>
<td>2.628*</td>
<td>6.960***</td>
<td>7.228</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.057</td>
<td>0.216</td>
<td>0.257</td>
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</tr>
<tr>
<td>Unique Variance</td>
<td>0.057</td>
<td>0.159</td>
<td>0.041</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p<0.05; **p<0.01, ***p<0.001. N=112

Hypothesis 4 proposed that transformational leadership of portfolio managers is positively related to the project manager’s perceptions of climate for innovation. Table 7 shows that the control variables had negligible effect on climate for innovation. Transformational leadership uniquely contributed 34% of the variance in climate for innovation upon addition to the model. The results further show a strong and highly significant relationship between
transformational leadership and climate for innovation ($\beta=0.586, \rho<0.001$). Hypothesis 4 is therefore supported.

**Table 7:** Regression analysis of transformational leadership a predictor of climate for innovation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Climate for Innovation</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.011</td>
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<td>.009</td>
<td>-.068</td>
<td>.099</td>
<td>-.056</td>
<td></td>
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<tr>
<td>Job Tenure</td>
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<td>.033</td>
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<td>.027</td>
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<tr>
<td>Level of Education</td>
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<td>-.163</td>
<td>-.256</td>
<td>.126*</td>
<td>-.161</td>
<td></td>
</tr>
<tr>
<td>Proj. Fees</td>
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<td>-.028</td>
<td>-.090</td>
<td>.095</td>
<td>-.074</td>
<td></td>
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<tr>
<td><strong>Transformational Leadership</strong></td>
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<td>-</td>
<td>-</td>
<td>.328</td>
<td>.044</td>
<td>.586***</td>
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<tr>
<td>R2</td>
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</tr>
<tr>
<td>Change in R-Squared</td>
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<td>0.336</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>F Change</td>
<td>0.792</td>
<td></td>
<td>54.56***</td>
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<td>ANOVA (F)</td>
<td>0.792</td>
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<td>11.872***</td>
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<tr>
<td>Adjusted R2</td>
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<td></td>
<td>0.335</td>
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<tr>
<td>Unique Variance</td>
<td>-</td>
<td></td>
<td>0.335</td>
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Notes: *p<0.05; **p<0.01, ***p<0.001. N=112

Hypothesis 5 posited that climate for innovation mediates the effect of transformational leadership on project performance. From hypotheses 1 and 4, the first two steps necessary for mediation are met. From Table 8, climate for innovation has a positive relationship with project performance ($\beta=0.326, \rho<0.001$), thus satisfying the third condition for mediation. When controlling for climate for innovation in the fourth step presented in Table 8, the regression coefficient for transformational leadership reduced from $\beta=0.328$ in Table 3 to $\beta=0.210$, representing 36% reduction. Sobel’s test was further undertaken to test the significance of the indirect effect of transformational leadership. The result (Sobel’s test statistic= 3.249, SE= 0.030, $\rho<0.01$) confirm the significance of the indirect effect of transformational leadership on project performance through its positive relationship with climate for innovation. Hence climate for innovation partially mediates the relationship between transformational leadership and project performance, thereby supporting hypothesis 5.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Table 8: Regression analysis of the mediation effect of climate for innovation on project performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Project Performance</th>
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<td>Step 3</td>
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<td>Beta</td>
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<td>Beta</td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
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<td>Age</td>
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<td>.106</td>
<td>-.095</td>
<td>-.108</td>
<td>.101</td>
<td>-.098</td>
<td>-.132</td>
<td>.100</td>
<td>-.121</td>
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<td>Job Tenure</td>
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<td>.106</td>
<td>-.159</td>
<td>-.187</td>
<td>.100</td>
<td>-.171</td>
<td>-.186</td>
<td>.099</td>
<td>-.170</td>
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<tr>
<td>Level of Education</td>
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<td>.009</td>
<td>.089</td>
<td>.131</td>
<td>.062</td>
<td>.061</td>
<td>.130</td>
<td>.042</td>
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<tr>
<td>Project Fees</td>
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<td>.103</td>
<td>.237*</td>
<td>.270</td>
<td>.097</td>
<td>.246**</td>
<td>.248</td>
<td>.097</td>
<td>.226*</td>
<td></td>
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<tr>
<td>Climate for Innovation</td>
<td>.296</td>
<td>.082</td>
<td>.326***</td>
<td>.280</td>
<td>.097</td>
<td>.321**</td>
<td>.279</td>
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<td>Transformational Leadership</td>
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<td>.055</td>
<td>.210</td>
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<td>R2</td>
<td>0.092</td>
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<td>0.195</td>
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<td>0.223</td>
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<tr>
<td>Squared F</td>
<td>2.628*</td>
<td>13.186***</td>
<td>3.702</td>
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<tr>
<td>ANOVA (F)</td>
<td>2.628*</td>
<td>4.986***</td>
<td>4.881***</td>
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<tr>
<td>Adjusted R2</td>
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<td>0.156</td>
<td>0.177</td>
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<tr>
<td>Unique Variance</td>
<td>0.057</td>
<td>0.099</td>
<td>0.021</td>
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Notes: *p<0.05; **p<0.01, ***p<0.001. Sample size=112 individuals

5. Discussion and conclusions

The primary objective of this research was to examine the role of portfolio managers in improving project performance directly as well as indirectly through climate for innovation and innovation championing. The results from this study demonstrate that high levels of portfolio managers’ transformational leadership positively effect on project performance explaining 10% of the variance in project performance. This is consistent with the results of Waldman and Atwater (1994) who in a study of R&D project teams found that transformational leadership of higher level managers positively influence project outcomes. Also, Keegan and Den Hartog (2004) found transformational leadership of managers did have a positive impact on employees’ commitment and motivation which could in turn influence employee performance in project environment. Our findings suggest that transformational leadership behaviour of portfolio managers could potentially bypass the hierarchical link between portfolio managers and project managers and be experienced directly at the project team level and consequently impact on project performance.

The direct effect of transformational leadership on performance of employees at lower levels of organisations is supported in previous studies (Dvir et al., 2002). Yang et al., (2010a) provide further evidence of the bypass effect of transformational leadership. Yang et al., (2010a) explained the bypass effect of transformational leadership behaviour of middle managers on the employee performance drawing on Bandura’s (1986) theory of social learning and suggested that employee’s identification with their organisation provides an important psychological avenue through which leaders directly influence the behaviour of their teams. Our findings suggest that by articulating a clear strategic objective for their division, portfolio managers could inspire delivery teams to put in the ‘extra effort’ required to achieve the desired goals. Furthermore high performance expectation expressed during project reviews could motivate the team members to aim at achieving higher standards of project performance. Given that previous research by Keegan and Dan Hartog (2004) as well
as Waldman and Atwater (1994) found no significant relationship between transformational leadership of project managers and project outcomes, it is possible that benefits of transformational leadership in the project environment could be derived from higher up the organisational hierarchy at the portfolio manager level rather than the project manager level. We found that transformational leadership of portfolio managers had a positive and significant relationship with championing behaviour, uniquely explaining 8% of the variance in innovation championing behaviour. This finding is consistent with previous studies which found transformational leadership engenders commitment and trust (Podsakoff et al., 1990, 1996), innovative behaviour among immediate followers (Pieterse et al., 2010) and performance beyond the expected level (Bass and Avolio, 1994). The study demonstrates this relationship holds within the project environment as trust in portfolio managers who exhibit transformational leadership is likely to encourage innovation championing behaviour among project managers in the knowledge that their managers will stand by them should they fail in their efforts to implement innovative solutions. This could lead to improved project performance.

Although research has shown that the leadership behaviour of project managers influences project outcomes (Yang et al, 2010b), there is no clear indication as to the type of leadership which will yield the desired project outcomes. Our study highlights a significantly positive effect of innovation championing behaviour on project performance in line with findings made by Dulaimi et al (2005), accounting for 16% of the variation in project performance. Similarly, Waldman and Atwater (1994) found that championing behaviour had a positive effect on project effectiveness in a research and development project environment. By exhibiting championing behaviour project managers facilitate the generation of ideas among team members and promote the advantages of an innovative idea. Furthermore, by demonstrating commitment and taking ownership of the process, project managers are likely to engender support and commitment among team members to make the project successful. A Study by Howell and Higgins (1990) on the personality characteristics of innovation champions found they exhibit transformational leadership to a greater extent than non-champions. It is therefore possible that the cascading effect of transformational leadership could influence the innovation championing behaviour of project managers who in turn influence project performance. This could result from the tendency of the direct subordinate to emulate portfolio managers (Yang et al., 2010a). This finding corroborates the cascading effect of transformational leadership in the project environment.

The evidence also suggests that transformational leadership of portfolio managers exerts a positive influence on climate for innovation, uniquely explaining 34% of the variance in climate for innovation. The result is consistent with findings by Sarros et al., (2008). In a study of 1158 managers in the private sector in Australia, Sarros and his colleagues found that transformational leadership accounted for 26% of the variance in organisational climate for innovation. The study particularly found that transformational leadership in organisations was linked to the provision of adequate resources, which enhances the perception of an environment encouraging of innovation. We also found climate for innovation influenced project performance and explained 10% of the variance. This is consistent with previous research that has shown that resource availability and support from management help to create a climate for innovation which in turn induces improved performance (Scott and Bruce, 1994). Kissi et al. (2012a) reviewed three types of innovative projects and concluded that middle level managers’ in project environment influence project performance by helping to create a climate conducive to innovation. This indirect relationship is in line with findings by
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Panuwatwanich et al. (2008) whose study of 181 professional designers in the construction industry found that leadership for innovation has an indirect effect on performance. Climate for innovation therefore provides an avenue through which transformational leadership can influence project performance. The results from this study further corroborates findings by Kissi et al. (2012b) who in a qualitative study identified individualised support as the most influential transformational leadership dimension influencing project performance both directly and indirectly though the organisational climate and championing behaviour. Articulating vision and fostering the acceptance of group goals both influenced climate for innovation and project performance while high performance expectation, modelling behaviour and intellectual stimulation were found to influence innovation championing and project performance.

Findings from this study have a number of significant theoretical implications. Firstly they deepen our understanding of the process through which transformational leadership of portfolio managers influences performance in the project environment. The study demonstrates that the bypass effect of leadership holds in the project environment as transformational leadership of portfolio managers had a direct effect on project performance, bypassing the influence of project managers. In addition the mediating influence of innovation championing behaviour supports the cascading effect of transformational leadership in project settings (Yang et al., 2010a). Portfolio managers could influence the delivery team as a whole through the climate for innovation. Our study highlights the importance of portfolio managers in enabling higher levels of performance in project based organisations. The study adds to the limited number of research on portfolio managers in literature and provides an insight into the role of this important constituency. It further identifies the need to further explore their influence in achieving project success. This is even more important given that context-related behaviours have in recent times been identified as one of the key factors that influence project success (Tuuli and Rowlinson, 2009). The findings also highlight a departure from the negative reporting of the role of middle level managers (Dopson and Stewart, 1993; Thomas and Linystead; 2002) and suggest they have an important function in enhancing project performance.

The findings from this study have a range of practical implications for project based professional services firms and particularly for portfolio managers. It is important that portfolio managers are aware of the impact of their work place behaviour on the performance of project managers and project team members. Portfolio managers can achieve this by modelling the kind of behaviour that will be expected of their project teams. In addition, intellectually stimulating their teams through intelligent questioning and expressing high performance expectation during project delivery could encourage creativity and innovative behaviour among project teams. Transformational leadership is most likely to be attractive to professional services organisations comprising mainly of individuals with a reasonably high level of education and an aspiration for challenging work which could stimulate professional development (Keller, 1992). Portfolio managers should therefore be conscious of this and adopt transformational leadership style in leading their teams. The position portfolio managers hold between the strategic decision making senior managers and operational delivery teams offers them the opportunity to influence the perceptions of their teams and send the right signals in respect of the expected innovative behaviour which could result in improved project performance. Investigations conducted by Keegan and Turner (2002) into project based organisations in various sectors including the engineering and procurement sector on their approach and attitude towards innovation revealed that irrespective of the
industry, they do not create a climate conducive for innovation. Their findings suggested that the processes and procedures associated with the successful management of projects serve to stifle innovation, noting that ‘the efficient use of personnel time has become the critical criteria against which all projects were judged and the measurement system focused all efforts on making people accountable for their time’ (Keegan and Turner, 2002: 375). Portfolio managers could therefore take steps to provide support for innovation and make the necessary resources including time available to their teams to help create the right environment that could lead to improved project performance. Given the direct and indirect impact of transformational leadership on performance, it is important that organisations make efforts to invest in developing transformational leadership competencies among portfolio managers.

In spite of the significant findings of this study, it is not without limitations. The cross-sectional nature of the study implies that no definitive causal inferences can be drawn among the constructs. For example, although the findings suggest that transformational leadership has a positive effect on climate for innovation, it is also possible that the nature of the work environment could influence the leadership behaviour of the portfolio managers. A longitudinal research design in the future could help establish the causal relationships among the constructs. The study adopted a quantitative approach and that has its disadvantages in that it fails to capture the nuances of, and complexities within the relationships studied. Future qualitative research design should examine in greater detail the processes through which the bypass and cascading effect of transformational leadership practically occurs in the workplace to influence project performance.

Whereas our study argues portfolio managers positively influence project performance, it is also possible the level of innovation contributed significantly to the project performance measures observed. Future research should control for the level of innovation in order to clarify the degree of portfolio managers’ direct impact on project performance. Common source bias could be an issue in this study as project managers were the only source of data. Future studies should include social desirability measures and obtain data from different sources including team members and portfolio managers to address this bias. At 8% the explanatory power of transformational leadership on innovation championing behaviour is relatively weak. Moreover, the level of correlation between transformational leadership and climate for innovation was higher than expected. This could be because transformational leadership has been found to match closely with the determinants of innovation such as encouragement, recognition and challenge in the workplace place (Gumusluoglu and Ilsev, 2009). Future studies should therefore adopt a different instrument for measuring transformational leadership or better explanatory measures for innovation championing and climate for innovation to explore these relationships in more detail. Finally, we based the study on one organisation. Although the size and diversity of the company mitigates this limitation, future research should focus on an industry wide survey to confirm the generalisability of the relationships identified in this study of a single but large project organisation.

**Acknowledgement**
The authors would like to thank David Bentley for helpful comments and the EPSRC for the funding the project on which this paper is based.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


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Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Appendix 1 – Survey Questionnaire
Section 1: About You

1. Please indicate which of these qualifications you have?
   a) Dip, b) HND c) BSc. d) B Eng e) MSc f) M Eng. g) MBA h) DEng i) PhD j) other 
   .............

2. Which business stream do you work for?

3. Please indicate which of the following age groups you fall in.
   a) Less than 25
   b) 25-30
   c) 30-35
   d) 35-40
   e) More than 40 years

4. How many years have you been working with the company?
   f) Less than 2 years
   g) 2 – 4
   h) 5 – 7
   i) 8 – 10
   j) More than 10 years

148
5. How long have you been working as a Project Manager?
   k) Less than 2 years
   l) 2 – 4
   m) 5 – 7
   n) 8 – 10
   o) More than 10 years

6. Which of the following apply to you
   p) My projects are mainly for private sector clients
   q) My projects are mainly for public sector clients
   r) Other clients (please specify)

7. On average what is the value of projects (fees) you have been managing :
   s) Less than 20k
   t) 20-40k
   u) 40-60k
   v) 60-80k
   w) More than 80

8. On average what is the value of projects (implementation cost) you have been managing :
   x) Less than 100k
   y) 100-200k
   z) 200-300k
   aa) 300-400k
   bb) More than 400k

Section 2: About your Divisional Manager/Director

Please indicate to what extent you agree that the following statements are true descriptions of the ‘Divisional Manager/Director’ behaviours in the workplace. (1=strongly disagree, 2=disagree, 3= fairly disagree, 4=neither agree nor disagree, 5=fairly agree, 6= agree, 7= strongly agree).

9. Is always seeking new opportunities for the unit/department/organisation.
10. Paints an interesting picture of the future for our group.
11. Has a clear understanding of where we are going.
12. Inspires others with his/her plans for the future.
13. Is able to get others committed to his/her dreams of the future.
14. Leads by “doing” rather than simply by “telling”.
15. Provides a good model to follow
16. Leads by example.
17. Fosters collaboration among work groups.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

18. Encourages employees to be “team players”
19. Gets the group to work together for the same goal.
20. Develops a team attitude and spirit among his/her employees.
21. Shows us that he/she expects a lot from us.
22. Insists on only the best performance.
23. Will not settle for second best.
25. Shows respect for my personal feelings.
26. Behaves in a manner that is thoughtful of my personal needs.
27. Treats me without considering my personal feelings.
28. Has provided me with new ways of looking at things which used to be a puzzle for me.
29. Has ideas that have forced me to think some of my own ideas I have never questioned before.
30. Has stimulated me to think about old problems in new ways.

Section 3: Organisational Climate for Innovation

Please indicate the extent to which the following describes the working environment in Mouchel? (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree).

31. The reward system here benefits mainly those who don't rock the boat
32. This organization publicly recognizes those who are innovative
33. The reward system here encourages innovation
34. This organization gives me free time to pursue creative ideas during the workday
35. Personnel shortages inhibit innovation in this organization
36. Lack of funding to investigate creative ideas is a problem in this organization.
37. There is adequate time available to pursue creative ideas here
38. There are adequate resources devoted to innovation in this organization
39. Assistance in developing new ideas is readily available
40. This place seems to be more concerned with the status quo than with change
41. In this organization, we tend to stick to tried and true ways
42. The people in charge around here usually get credit for others’ ideas
43. This organization is open and responsive to change
44. People around here are expected to deal with problems in the same way
45. The best way to get along in this organization is to think the way the rest of the group does
46. A person can't do things that are too different around here without provoking anger
47. This organization can be described as flexible and continually adapting to change
48. Around here, a person can get in a lot of trouble by being different.
49. The main function of members in this organization is to follow orders which come down through channels
50. Around here, people are allowed to try to solve the same problems in different ways
51. Our ability to function creatively is respected by the leadership
52. Creativity is encouraged here
Section 4: About your “Innovation Championing” Behaviour

Please indicate the extent to which you display the following behaviours in your project management responsibilities (1=not at all, 2=once in a while, 3=sometimes, 4=fairly often, 5=frequently).

53. I enthusiastically promote the advantages of new ideas and solutions
54. I express confidence in what the innovation can do and achieve
55. I challenge the way it has been done before as the only answer
56. I get others to look at problems from many different angles
57. I seek differing perspectives when solving problems
58. I maintain a network of contacts
59. I seek out new technologies, process, techniques and/or product ideas
60. I push innovation actively and vigorously
61. I show optimism about the success of innovation
62. I show tenacity in overcoming obstacles
63. I accept responsibility for the results
64. I give top priority to getting results
65. I coordinate and bring together the key individuals
66. I get the necessary resources (e.g. people, time, money) to implement new ideas, technology and/or solutions
67. I back the people involved
68. I seek to build trust
69. I get the problem into the hands of those who can solve them
70. I keep project stakeholders involved in the process
71. I set up harmonious and cooperative working environment among parties
72. I accept feedback
73. I seek to get support from the top level

Section 5: Project performance

To what extent do you perceive that your projects have achieved or will achieve the following outcomes? (1=not at all, 2=just a little, 3=moderate amount, 4=quite a lot, 5=a great deal).

74. Enable and motivate innovation
75. Lead to improved project team satisfaction
76. Increase the level of productivity
77. Finish project within the budget
78. Finish project on time
79. Retain talents with the company
80. Enable competitive advantages to the company
81. Enhance the image of the company
82. Enhance client satisfaction
83. Enable continuous improvement
84. Facilitate learning within the project
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

APPENDIX E  PAPER 5

Understanding the effect of transformation leadership behaviour of middle managers on innovation

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Abstract

The purpose of this study was to investigate the role of transformational leadership behaviour of middle managers in facilitating innovation in project based professional services firms. It followed a quantitative data collection and analysis to examine the relationship between transformational leadership and climate for innovation, innovation championing behaviour and project performance. In-depth interviews were held with 13 members of staff selected from different parts of the company. In addition a focus group discussion was held with 15 Technical Directors aimed at developing a deeper understanding of the processes by which middle managers influence innovation. Findings from the study suggest middle managers’ transformational leadership impact project outcomes by helping to develop a climate for innovation and influencing the innovation championing behaviour of their staff through their actions and behaviour in the workplace. The findings contribute to a better understanding of the role of middle level leadership in project environment in facilitating innovation and improved performance and answer the call for more qualitative approaches to understanding the impact of leaders in project based organisations.

Keywords: Climate for innovation, innovation championing, middle managers, project based firms, transformational leadership

Introduction

Most firms in construction and other industries consider innovation as an important source of competitive advantage as it provides an avenue by which they can differentiate their products or services (Dulaimi, Nepal and Park, 2005; Kissi, Dainty and Liu, 2011a). Innovation is also important to addressing the criticisms directed at the industry for delivering products and services which fall below clients’ expectation of quality, price certainty and assured delivery (Kissi et al. 2011a; Lu and Sexton, 2006). The need for change is more urgent in view of the current economic circumstances which have seen many companies pursuing a dwindling number of business opportunities (Kissi et al., 2011a). Innovation in this paper has been defined ‘as the generation or adoption of ideas; design concepts or delivery processes, new to the adopting organisation, which when implemented will yield a reduction in cost and/or time associated with project delivery and improve the quality of outcomes (Kissi et al., 2011a: 12). Studies have identified a number of factors both internal and external to project based organisations as influencing innovation. This study however focuses on the factors organisations have control over; the internal influencers. The primary internal factors have been identified as; leadership, climate for innovation and innovation championing, (Kissi et
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

al., 2011a; Kissi et al., 2010). Leadership behaviour in general and transformational leadership in particular has long been considered an important individual factor that influences innovation and performance in the workplace (Keegan and Den Hartog, 2004). Whereas a number of studies have confirmed the positive impact of transformational leadership on innovation, most of them have focused on top managers and adopted quantitative approach, treating transformational leadership as a composite construct. Therefore they failed to capture how transformational leadership is practically exhibited in the project based environment.

The study forms part of an on-going Engineering Doctorate programme and follows two previous empirical studies examining the role of middle managers in improving innovative performance. The first was a case study of three innovations which identified innovation supporting behaviour of middle managers, innovation championing and climate for innovation as the key factors that influenced the innovation outcomes. The second study which was quantitative in nature identified a positive and significant relationship between transformational leadership, climate for innovation and innovation championing behaviour. In addition, it was found that transformational leadership influenced project performance directly and indirectly through climate for innovation and championing behaviour (Kissi et al., 2011a; Kissi, Dainty and Tuuli, 2011b).

This phase of the study was to test the validity and applicability of the model in project based organisations. In addition, the study aimed to examine the influence of the individual dimensions of transformational leadership on innovation and how they are practically exhibited in the workplace. The study further sought to identify the most influential dimension that managers could concentrate on developing in order to improve performance. Middle managers in this study are considered as those above first level supervision but below the senior managers (Dopson, Stewart and Risk, 1992). They include Technical Directors, Project Directors, Team Managers and Principal Engineers. Subsequent sections of this paper discuss the key constructs in this study, the methodology employed, the key findings and their theoretical and practical implications.

**Transformational leadership**

Transformational leadership is associated with stimulating and inspiring followers to deliver extraordinary results (Bass and Riggio, 2006). It changes followers by appealing to their higher order needs and causes them to modify their own values and to look beyond personal interest in favour of the group goals (Pieterse et al, 2010). Transformational leadership comprises several components, being a higher order construct (Pieterse et al, 2010). The study employed the six dimensions of transformational leadership; articulating vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, individualised support and intellectual stimulation (Kissi et al., 2011a; Podsakoff et al., 1990). According to the authors through articulating vision, the leader identifies new opportunities for the unit and inspires others with his or her vision and shows them how to achieve the vision. The leader also provides appropriate model to the team of the sort of behaviour expected by living the espoused values as an example to the team. In addition the leader promotes team effort towards the achievement of organisational goals by fostering the acceptance of group goals whiles high performance expectation is reflected in the leader’s expressed confidence in the ability of the team to achieve. Moreover individualised support echoes the leader’s ability to consider individual team member concerns. Finally the leader challenges the assumptions employees have about their work and urges them to think outside
the box in developing new solutions to existing problems through intellectual stimulation (Podsakoff et al., 1990, 1996).

**Transformational Leadership, Climate for Innovation and Championing Behaviour**

The way members of an organisation experience and react to their organisational context is referred to as climate (Rollinson and Broadfield, 2002). Climate in organisational studies is essential as employees’ draw conclusions from their observations rather than what is said and align their own priorities with what they perceive to be important to the organisations. Climate also determines the motivations, attitudes and behaviour of employees (Kozlowski and Hults, 1987; Kissi et al., 2009, Kissi et al., 2010). Climate for innovation is therefore considered as creating the kind of environment that will foster innovation in the workplace. Leadership behaviour has the potential of influencing organisational climate. In a study of 1158 managers in Australian private sector organisations, Sarros, et al. (2008) found that visionary leadership associated with adequate supply of resources; funding, personnel, time for creative activities and reward for innovations influenced organisational climate for innovation. The study however did not involve a detailed investigation in context as it was quantitative in design.

The need for innovation champions in construction to improve performance has been well documented, (Nam and Tatum, 1997; Dulaimi et al., 2005). Innovation championing behaviour involves the project team members’ observable actions directed towards seeking, stimulating, supporting, carrying out and promoting innovation in projects (Dulaimi et al, 2005). Perception of the work environment has been found to impact on the creativity of individuals in the organisation (Amabile et al, 1996) and ultimately their innovation championing. Transformational leaders can enhance creativity and innovation in the workplace by developing an environment that encourages staff to pursue new approaches to resolving old problems without being apprehensive about recrimination in event of a negative outcome (Amabile et al, 1996; Kissi et al., 2011a; Kissi et al, 2009). This could therefore enhance the championing behaviour of the project team members. Ultimately Innovation championing behaviour leads to improved project performance (Nam and Tatum, 1997; Dulaimi et al, 2005, Kissi et al, 2010; Kissi et al., 2011a). However, most studies investigating the role of transformational leadership in facilitating innovation has been focused on senior managers at more strategic levels (Jung et al, 2008) or project managers, (Keegan and Den Hartog, 2004), with little attention paid to middle management (Kissi et. al 2010; 2011a). The role of middle managers in organisations has been subjected to a lot of debate and conjecture. Whiles some researchers suggest they have an important role to play in enhancing productivity through innovation, others argue that they are unimaginative, stubborn and don’t have much to contribute towards the advancement of organisations (Huy, 2001; Kissi et al., 2011a).

From the forgoing, it could be seen that although there is significant empirical evidence that transformational leadership impacts on innovation, the role of middle managers in this process is debatable. Given that middle managers have a direct contact with and exercise supervisory responsibility over project teams, it could be argued that their day to day actions and behaviour in the workplace could have a significant impact on how their team members respond and perform. For that reason this study is relevant to capturing how transformational leadership behaviour is practically exhibited by middle managers in the workplace and how that impacts innovative performance.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Methodology

This phase of the study sought a deeper understanding of the process by which transformational leadership influence performance. There was no requirement to control the behaviour of the participants. The research questions posed were primarily “how and why questions”. The study also aimed to develop a better understanding of the phenomenon within the context of a project based organisation. For the above reasons it was deemed important for the purpose of demonstrating how middle managers’ day to day behaviour in the workplace influence championing behaviour, work climate and project performance to undertake in-depth interviews in context (Winch, 1998; Yin, 2003). Interviews therefore formed an important source of evidence in this study as they helped to focus directly on the topic and provided more insightful information (Yin, 2003).

The company on which the study was based employed about 8,000 staff across the UK, Middle East and Australia and operates in a number of industries. The study was based on the infrastructure Services Business Stream which primarily provides highway engineering and project management consulting services. A focus group discussion comprising of 15 Technical Directors (FG) and 13 interviews were held as part of the data collection exercise. The 13 interviewees comprised; 2 Team Managers (TM), 1 Technical Director (TD), 1 Project Director (PD), 1 Principal Engineer (PE), and 3 Senior Engineers (SE) and 5 Engineers (CE). The average time spent per interview was about 40 minutes. The interview questions focused on the leadership behaviour of the managers they work with and how that influences their own responses and performance in the work place. In the case of the middle managers, the interview was focused on their own leadership behaviour and how that impacted on their team members’ performance. The interviewees were selected to ensure that there was a representation from a cross-section of grades within the company.

The study adopted semi-structured face to face interview approach with guiding questions derived from literature. The interview focused on Podsakoff et al.’s (1990, 1996) six dimensions of transformational leadership as exhibited by middle managers. An example is ‘how does your manager paint an exciting picture of the future to inspire you and the team’. Where the interviewees had not seen evidence of any particular dimension, they were asked about what the likely impact would be if their manager was to exhibit such behaviour. The study adopted the thematic approach to the data analysis following the recommendations of Braun and Clarke (2006) as briefly discussed below. All the interviews were recorded and transcribed verbatim. Using Nvivo version 9.2, initial codes were generated from the transcribed interview documents highlighting data which were of interest for further analysis. This was done in such a way to ensure that meaning was not lost by taking the data out of context. The next stage of the analysis involved combining the codes into appropriate themes and sub-themes. Following further analysis, the initial themes were refined to identify the key themes emerging. The final themes related to actions and behaviours of the middle managers which had significant impact on climate for innovation, championing behaviour and project performance.
Findings and Discussions

Findings from this research confirmed the positive relationships among the constructs observed in the earlier quantitative study. These relationships are diagrammatically represented in figure 1 below.

![Figure 1: Relationship between individual dimensions of transformational leadership and the innovation championing, climate for innovation](image)

This study found that individualised support was the most influential dimension impacting on innovation championing behaviour, climate for innovation and project performance. Articulating vision and fostering the acceptance of group goals both influenced climate for innovation and project performance. High performance expectation, modelling behaviour and intellectual stimulation influenced innovation championing and project performance. The study also found that climate for innovation influenced project performance directly and indirectly through innovation championing.

The study further identified the specific behaviours of the middle managers that were responsible for the relationships observed. For lack of space in this paper, the most influential dimension; individualised support is discussed in detail. Table 1 below summarises examples of the individualised support as reported by interviewees, the impact on team members and corresponding verbatim quotes in support of the impact. Details of the manifestations of the
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

other dimensions of transformational leadership will be reported in the forthcoming Engineering Doctorate thesis. In the sections that follow, manifestations of the individualised support dimension are discussed in detail.

Table 1: Examples of transformational leadership dimension of individualised support and how it was expressed.

<table>
<thead>
<tr>
<th>Transformational Leadership Dimension</th>
<th>How it was expressed</th>
<th>Examples of such behaviour found</th>
<th>Impact</th>
<th>Quote where relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualised Support</td>
<td>Personal Development</td>
<td>Managers allocating projects that will help staff develop other skills</td>
<td>More commitment and improved performance</td>
<td>‘feel good if you think you got an opportunity to develop and grow somehow it is good for you’ (CE1)</td>
</tr>
<tr>
<td>Individualised Support</td>
<td>Respect for Individual Preferences</td>
<td>Managers respecting a particular individual’s preference for e-mail communication instead of verbal</td>
<td>Perception of work environment is enhanced, people feel more relaxed, and output increased</td>
<td>‘I work with other people that if I probably showed them I expect a lot from them I will get a negative response so I show them I am very pleased when you do your best’ (FG1)</td>
</tr>
</tbody>
</table>

**Personal development**

This was seen in the middle managers addressing the development needs of their staff. It was reflected in the manager making efforts to understand the strength and weaknesses of the team and helping the team members to harness their strength while developing other skills. The evidence suggested that some middle managers allocated projects to individuals that enabled them to address their personal and professional development needs. Some managers actively sought opportunities for their staff to work on specific projects with different clients and different parts of the business that could facilitate their development. In most cases this was possible because having built their careers over several years in the company most cases from the lower levels (Huy, 2001); the middle managers had extensive networks across the company that they drew support from in developing their teams. This according to the staff involved had a very positive effect and elicited extra effort from them. This finding is consistent with suggestions by Bass and Riggio (2006) that a core element of transformational leadership is to enable followers to develop their capabilities and their own capacity to lead. Similarly Sosik, Godshalk and Yammarino (2004), compared the effect of transformational leaders on their staff to that of mentoring which includes providing career development guidance. According to Bass and Riggio (2006:55); ‘a major determinant factor of the effective performance of transformational leaders may be the extent to which the leaders are able to have a positive influence on followers’ development’.
Respect for Individual Preferences
There was evidence to suggest that middle managers were conscious of and respected the individual preferences of their team members as evident in this statement by one of the Technical Directors, ‘I work with other people that if I probably showed them I expect a lot from them I will get a negative response so I show them I am very pleased when you do your best’ (FG1). Also commenting on intellectual stimulation the Technical Director stated that ‘there is a group of people who need to do what they have always done so to go and talk to them why didn’t you have that great idea is not getting the best out of them. So what you want is an environment where those who can think outside the box are encouraged to do so and are appreciated and those who have the job to put these ideas into action, their work is appreciated as well’ (FG1).

Some managers also recognise that there are different insecurities and pressures and issues that affect their day to day performance and took this into consideration in working with them. An individual preference recognised and taken into consideration was seen to have a positive impact on the individual’s motivation and commitment and which ultimately influences their performance. It was observed that middle managers were able to do this because of their closeness to the delivery teams unlike top managers. This finding is consistent with (Bass and Riggio, 2006) suggestions that transformational leaders can have a greater impact by recognising, accepting and working with individual differences and preferences of their team members which in turn influences the nature of the relationship between the middle managers and their team members. Similarly Scott and Bruce (1994) asserted that the quality of relationship that exists between employees and their managers, impact on their innovativeness as it influences the subordinate’s perception of the work environment as supportive.

Challenging Work
The study found that middle managers’ effort in packaging work and allocating new challenging roles to individuals did have a positive impact on their work environment and they had more job satisfaction as a result. One Technical Director commented that ‘you will have noticed people have been given new roles for example someone is made a team manager or another office, you can see that all of a sudden, he starts coming to the office at 7:30 in the morning and he is running around and he is working very hard and he is doing that because he is happy, he is happy and he is happy because he is stretched and he is challenged and he has challenges to face’ (FG2). Middle managers were seen to draw extensively from their years of experience when packaging work for their team members and asking challenging question. Some of the staff were seen to make the extra effort in undertaking research and finding solutions to challenging tasks or projects they had been allocated leading to increased championing behaviour and higher levels of performance. This could be explained by the fact that some people are motivated by the nature of the task or the role assigned to them in the work place (Rollinson and Broadfield, 2002). Moreover in a professional services environment challenging work could stimulate professional development and higher levels of performance, (Keller, 1992). Shalley and Gilson (2004) similarly submitted that when managers provide a challenging environment to employees it informs the perceptions of the work environment as one supportive of innovation which influence innovative behaviour in the workplace.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Interaction and Feedback
The study showed that team members whose managers were approachable and accessible had a good experience of the work environment as being supportive and influenced their tendency to adopt innovative solutions. This could be seen in informal chats among the middle manager and the team members on social issues, sports and other activities outside work. The need for this interaction was expressed by one interviewee, ‘managers need to have more of an office presence rather management meetings and need to spend more time interacting with their teams to get to know them not just by filling in skill matrix but get to know their teams and their skills and what they are excellent in and what their limits are’ (PD1). This statement further buttresses the fact that staff expects their managers to engage and interact with them. Where there was more regular interaction, team members were able to bounce ideas off their managers and that was seen to encourage team members to make efforts to adopt more innovative approaches to delivering projects (Salter and Gann, 2003).

The study further found that these regular interactions also afforded managers the opportunity to provide more regular feedback to their staff. Providing regular feedback was seen to have a positive impact on the staff as that put them in a position to understand where they were contributing to the expected level required of them and where they needed to do more. Feedback was seen to include both positive when a good work was done and constructive criticism where work delivered was not up to the standard expected. Both were seen to lead to improved performance. The findings further suggest that the more personal contact between the middle manager and the delivery teams and resultant interaction tends to create an atmosphere of trust enabling the teams explore and develop solutions as innovation champions (Kissi et al., 2011a).

Support for Individuals
There was evidence to suggest that where middle managers provided support and stood by staff in good and bad times and provided advice for them when problems were presented to them, it created a sense of a good place to work. According to one of the interviewees it made the staff feel they were in the right place. Some of the interviewees stated that they had no problems at all approaching their managers with personal concerns as they were always understanding and supportive. The positive effect of this was re-echoed by one of the interviewees who commented that ‘when you treat your employee as a human and care about them in their personal life as well as their work life then they get attached to you and they want to stay with you and they want to do their best for you’ (CE2). It could therefore be seen that paying attention to the individual’s needs does not only influence the environment within which people operate but also their motivation to work harder on their projects. An interviewee cited an instance when due to personal circumstances had to work from home and how the manager was very supportive in allowing work to be done around the circumstances as far as the expected targets could still be achieved.

Managers’ action in listening and taking the needed actions to address the concerns of staff was seen to have a positive impact. The team members had a favourable view of managers who forwarded issues to other people better placed to deal with them in the event that they were unable to deal with them. However the findings suggested that listening and not taking action had a negative impact on the staff. By their closeness to the staff, middle managers were able to provide a safe psychological environment or work climate for members of their team trying new approaches and developing new solutions to existing problems (Huy, 2001). Providing support for individuals has been found to lead to higher levels of productivity,
(Podsakoff et al., 1996). Similarly, Oldham and Cummings (1996) found that employees were at their most creative when they operate in a supportive environment. It’s however worth noting that in an environment where people value their independence, over stretching support for the individual could be misinterpreted to mean the manager lacks confidence in the individual’s ability to deal with their own issues (Keller, 1992) and could lead to negative outcomes.

**Recognition**

The study found that when individuals were recognised for their contributions to project delivery, made to have a sense of belonging and seen as valued members of the team, their confidence and motivation were positively influenced to do more. In a particular instance one of the interviewees undertook a project which won an award and this information was circulated in the division. Asked how that impacted his work, he responded that made him feel good and wanted to do more. One interviewee commented that ‘he looks at the good things that you have done rather than the negatives. That motivates you to do better. There is always that you have n’t done, you cannot always get 100% so if you get 90% he focuses on the 90% instead of the 10%’ (CE4). Recognition has been previously identified as an important motivating factor in a number of studies, (Rollinson and Broadfield, 2002).

**Conclusion**

The purpose of this study was to examine the role of middle managers in enabling innovation in project based organisations. The study investigated the behaviours middle managers exhibited in the work place and how that influenced the performance of their teams. This paper focused on identifying the specific behaviours that comprised transformational leadership dimensions of individualised support and the impact on team members. Findings from the study suggest that middle managers can demonstrate individualised support by; assisting the personal development of staff, providing support for them in time of need, taking their preferences into consideration in working with them, providing challenging role, recognising their contribution, providing regular feedback and having regular interaction with their team members.

These were seen to impact the team members in diverse ways. Firstly, it influenced their perception of the climate within which they operated as supportive of innovation. Secondly it influenced their tendency to exhibit innovation championing behaviour by enhancing their tendency to adopt innovative approaches to delivering projects. Climate for innovation and championing behaviour were also seen to influence project performance as team members were motivated to undertake extra role activities in project delivery. Individualised support therefore influenced project performance directly and indirectly through climate for innovation and championing behaviour.

The findings have a number of significant implications for project based professional services firms. Whereas most efforts at enhancing innovation is focused on senior management, this study demonstrates that middle managers who bridge the gap between the strategic and operational levels in the organisational structure have a very important role to play in facilitating innovation through their day to day activities and the behaviour they exhibit in the work place. To enable middle managers to play this role effectively, they need to be supported to develop transformational and innovation supporting leadership behaviour. In the current adverse economic conditions, there is a tendency for middle managers to bear the brunt of cuts. However that could lead to loss of very valuable experience and an important resource
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

for improving performance. The role of middle managers in enhancing innovation needs to be recognised and promoted to help address the previously reported negative reviews on the role of middle managers in organisations.

In spite of the significant findings in this study, it is not without limitations. The study was focused on one organisation. However the size of the organisation and the number of industries it operates in implies the findings from the study will be relevant to several other similar organisations. Future studies could be extended beyond the current organisation to others in the industry. Future studies could also adopt a longitudinal approach focused on developing transformational leadership in middle managers and studying the impact over time. The study has introduced a new dimension of the study of the effect of transformational leadership by examining the impact of specific dimensions on performance which could be investigated further in the wider industry context.

References


Improving innovation and project performance in construction professional services firms: The leadership role of middle managers


Tools for Assessing Transformational Leadership, Organisational Climate for Innovation, Innovation Championing and Project Performance

Instruction for use
Each middle manager should be invited to fill in the self-assessment questionnaire (Appendix 7.1) and nominate 4 team members who can provide feedback on their leadership style. Of the 4 team members, 2 should be asked to provide feedback on the leadership style of the middle manager using a questionnaire (Appendix 7.2) similar to the one filled in by the middle manager. The other two will provide feedback using open-ended questions (Appendix 7.3).

The scores of the middle manager should then be compared to the average score of the two team members and any significant differences noted (Appendix 7.4). In addition the feedback from the open ended questions should be summarised. These should be discussed with the middle manager during the appraisal meeting (or a special meeting arranged for this purpose).

This process should be repeated after six months to track any improvements in middle managers' transformational leadership behaviour.
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

**Transformational Leadership Self Assessment Tool for Middle Managers**

Please indicate to what extent you agree that the following statements are true descriptions of the (named persons) behaviours in the workplace. (1=strongly disagree, 2=disagree, 3= fairly disagree, 4=neither agree nor disagree, 5=fairly agree, 6= agree, 7= strongly agree).

<table>
<thead>
<tr>
<th>I am always seeking new opportunities for the unit/department/organisation.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I paint an interesting picture of the future for our team.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I Lead by “doing” rather than simply by “telling”.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I lead by example.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>I get the group to work together for the same goal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I develop a team attitude and spirit among his/her team.</td>
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<td>2</td>
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<td>4</td>
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<td>6</td>
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<tr>
<td>I show my team that I expect a lot from them.</td>
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<td>2</td>
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<tr>
<td>I insist on only the best performance.</td>
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<td>4</td>
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<tr>
<td>I show respect for other’s personal feelings.</td>
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<td>7</td>
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<tr>
<td>I behave in a manner that is thoughtful of other’s personal needs.</td>
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<td>6</td>
<td>7</td>
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<tr>
<td>I have ideas that force others to re-think some of their own ideas they never questioned before.</td>
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<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>I stimulate others to think about old problems in new ways.</td>
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<td>2</td>
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<td>4</td>
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<td>6</td>
<td>7</td>
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</table>
**Transformational Leadership (Team Member Assessment Tool)**

Please indicate to what extent you agree that the following statements are true descriptions of the (named persons) behaviours in the workplace. (1=strongly disagree, 2=disagree, 3= fairly disagree, 4=neither agree nor disagree, 5=fairly agree, 6= agree, 7= strongly agree).

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
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<tbody>
<tr>
<td>Is always seeking new opportunities for the unit/department/organisation.</td>
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<tr>
<td>Paints an interesting picture of the future for our team.</td>
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<tr>
<td>Leads by “doing” rather than simply by “telling”.</td>
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<tr>
<td>Leads by example.</td>
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<tr>
<td>Gets the group to work together for the same goal.</td>
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<tr>
<td>Develops a team attitude and spirit among his/her team.</td>
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<tr>
<td>Shows us that he/she expects a lot from us.</td>
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<tr>
<td>Insists on only the best performance.</td>
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<tr>
<td>Shows respect for my personal feelings.</td>
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<tr>
<td>Behaves in a manner that is thoughtful of my personal needs.</td>
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<td>Has ideas that have forced me to think some of my own ideas I have never questioned before.</td>
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<td>Has stimulated me to think about old problems in new ways.</td>
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</table>
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

**Tool for Team Member Evaluation of Organisational Climate**

Please indicate the extent to which the following describes the working environment in Mouchel? (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree).

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity is encouraged here</td>
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<tr>
<td>Our ability to function creatively is respected by the leadership.</td>
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<tr>
<td>Around here, people are allowed to try to solve the same problems in different ways.</td>
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<tr>
<td>In this organization, we tend to stick to tried and true ways</td>
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<tr>
<td>Assistance in developing new ideas is readily available</td>
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<tr>
<td>There are adequate resources devoted to innovation in this organization</td>
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<td>This organization gives me free time to pursue creative ideas during the workday</td>
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<td>This organization publicly recognizes those who are innovative</td>
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<tr>
<td>The reward system here benefits mainly those who don't rock the boat</td>
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</tbody>
</table>
**Tool for Assessing Innovation Championing’ Behaviour of Team Members/Project Managers**

Please indicate the extent to which you display the following behaviours in your project management responsibilities (1=not at all, 2=once in a while, 3=sometimes, 4=fairly often, 5=frequently).

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I seek out new technologies, process, techniques and/or product ideas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I seek differing perspectives when solving problems</td>
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<tr>
<td>I get others to look at problems from many different angles</td>
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<tr>
<td>I challenge the way it has been done before as the only answer</td>
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<tr>
<td>I express confidence in what the innovation can do and achieve</td>
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<tr>
<td>I show tenacity in overcoming obstacles</td>
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<tr>
<td>I get the necessary resources (e.g. people, time, money) to implement new ideas, technology and/or solutions</td>
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<tr>
<td>I get the problem into the hands of those who can solve them</td>
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<tr>
<td>I seek to get support from the top level for projects</td>
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</table>
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

Section 4: Project performance Measurement Tool

To what extent do you perceive that your projects have achieved the following outcomes? (1=not at all, 2=just a little, 3=moderate amount, 4=quite a lot, 5=a great deal).

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<thead>
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<th>2</th>
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<tr>
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<td>Enable continuous improvement</td>
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<tr>
<td>Enhance client satisfaction</td>
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<td>Enhance the image of the company</td>
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<td>Enable competitive advantages to the company</td>
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<td>Retain talents with the company</td>
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<tr>
<td>Finish project on time</td>
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<tr>
<td>Finish project within the budget</td>
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<tr>
<td>Lead to improved project team satisfaction</td>
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<tr>
<td>Enable and motivate innovation</td>
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## APPENDIX G  SAMPLE QUALITATIVE LEADERSHIP FEEDBACK FORM

1. **Painting an exciting picture of the future to inspire the team (articulating vision)**

<table>
<thead>
<tr>
<th>What you do well</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Seek business development opportunities and encourages team members to participate in developing plans, capabilities and case-studies to pursue new opportunities. Attends regular team leader meetings and provides feedback (less regularly) on future prospects for the team.</td>
<td></td>
</tr>
<tr>
<td>Informs us of future work and other scheme / bid wins in the company and how the company is being taken forward by the board and directors etc and trying to improve its systems. He always gets our opinions and feeds back and relays this to people higher up.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>What you could improve on</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Could provide regular feedback on business development and engage senior management to provide greater insight to his team on the business unit’s trajectory.</td>
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</tr>
<tr>
<td>Could also seek opportunities to undertake collaborative work with other teams across the country (as contained in his team’s Business Plan), and provide wider opportunities for his team.</td>
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</table>

2. **Providing an example to the team of the kind of behaviour expected (leading by example)**

<table>
<thead>
<tr>
<th>What you do well</th>
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</thead>
<tbody>
<tr>
<td>More project management focussed than technical, and this renders it difficult to pick out specific examples where he’s lead by example on innovative thinking. However, he does encourage his team to take on new approaches to investigations and design work.</td>
<td></td>
</tr>
<tr>
<td>Good at picking out lessons learnt from other schemes and taking these forward in new ones when similar issues occur.</td>
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</table>

<table>
<thead>
<tr>
<th>What you could improve on</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>By making innovative thinking, investigations and solutions part of individual and team KPIs, and selling successes to internal and external clients. As part of business development, he could lead the team in identifying partnerships with specialist vendors for innovative design solutions that offer exceptional value to clients.</td>
<td></td>
</tr>
<tr>
<td>Lacks the ‘lead by example’ quality. Can be more appreciative of team member’s creative efforts and given them credit where it is due.</td>
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</tr>
</tbody>
</table>
### 3. Developing team spirit and getting the team to work together towards the same goal

**What you do well**  
Takes opportunities to do team building activities (lunches, soft ball / cricket etc) to create spirit of togetherness, and encourages the sharing of work load to deliver projects on time and within budget. Shares news on the team’s aspirations and successes.

**What you could improve on**  
Could do more to convey greater understanding of the clients’ needs and expectations to his team, as well as manage the client and team openly when unexpected changes occur during scheme life-cycles. Could (at times) manage resourcing better during peak project periods by allocating some deliverables to other teams to ensure delivery of quality projects on time and within budget.

### 4. Letting the team know you expect a lot from them (High Performance Expectation)

**What you do well**  
Agrees objectives with team members and seeks to know medium and long term developments aspirations, which he aligns the objectives to meet. Encourages individuals to undertake varied projects (where available), assuring support and resources available to meet deliverables.

**What you could improve on**  
By facilitating wider use of available technical resources (e.g. cross-team working), his team could draw on available specialist knowledge from technical experts within the company on complex schemes. This would allow his team to deliver more varied and complex projects (in lead design or project engineering role), enhance on the job learning and boost confidence in delivering schemes in future. Need to provide the necessary resources and assistance to achieve agreed objectives.

### 5. Taking the feelings of your/the team members into account whiles working with them

**What you do well**  
Holds a one-to-one session where he feels that a team member’s working environment has been affected by events from within and/or outside the business. He also encourages mutual respect among team members, especially when resolving difficult issues/opinions on projects.

**What you could improve on**  
Should avoid discussing his opinions of individuals with other team members as this creates an environment of mistrust and erodes the confidence within the team. Could do more to ensure feelings and concerns of all team members are equally regarded and addressed.

### 6. Encouraging your team to think outside the box and search for new solutions in delivering projects. (Intellectual Stimulation)
**What you do well**
Encourages probing of the problem to develop broad (big picture) and detailed understanding of underlying issues, client’s needs, aspirations and opportunities; allowing multiple benefits to be targeted and thus driving novel solution development. Ideas shared among team members in cross-project working.

**What you could improve on**
The above could be done more often, and should be an entrenched part of the team’s design process. The team’s approach to design should emphasise innovative approach to problem solving, research on leading systems/technologies that enhance value and sustainability, and incorporate this in individual/team/project KPIs. Post project reviews and client feedbacks should be undertaken more frequently, include sections on innovative design and to provide learning outcomes for future improvements.

<table>
<thead>
<tr>
<th>7. Impact of behaviour on Work Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where interactive problem solving and solution development is undertaken amongst the team (item 6), this breeds confidence in team members’ abilities and desire for new engineering approaches. However, inconsistency in the behaviours described in item 6 has seen the team lose momentum in sharing ideas and bridging knowledge gaps that can foster innovative thinking.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Impact of behaviour on Innovation Championing</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ethos of encouraging delivery of added value and benefits to the client and community (item 6) engages a mindset to think outside the box and develop bespoke solutions (either using an amalgamation of established methods or using completely new ones).</td>
</tr>
<tr>
<td>Pressure from manager to deliver, hardly promotes innovative thinking. When the Engineer makes extra effort to bring innovation and it is acknowledged, it is motivating.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Impact of behaviour on Project Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The positive impact from “thinking outside the box” enables opportunities to be explored (scheme options) in developing solutions that meet or exceed client expectations.</td>
</tr>
<tr>
<td>We work well as a team and as a result have a good commitment to the schemes we work on, together with a degree of pride in the work we complete knowing that we have been a part of the process and had an input in the final result.</td>
</tr>
</tbody>
</table>
## APPENDIX H  LEADERSHIP DEVELOPMENT RESOURCE

<table>
<thead>
<tr>
<th>Transformational Leadership Dimension (Drivers)</th>
<th>How it was expressed (Objective)</th>
<th>Examples of such behaviour found</th>
<th>Impact</th>
<th>Quote where relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualised Support</td>
<td>Personal development</td>
<td>Allocating projects that will help staff develop other skills</td>
<td>More commitment and improved performance</td>
<td>‘feel good if you think you got an opportunity to develop and grow somehow it is good for you’ (Senior Engineer 1)</td>
</tr>
<tr>
<td>Working preferences</td>
<td>Respecting and working with individuals’ preferences</td>
<td>Perception of work environment is enhanced, people feel more relaxed, and output increased</td>
<td>‘I work with other people that if I probably showed them I expect a lot from them I will get a negative response so I show them I am very pleased when you do your best’ (Focus Group 1)</td>
<td></td>
</tr>
<tr>
<td>Challenging role</td>
<td>Assigning individuals new roles such as project lead</td>
<td>Increased motivation, more commitment and higher performance</td>
<td>‘you will have noticed people have been given new roles for example someone is made a team manager or another office, you can see that all of a sudden, he starts coming to the office at 7:30am in the morning and he is running around and he is working very hard and he is doing that because he is happy’ (Focus Group 1)</td>
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<tr>
<td>Providing feedback</td>
<td>Having one to one discussions on the individual’s performance and rewarding or critiquing where appropriate</td>
<td>Individuals become more aware of their own contribution and have heightened motivation to do more</td>
<td>‘He shows that you can achieve that by commending you for what you have done. Personally he has commended me because my scheme won an award and he recommended and encouraged me and also asked me to do some more’. (Engineer 3)</td>
<td></td>
</tr>
<tr>
<td>Support for Individuals</td>
<td>Paying attention to the individual’s needs and supporting them through changing personal circumstances</td>
<td>Influence the environment within which people operate and also their motivation to work harder at the job</td>
<td>‘makes it a comfortable place to work and makes me feel like I am in the right place’ (Engineer 1)</td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td>Acknowledging the contributions individuals make</td>
<td>Individuals feel they matter and are valued</td>
<td>‘it elevates your confidence, you start acting with more confidence’ (Engineer 1)</td>
<td></td>
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<tr>
<td><strong>Leadership Development Resource</strong></td>
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| **Regular Interaction** | **Chatting with staff over issues outside work such as sports and weekend social activities** | **Creates a friendly atmosphere within which team members are able to exchange ideas. This ultimately influences performance** | **'managers need to have more of an office presence rather management meetings and need to spend more time interacting with their teams to get to know them’**  
 **(Project Director 1)** |
|------------------------|---------------------------------|---------------------------------------------------------------|-------------------------------------------------|

| **Articulating Vision** | **Sharing current opportunities** | **Communicating vacancies within the company to team members** | **Had a settling effect on staff so they could focus on their work.** | **‘having conversation with the team and letting us know that some conversations are going on in Portsmouth, in different cities that you can maybe move and start as a team leader for the new team to manage, so that is an incentive for us…is an opportunity if everything goes well’**  
 **(Senior Engineer 1)** |
|------------------------|---------------------------------|---------------------------------------------------------------|-------------------------------------------------|

| **Sharing opportunities** | **Passing on relevant information regarding projects the company is bidding for and work in the pipeline.** | **Lack of information on the company’s direction, bidding activities and future opportunities were seen to have a detrimental effect as it led to uncertainty.** | **‘what will be more helpful is to see we have won work of this value or there is potential to win work. If that was done quarterly with a monthly update really just give the guys confidence that work load is coming through’**  
 **(Principal Engineer 1)** |
|------------------------|---------------------------------|---------------------------------------------------------------|-------------------------------------------------|

| **Fostering the acceptance of group goals** | **Team Building** | **Holding social events outside the work environment** | **Improves relationships among the team members and encourages sharing of ideas** | **‘I think where it has happened, it has been good you have seen people outside a pure working environment and you get the opportunity to understand them a little bit better and increase your emotional intelligence of them and know how to behave around them’**  
 **(Project Director 1)** |
|------------------------|-------------------------|-------------------------------|---------------------------------|-------------------------------------------------|

| **Make goals relevant** | **Putting the corporate goals in a local context** | **People were more committed to achieving goals where they understand the bigger picture** | **‘I think it will be positive as I said. I think it will be putting goals into myself and that will encourage me at least for myself to know where I need to go and how I could get there’.**  
 **(Senior Engineer 1)** |
Improving innovation and project performance in construction professional services firms: The leadership role of middle managers

| **Collaborative working** | **Encouraging discussions and support for each other** | **Reflects in ideas generation on project outcomes** | "will get the team to gel and will get the team to improve delivery because they feel they can talk to each other not necessarily get shot down … if we get people to talk to each other we can improve quality as well because they will ask technical questions. (Team Manager 1)"

| **High performance expectation** | **Setting stretching targets** | **Through the performance appraisal process managers set targets for their team members** | **Members see that as a benchmark they need to achieve and enhances their performance** | "because he is pushing harder because you got the confidence and you think it is ok we know that you can deliver high expectations". (Senior Engineer 1)"

| **Monitoring performance** | **Targets set are reviewed twice in a year** | **Where this has been done the result has been good although some staff had not benefited from the process for different reasons** | "that gives me a target or a benchmark to which I should work to and as an engineer working, I prove my capability to management it shows them I am able to achieve what he expects from me to prove that this can be achieved by me so it inspires me and drives me to achieve these things". (Engineer 3)"

| **Express belief in team's ability** | **Encouraging a CAD technician to take on design role** | **Elicited higher levels of performance** | "if you think that your Manager has confidence in you and he start to check the good things you are doing and you put things together to innovate". (Senior Engineer 1)"

| **Clarifying expectation** | **Setting up project structure and allocating clear roles to the individuals** | **Team members were motivated to achieve what was expected of them where there was no ambiguity** | "there is no need for a formal process, an informal conversation about ok this is what we really want from you on this scheme and I think it will give me a clearer idea of my role on the project so I think having a clear description of my role for each of the project I think that will help to deliver" (Engineer 2)"

| **Modelling Behaviour** | **Sharing project experiences** | **Managers drawing on their experiences while working with the design teams** | **Inspire confidence in their teams and improve project performance** | "some sort of a guidance so providing some experience from his /her background into the team and feeding the team with that" (Engineer 2)"

<p>| <strong>Living the company</strong> | <strong>Managers living the company’s core</strong> | <strong>it has had significant</strong> | &quot;once you have finished with a meeting or a risk&quot; |</p>
<table>
<thead>
<tr>
<th>Leadership Development Resource</th>
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<thead>
<tr>
<th>Values</th>
<th>keep promises and doing what they expect from their teams</th>
<th>Influence on the team members’ tendency to follow the values</th>
<th>Workshop, you will be thinking to yourself, next time I have a risk workshop that is the way I will do it’ (Project Director 1)</th>
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</thead>
<tbody>
<tr>
<td>Demonstration</td>
<td>Some managers actively exhibit the behaviour expected from team members</td>
<td>Similar behaviour is elicited from the team members particularly in the area of innovation</td>
<td>‘For trying new ways and new things in a project the manager himself has to be someone who wants to try new things and new materials and if the manager does not want to try new materials you cannot go far with it any new suggestion you bring the manager will turn it down’ (Engineer 3)</td>
</tr>
<tr>
<td>Intellectual Stimulation</td>
<td>Autonomy</td>
<td>Managers passing on brief and defining the outcome expected without detailing the steps required</td>
<td>Impacted on the tendency of the designers to explore and find best way of delivering the project</td>
</tr>
<tr>
<td>Multiple Options/Encouraging generation of ideas</td>
<td>Requiring designers to present options for discussions prior to agreeing a solution</td>
<td>Designers responded by actively searching for possible solutions</td>
<td>‘It will be an idea to brain storm every now and then and some how put all the team in a meeting room for an hour and we discuss different things related to the work that we do and come out with a new approach, solutions or different ways to do things, to improve’ (Senior Engineer 1)</td>
</tr>
<tr>
<td>Challenging old ways</td>
<td>Some project teams departing from certain standards in order to save money for clients</td>
<td>Some designers take up the challenge and try new ways and new materials</td>
<td>‘we do these things day in and day out but we don’t actually question do we need to do this?” (Technical Director 1)</td>
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APPENDIX I  SAMPLE OUTPUT FROM NVIVO

Node Structure

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<thead>
<tr>
<th>Nodes</th>
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Nodes compared by number of items coded

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179