

Identifying the Factors that Influence Innovation Championing Behaviour in Construction Support Services Organisations: A Review of the Role of Middle Management

Kissi, J.
Mouchel Group
(email: john.kissi@mouchel.com)

Payne, R.
Luke, S.
Dainty, A.
Liu, A.

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

1. 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.

2. 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 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.

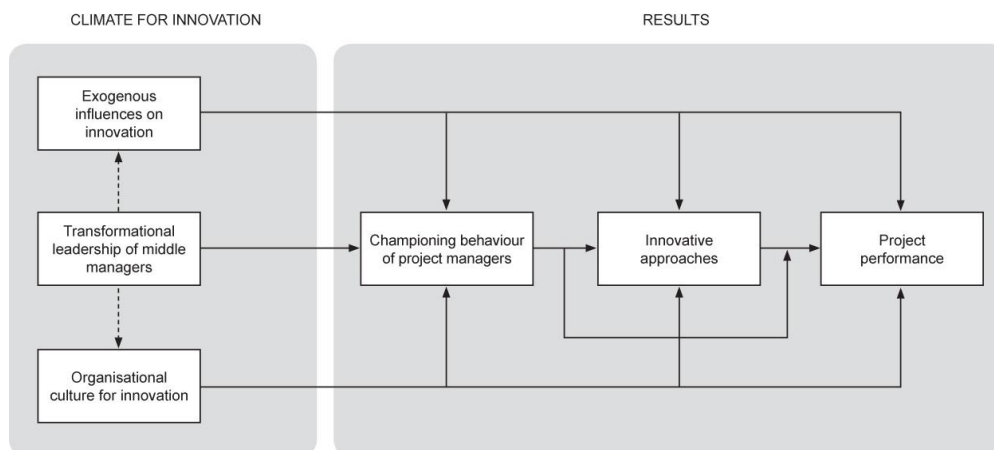


Figure 1: Conceptual Model

2.1 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.

2.2 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.

2.3 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, 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.

2.4 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. Moreover 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.

2.5 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 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).

3. 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.

4. 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 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.

References

- Ahmed, P.K. (1998), "Culture and climate for innovation", *European journal of innovation management*, vol. 1, no. 1, pp. 30-43.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. & Herron, M. (1996), "Assessing the Work Environment for Creativity", *Academy of Management Journal*, vol. 39, no. 5, pp. 1154-1184.
- Barrett, P. & Sexton, M. (2006), "Innovation in Small, Project-Based Construction Firms", *British Journal of Management*, vol. 17, no. 4, pp. 331-346.
- Bass, B.M. and Avolio, B.J. (ed) (1994), *Improving Organisational Effectiveness Through Transformational Leadership*, Sage, London.
- Bayer, S. & Gann, D. (2007), "Innovation and the dynamics of capability accumulation in project-based firms", *Innovation: Management, Policy & Practice*, vol. 9, no. 3-4, pp. 217-234.
- Cameron, K.S. and Quinn R.E. (1999), *Diagnosing and Changing Organizational Culture: Based of the Competing Values Framework*, Addison-Wesley, Reading, M.A.
- Collis, J. and Hussey, R. (2003), *Business Research 2nd Edition* London Palgrave Macmillan
- Dodgson, M., Gann D. M. and Salter, A. (2008) *The Management of Technological Innovation: Strategy and Practice* , Oxford Press, Oxford.
- Dopson, S. and Stewart, R. (1993), *What is happening to Middle Management?* In *Managing Change*, Mabey, C. and Mayon-White, B. (eds) 2nd edn, Sage, London, pp. 35-46.
- Dulaimi, M.F., Nepal, M.P. & Park, M. (2005), "A hierarchical structural model of assessing innovation and project performance", *Construction Management & Economics*, vol. 23, no. 6, pp. 565-577.

Eaton, D. (2001), "A temporal typology for innovation within the construction industry", *Construction Innovation*, vol. 1, no. 3, pp. 165-179.

Egan, J. (1998), *Rethinking Construction*, DETR, London.

Gann, D.M. & Salter, A.J. (2000), "Innovation in project-based, service-enhanced firms: the construction of complex products and systems", *Research Policy*, vol. 29, no. 7, pp. 955.

Gumusluoglu, L. and Ilsev, A. (2009), "Transformational leadership, creativity and organisational innovation", *Journal of Business Research*, vol. 62, pp. 461-473.

Hartmann, A. (2006), "The context of innovation management in construction firms", *Construction Management & Economics*, vol. 24, no. 6, pp. 567-578.

Howell, J.M. and Shea, C.M. (2001), "Individual differences, environmental scanning, innovation framing and champion behaviour: key predictors of project performance", *Product innovation management*, vol. 18, pp. 15-27.

Ivory, C. (2005), "The cult of customer responsiveness: is design innovation the price of a client-focused construction industry?", *Construction Management & Economics*, vol. 23, no. 8, pp. 861-870.

James et al (2008), "Organizational and psychological climate: A review of theory and research", *European Journal of Work & Organizational Psychology*, vol. 17, no. 1, pp. 5-32.

Jung, D.I., Chow, C. & Wu, A. (2003), "The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings", *Leadership Quarterly*, vol. 14, no. 4, pp. 525.

Jung, D. Wu, A. & Chow, C.W. (2008), "Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation", *Leadership Quarterly*, vol. 19, no. 5, pp. 582-594

Kissi, J. Payne, R., Luke, S., Dainty, A.R.J., and Liu, A. (2009) "A study of the role of middle management in developing innovation climate in construction support services organisations. In Dainty, A.R.J (Ed) Procs 25th Annual ARCOM Conference, 7-9 September 2009, Nottingham, UK Association of Researchers in Construction Management, 75-84.

Kozlowski, S.W. & Hults, B.M. (1987), "An Exploration of Climates for Technical Updating and Performance", *Personnel Psychology*, vol. 40, no. 3, pp. 539-563.

Latham, M. (1994), *Constructing the Team*, HMSO, London.

- Lim, J.N. & Ofori, G. (2007), "Classification of innovation for strategic decision making in construction businesses", *Construction Management & Economics*, vol. 25, no. 9, pp. 963-978.
- Lu, S.L. & Sexton, M. (2006), "Innovation in small construction knowledge intensive professional service firms: a case study of an architectural practice", *Construction Management & Economics*, vol. 24, no. 12, pp. 1269-1282.
- Markham, K.M. (1998), "A longitudinal examination of how champions influence others to support their projects", *Journal of Product Innovation Management*, vol. 15, pp. 490-504.
- Nam, C.H. & Tatum, C.B. (1997), "Leaders and champions for construction innovation", *Construction Management & Economics*, vol. 15, no. 3, pp. 259-270.
- Ott, J.S. (1989), *The Organizational Culture Perspective*, Brooks-Cole, Pacific Grove, CA.
- Panuwatwanich, K., Stewart, R.A. and Mohamed, S. (2008), "The Role of Climate for Innovation in Enhancing Business Performance", *Engineering Construction & Architectural Management*, vol. 15, no. 5, pp. 407-422.
- Quinn, R. & Rohrbaugh, J (1983), "A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Analysis", *Management Science*, vol. 29, no. 3, pp. 363-377.
- Rollinson, D. and Broadfield, A (2002), *Organisational Behaviour and Analysis: An Integrated Approach*, 2nd edn, Prentice Hall, London.
- Salter, A. & Gann, D. (2003), "Sources of ideas for innovation in engineering design", *Research Policy*, vol. 32, no. 8, pp. 1309.
- Salter, A. & Torbett, R. (2003), "Innovation and performance in engineering design", *Construction Management & Economics*, vol. 21, no. 6, pp. 573-580.
- Sarros, J.C., Cooper, B.K. and Santora, J.C. (2008), "Building a Climate for Innovation Through Transformational Leadership and Organisational Culture", *Journal of Leadership and Organisational Studies*, vol. 15, no. 2, pp. 145-158.
- Schneider, B., & Reichers, A. E. (1983), On the etiology of climates. *Personnel Psychology*, 36, 19
- Shenhar, A.J. & Levy, O. (1997), "Mapping the dimensions of project success", *Project Management Journal*, vol. 28, no. 2, pp. 5.
- Styhre, A. and Josephson P. (2006), "Revisiting site manager work: stuck in the middle", *Construction Management & Economics*, vol. 24, pp. 521-528.

Waldman, D.A and Bass, B. M (1991), "Transformational leadership at different phases of the innovation process", *The journal of high technology management research*, vol. 2, no. 2, pp. 169-180.

Yin, R.K. (2003), "Case Study Research: Design and Methods" 3rd Ed, Sage Publications, London.