

# PROJECT MANAGERS' PERFORMANCE MEASURES: A FRESH PERSPECTIVE

Divine K. Ahadzie<sup>1</sup>, David Gavin Proverbs and Paul Olomolaiye

*Research Institute in Advanced Technologies (RIATec), University of Wolverhampton, Wulfruna Street, WSI 1SB, Wolverhampton, West Midlands, UK*

While performance measures are widely held as a viable option for providing appropriate evaluative criteria against which effective managerial performance can be validated, research towards project managers' (PMs') performance measures has not been vigorously pursued in construction. This paper is a contribution towards addressing the apparent weakness. Consequently, drawing on the theory of job performance improvement and the criteria of effective project management and project success, it is contended that an appropriate methodology for developing a robust evaluative criteria is for the measures to be based on both performance outcomes and the elements of task and contextual performance behaviours. It is also contended that, there is a need to link the measures to various project phases to help provide support for continuous performance improvement. Consequently, it is intended to use the proposed methodology on an ongoing study aimed at developing a predictive model for evaluating the performance of PMs in Mass House Building Projects (MHBP) in Ghana.

Keywords: Contextual performance behaviours, performance measures, performance outcomes, project managers and task performance behaviours.

## INTRODUCTION

Presently, the role of the project manager (PM) is acknowledged as the key to achieving project success in construction organizations (see for instance Russell et al, 1997; Edum-Fotwe and McCaffer, 2000; Dainty et al, 2003). Consequently, there has been considerable research effort towards improving the performance of construction project managers (PMs). However, the research has primarily focussed on developing standards for project management knowledge and practice (Dainty et al, 2004). Research towards project managers' (PMs') performance measures has not been vigorously pursued in practice (Dainty et al, 2003). This has huge implications for the construction industry given that, performance measures are often the only viable means for evaluating the theories of work behaviour, the effective administration of human resources and the provision of feedback to management personnel (see Austin and Villanova, 1992). Furthermore, performance measures are often the only option available for providing evaluative criteria against which the selection, training and promotion of management personnel can be validated (see for instance Borman, 1978; Borman et al, 1995). Thus, PMs' performance measures are important prerequisite for identifying appropriate evaluative criteria for improving the performance of construction PMs. Consequently, in this paper, a perspective view of construction PMs' performance measures is presented and a fresh way forward is proposed. Subsequently, following the need for an empirically proven structured system, to

---

<sup>1</sup> D.K.Ahadzie@wlv.ac.uk

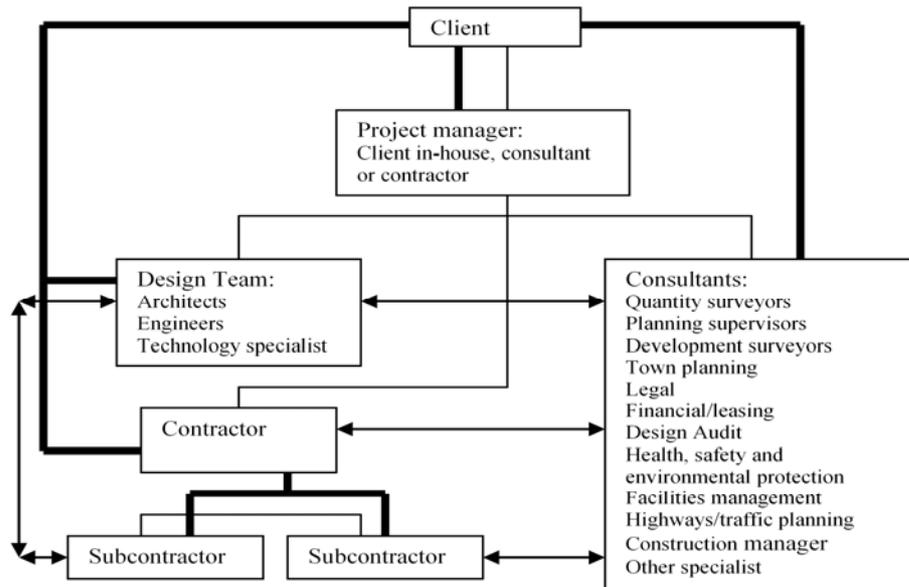
objectively evaluate managerial performance in Mass House Building Projects (MHBP) in Ghana, it is intended to apply the proposed methodology to develop a predictive model for evaluating the performance of PMs in MHBP.

The structure of the paper is as follows. First, a working definition of the term PM is presented including an appropriate professional contextualisation. This is followed by a brief discussion on what constitutes performance measures against the theory of job performance and criteria of effective project management and project success. Subsequently, a review of the limited research efforts in PMs' performance measures is presented, followed by a proposal for a fresh way forward. The final section provides conclusions and recommendations that will be useful for construction management researchers and practitioners involved.

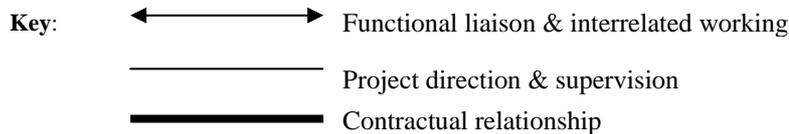
## **THE PROJECT MANAGER**

The definition for the title PM is a subject under debate amongst academic writers. Traditionally, the term is often used to describe persons/entities that monitor, oversee and/or provide broad supervision on projects, but the contention is that it should be used for one who exercises total authority and also accepts full responsibility for the management of a project (Lock, 1987). Indeed, in a study conducted by the Association of Project Management (APM), Brinberg (1999) reported of inconsistencies in the titles given to the PM by clients. In the midst of these inconsistencies however, Walker (2002) is of the view that, it is necessary to concentrate on the duties of the PM rather than what should be the precise definition or title, since what the PM does and not the title holds the key to achieving project objectives. All the same, Walker (2002) again argues that if there should be any definition at all, such a definition should uphold the principles of project management, which is to consider the interest of the client as a priority. However, further confusion arises from the emergence of the concept of project stakeholders. Consequently, the PM is now faced with not only the traditional single client but multiple clients whose diverse interests also have to be satisfied (see Newcombe, 2003).

Another issue of contention is the question of what should be the appropriate professional background of the PM. According to the CIOB (2002), the PM should come from any professional background but would also need to have the requisite skills and competence to manage all aspects of projects from conception to completion. Ogunlana et al (2002) have also noted that while the PM could come from any professional background, generally the consensus is for them to have some degree of relevant technical skills relating to the project at hand. Generally, the PM may form part of an in-house team, consultant or contractor organization (see Figure 1). It is obvious that whatever the background, the PM will be expected to work with personnel from varied professions. Thus, the human factor is crucial and decisive in dealing with the numerous skills to be encountered (Cooke-Davies, 2002).



**Figure 1:** Project structure using project manager



**Source:** After CIOB (2002)

## PERFORMANCE MEASURES

The definition of performance measures since long has been shrouded in confusion in the broader context of human resources management (see Austin and Villanova, 1992). Warren (1934) for instance proposed two definitions of performance measures thus; a standard for making qualitative comparison or as the basis for making judgement. English and English (1958) also postulated four definitions thus: a basis for judgement; a behaviour goal by which progress is judged; a measure of validity: a measure of predictability. Reber (1985) also defined performance measures as a standard against which judgement, evaluation or classification can be made. Villanova and Austin (1992) have also cited Scott (1917), Bechtoldt (1947), Weitz (1961) and Zammuto (1984) for providing differing definitions. However, after a comprehensive review, Austin and Villanova (1992) came to the conclusion that, performance measures can succinctly be defined as a measure (directly or indirectly) of performance based on behaviours and outcomes, which can be used to make prediction about individuals for organizational interventions. While performance measures can be described in terms of the attributes of performance outcomes and behaviours, Sinclair and Zairi (1995) also suggest, they are numerical or quantitative indicators (see Takim et al, 2004). It is worth noting that, generally, performance measures have become a difficult management process because of the numerous uncertainties involved. However, despite these difficulties, Borman (1978) implies that performance measures are the most widely held means of gathering performance information about individuals and thus the viable option for validating effective managerial performance (see also Borman et al, 1995).

## **THE THEORY OF JOB PERFORMANCE AND CRITERIA OF EFFECTIVE PROJECT MANAGEMENT/PROJECT SUCCESS**

Having provided a working definition for the PM and performance measures, this section introduces the theoretical framework for discussing and proposing a fresh way forward in PMs' performance measures.

### **Theory of Job Performance**

The theory of job performance deals with an important distinction between performance behaviours that contribute to organizational effectiveness. According to Motowidlo and Van Scotter (1994), three related themes generically emerge from the behavioural aspect of job performance. These are the distinction between prescribed and discretionary role behaviour; behaviours that deals with cooperation and helping others in an organization; the distinction between performance behaviours relating to and not relating to task proficiency. Despite these distinctions, studies undertaken by Motowidlo and Van Scotter, (1994) indicate that these themes converge into two major distinctions namely; task and contextual performance behaviours (see also Borman and Motowidlo, 1993; Borman et al, 1995). Task performance behaviours (e.g. job knowledge and task proficiency) bears a direct relation to the technical skills required for executing technical functions in an organization, whilst contextual performance behaviours (e.g. interpersonal skills) supports the broader organizational, social and psychological environment the technical functions must operate.

Consequently, while the source of variation in task performance is the proficiency, the major source of variation in contextual performance is volition and predisposition (Borman and Motowidlo, 1993).

Thus, whilst task performance behaviours are geared towards proficiency in job-specific tasks, contextual performance behaviours are concerned with improving interpersonal skills within the broader organizational setting. In applied psychology research, Borman and Motowidlo (1993), Motowidlo and Van Scotter (1994), Van Scotter and Motowidlo (1996) all conclude that the element of task and contextual performance behaviours contribute independently to overall performance and should thus be distinguished from each other. Nevertheless, they also contend that, while the elements of task and contextual performance behaviours are independent, they are not mutually exclusive and must both be considered for evaluating and judging performance.

### **Effective project management and project success**

According to Kumaraswamy and Thorpe (1996), project success is not synonymous with effective project management. Project success is measured against the overall project objectives whilst effective project management is measured against the traditional criteria of cost, time and quality (Cooke-Davies, 2002). This notwithstanding, it is also recognised that it is not that easy making a marked distinction between the criteria of project success and effective project management. This is because, traditionally, project success has also been based on the primary objectives of the client namely; time, cost and quality (see Lim and Mohammed, 1999). Presently, the consensus is that the evaluative criteria for effective project management and project success both goes beyond these traditional measures. Leung et al (2004) for instance reports that another way of measuring project success is to consider the satisfaction of the stakeholders. Newcombe et al (2003) have also emphasised the

different needs of project stakeholders, which have to be satisfied on projects. Thus, in recent times the contention is that, appropriate evaluative criteria of effective project management or project success, among others, should reflect elements such as time, cost, quality, health, safety, technology transfer, environmental friendliness, risk containment and the satisfaction of the project stakeholders (see Dainty et al, 2003). However, cognisant of the assertion that the factors influencing project outcomes may differ depending on the project phase, it has become imperative for this to be taken into consideration in redefining performance measurement systems in construction (see Lim and Mohammed, 1999; Ahadzie et al, 2005)

## **PROJECT MANAGERS' PERFORMANCE MEASURES**

A critique of the literature reveals that while research towards improving the performance of PMs is growing, PMs' performance measures have not been vigorously pursued in practice. Presently, the literature is skewed towards development of standards for project management knowledge and practice, and not the development of evaluative criteria for measuring the performance of PMs (e.g. Edum-Fotwe and McCaffer, 2000; Kartam et al, 2000; Wilkinson, 2001; Seng Lei and Skitmore, 2004). Thus, whilst these standards are very useful for promoting assessment, development and certification, they are not particularly useful for predicting and evaluating the performance of the PM during the lifecycle of projects (see also Dainty et al, 2004). Specifically, Kumaraswamy and Thorpe (1996), Russell et al (1997), Brown and Adams (2000), Ogunlana et al (2002), Ling (2004), Dainty et al (2003 and 2004) represent some of the limited literature which have focussed primarily on PMs' performance measures.

The methodologies used also differ in perspective making the issue of which is more appropriate and robust quite contentious (see Brown and Adams, 2000; Dainty et al, 2003). For example, whilst Kumaraswamy and Thorpe (1996), Russell et al, (1996), Brown and Adams, (2000) and Ling (2004), concentrated on output based measures (i.e. project outcome or effective project management). Dainty et al, (2003 and 2004) argue for input based measures (i.e. behavioural measures such as team building, leadership, communication and self-efficacy). Alternatively, Ogunlana et al (2002) focussed on the factors influencing the matching of PMs to different project types, and introduced an element for evaluating the characteristics of the PM to develop a matching model. Furthermore, whilst some writers argue for broader evaluative criteria (e.g. Kumaraswamy and Thorpe, 1996), others argue for evaluative criteria based on only the traditional measures (e.g. Brown and Adams, 2000). Thus, while Kumaraswamy and Torpe (1996) formulated a set of evaluative criteria relating to cost, quality/specification, time, client satisfaction, project participant satisfaction and risk containment, Brown and Adams (2000) focussed on only the traditional measures of time, cost and quality. Furthermore, Russell et al (1997) developed a continuous variable model for predicting project outcome and focussed on time and cost criteria only. Ling (2004) established a link between the success factors and success criteria and also formulated evaluative criteria relating to cost, time, quality, owners administrative burden and owner satisfaction.

Alternatively, and as mentioned earlier, Dainty et al (2003) argue for input based measures reflecting behavioural skills. Consequently, Dainty et al (2004) have developed a competency- based model, which focuses on the behavioural aspect of job performance improvement. Indeed, the criterion problem is contentious in the broader context of human resources management and this can be traced to the various

semantics used in defining performance measures. Nevertheless, Austin and Vallinova (1992) have argued for a succinct definition of performance measures as a sample of performance based on the elements of both performance outcomes and behaviours. It follows that a common weakness of current PMs' performance measures is that while they are valid in perspective, they do not reflect comprehensive evaluative criteria. Furthermore, even though it is recognised that the factors influencing PMs' performance may differ depending on the project phase (Lim and Mohammed, 1999), there has been no attempt to link the evaluative criteria to the various project phases, so that the PMs' performance can be predicted throughout the life cycle of a project (see also Ahadzie et al, 2005). It is therefore contended that current PMs' performance measures are not sufficiently holistic for benchmarking the PMs' performance. Consequently, it is argued in the discussion that follows that a more appropriate and robust approach is for PMs' performance measures to be based on both the elements of performance outcomes and behaviours and also linked to the various project phases.

## **DISCUSSION**

Generally, the literature indicates that research towards the development of PMs' performance measures has not been vigorously pursued in practice. This supports Dainty et al (2003) assertion that, there is a general weakness in project management literature in developing evaluative criteria for measuring the performance of construction PMs. Basically, the literature revealed two distinct methodologies in the limited studies published so far. That is, the identification of evaluative criteria based on either performance outcomes (e.g. project success and/or effective project management) or behavioural aspects of job performance. Evidently, a majority of the literature is skewed towards the former. Following the definition proposed by Austin and Vallinova (1992), that performance measures are samples of performance based on both outcomes and behaviours, it can be argued that the two distinct approaches for identifying evaluative criteria are valid. However, it is equally valid to argue that, to use each methodology independently does not reflect the broader definition proposed by Austin and Vallinova (1992). Thus, performance measures based solely on either methodology fails to identify evaluative criteria from a multidimensional perspective and hence is not holistic for PMs' performance measures. Furthermore, the weakness in linking the criteria measures to the various project phases makes it impossible to have a basis to predict and evaluate the performance of PMs throughout the lifecycle of a project. However, as implied by Lim and Mohammed (1999), such a system is needed to be able to support continuous performance improvement.

Consequently, it is contended that, the identification of appropriate and robust evaluative criteria for the PMs' performance measures should embrace both performance outcomes and behaviours. Furthermore, the evaluative criteria should be linked to the various project phases possibly; inception, procurement, construction and/or completion. The application of the theory of job performance in this instance brings to the fore the relevance of tasks and contextual performance behaviours. Since the evidence suggests that, while task and contextual performance behaviours are independent, they are not mutually exclusive (e.g. Motowidlo & Van Scotter, 1994), it is imperative that both are also reflected in the methodology.

## **A FRESH WAY FOWARD**

In view of the discussion presented above, it is thus re-emphasised that an appropriate way forward is for construction PMs' performance measures to embrace both performance outcomes and behaviours. This should provide a useful basis to develop evaluative criteria that reflect input- and output- based measures, both of which are arguably necessary for instituting comprehensive performance improvement programmes. The proposal to introduce both task and contextual performance measures is also significant. As mentioned earlier, task and contextual performance behaviours are not mutually exclusive and thus combine to help managers achieve overall organizational effectiveness. Thus, while task performance behaviours should provide a useful basis for identifying evaluative criteria for PMs' performance improvement in the technical areas of planning, supervising, delegating, coordinating and controlling. Contextual performance behaviours should provide evaluative criteria for improving PMs' performance on attributes such as initiative, conscientiousness, leadership, commitment and discipline that provide support for the organizational, social and psychological environment in which the technical functions (identified above) must operate. It is also contended that there is a need to link PMs' performance measures to the various project phases. This should help identify evaluative criteria, which are critical for the PMs' performance improvement at the various project phases. In effect, the fresh way forward being proposed should provide the potential for measuring the performance of construction PMs from a multidimensional perspective throughout the whole lifecycle of a project.

In this respect, it is proposed to use a new methodology to develop a predictive model for evaluating the performance of PMs in Mass House Building Project (MHBP) in Ghana. Against the backdrop of the contribution that PMs are making towards performance improvement in MHBPs in recent times, there is a need for the development of an empirically proven structured system, so that their performance can be evaluated objectively for best practice improvement (see Amoah-Mensah, 1996 and 2002; Ahadzie et al, 2004). However, PMs operating in developing countries like Ghana are faced with special challenges such as; excessive bureaucratic conditions, a weak materials supply base, financial uncertainties, an unregulated labour market and limited knowledge in management by some of the key players, especially contractors (see Faniran et al, 2000; Ahadzie et al, 2004). Furthermore, there is a lack of adequate infrastructure such as; transportation networks, telecommunication and power supply systems (see Faniran, et al, 2000). These challenges stem from the weak technological and economic environment in which the PMs operate. Thus, the identification of bespoke evaluative criteria, which reflects these unique conditions should be of paramount interest. Therefore, the ultimate aim of the ongoing study from which this paper emanates, is to develop evaluative criteria for PMs' performance measures, which reflects the unique characteristics of MHBPs as well as the organizational, technological and socio-economic conditions in which the PM operates in Ghana. Nevertheless, it is also worth noting that, while the study is unique to Ghana, it should be applicable to many developing countries, particularly in sub-Saharan Africa where PMs are faced with similar challenges. Currently, the conceptual model is being developed and hopefully will be reported in the Building Education and Research (BEAR) 2006 conference.

## CONCLUSION

A critical perspective of PMs' performance measures has been presented. The literature indicates that, despite the potential benefits that performance measures can offer, PMs' performance measures have not been vigorously pursued in practice. Two distinct methodologies were identified in the research, that is, performance measures based either on performance outcomes or behaviours. In this instance, PMs' performance measures based on performance outcomes emerged dominant. Further conclusions drawn suggests that current PMs' performance measures are not sufficiently holistic as they are not multi-dimensional in their approach and also do not reflect the various project phases. It is therefore contended that a more appropriate methodology is for PMs' performance measures to reflect both elements of performance outcomes and task and contextual behaviours, and furthermore to link the measures to the various project phases. Subsequently, against the backdrop of a need to develop appropriate evaluative criteria for validating managerial performance on MHBPs, it is intended to use the proposed methodology to develop a predictive model for evaluating the performance of PMs in MHBPs Ghana.

## REFERENCES

- Ahadzie, D. K., Proverbs, D.G. and Olomolaiye, P (2004) Meeting Housing Delivery Targets in Developing Countries: The Contribution of Project Managers in Ghana, In: Ogunlana et al (eds) *Globalization and Construction in Developing Countries*, AIT Conference Centre, Bangkok, Thailand, 17-19<sup>th</sup> November, pp. 620-630 (available at [www.sce.ait.th/GC2004](http://www.sce.ait.th/GC2004))
- Ahadzie, D.K., Proverbs, D.G. and Olomolaiye P (2005) Construction Performance Measurement Systems: Emerging Research Needs, 5<sup>th</sup> *International Postgraduate Research Conference*, University of Salford, 14-15<sup>th</sup> April, pp. 736-746
- Amoa- Mensah, K. (1996) Attaining Affordability through Cost Saving House Building Techniques: A Case Study of strategies that aided resource optimization in some affordable housing projects in Ghana. *The Surveyor, Ghana Institution of Surveyors*, pp. 109- 122
- Amoa-Mensah, K (2002) The Strategy of Fast Track Housing Delivery: The Ashongman Success Story, *Paper presented at Building and Road Research Institute*, Kumasi, Ghana, November, pp 1-7
- Austin, J.T., and Villanova, P (1992) The Criterion Problem: 1917-1992, *Journal of Applied Psychology*, Vol. 77 (6), pp 836-874
- Bechtoldt, H (1947) Problems in establishing criterion measures, In: Stuit, D.D (eds.), *Personnel research and test development in the Bureau of Naval Personnel* (pp. 357-379). Princeton, NJ, Princeton, University
- Borman W.C (1978) Exploring Upper Limits of Reliability and Validity in Job Performance Ratings, *Journal of Applied Psychology*, Vol. 63 (2), pp 135-144
- Borman, W.C and Motowidlo, S.J. (1993) Expanding the Criteria Domain to Include the Elements of Contextual Performance, In: Schmitt and Borman (Eds.) *Personnel Selection in Organizations*, San – Francisco, pp 71-98
- Borman, W.C., Dorsey, D.W., & White, L. A (1995) Effects of Ratee Task Performance and Interpersonal Factors on Supervisory and Peer Performance Ratings, *Journal of Applied Psychology*, Vol. 80 (1), 168-177
- Brinberg, G. H. (1999) *Project management for Building Designers and Owners* CRC press, London

- Brown, A., & Adams, J. (2000) Measuring the effect of project management on construction outputs: a new approach, *International Journal of project management*, Vol.18, pp 327- 335
- CIOB (2002) Code of practice for project for construction and development, Blackwell publishing, United Kingdom
- Cooke –Davies, T (2002) The real success factors on project. *International Journal of Project Management*, Vol. 20, pp 185 –190
- Dainty, A. R. J., Cheng, Mei-I and Moore, D.R. (2004) A competency – based performance model for construction project managers, *Construction Management and Economics*, Vol. 22, pp 877-886
- Dainty, A.R.N, Cheng Mei-I and Moore, D.R. (2003) Redefining performance measure for construction project managers: an empirical evaluation. *Construction management and Economics*, Vol. 21, pp 209 –218
- Edum –Fotwe, F and McCaffer, R. (2000) Developing project management competency: perspectives from the construction industry. *International Journal of Project management*, Vol.18, Pp. 111- 124
- English, H. B & English, A.C (1958) A comprehensive dictionary of psychology and psychoanalytic terms, *New York: Longmans, Green & Company*
- Faniran O.O., Love, P.E.D., & Smith, J. (2000) Effective Front –End: Management A key element in achieving project success in developing countries *Proceedings of the 2<sup>nd</sup> International Conference of Construction in Developing countries*, Botswana, 15<sup>th</sup> – 17<sup>th</sup> <http://www.odsf.co.za/cdcproc/1stproceedings.html>
- Kamaraswamy, M. M and Thorpe, A (1996) A Computerised Construction Project Management Evaluation System, *Advances in Engineering Software*, Vol. 25, pp.197-206
- Kartam, N.A., Al-Daihani, T.G and Al-Bahar, J.F (2000) Professional project management practices in Kuwait: issues, difficulties and recommendations, *International Journal of Project Management*, Vol.18, pp.281-296
- Leung, Mei-yung, Ng Thomas, S and Cheung, S.O (2004) Measuring construction project participant satisfaction, *Construction Management and Economics*, Vol. 22, pp 319-331
- Lim, C.S. and Mohammed, Z (1999) Criteria of project success: an exploratory re-examination., *International Journal of Project*, Vol. 17, pp. 243 –248
- Ling, F.Y.Y (2002) Model for Predicting Performance of Architects and Engineers, *Journal of Construction Engineering and Management*, ASCE, Vol. 128 (5), pp.446-456
- Ling, F.Y.Y (2004) How project managers can better control the performance of design and build projects, *International journal of project management*, Vol. 22, pp.477 –488
- Lock, D (1987) Project Management, *Gower Publications*, England
- McCloy, R. A., Campbell, J.P and Cudeck, R (1994) A Confirmatory Test of a Model of Performance Determinants, *Journal of Applied Psychology*, Vol. 71 (4), pp 493-505
- Motowidlo, S.J and Scotter, R.V(1994) Evidence that Task Performance Should be Distinguished from Contextual Performance, *Journal of Applied Psychology*, Vol. 79 (4), pp 475-480
- Newcombe, R. (2003) From Client to project stakeholders: a stakeholders mapping approach, *Construction Management and Economics*, Vol. 21, pp 841-848

- Ogunlana, S. Siddiqui Z, Yisa, S and Olomolaiye, P (2002) Factors and procedures used in matching project managers to construction projects in Bangkok. *International Journal of Project management*, pp. 385 –400
- Reber, A.W (1985) Dictionary of psychology, London, Penguin
- Russell, J.S., Jaselkis, E.J and Lawrence, S.P. (1997) Continuous Assessment of Project Performance. *Journal of Construction Engineering and Management*, Vol. 123, March, pp. 64 –71
- Scott, W.D (1917) A fourth method of checking results in vocational selection, *Journal of Applied Psychology*, Vol. 1, pp.61-67
- Seng Lei, W.W and Skitmore, M (2004) Project Management Competencies: A Survey of Perspectives from Project Managers in Southeast Queensland, *Journal of Building and Construction Management*, Vol. 9(1), pp. 1-12
- Sinclair, D and Zairi, M (1995) Effective process management through performance measurement, Part III- an integrated model of total quality –based performance measurement, *Business Project Re-engineering & Management Journal*, Vol. 1 (3), pp 50-65
- Takim, R., Akintoye, A. and Kelly, J (2004) Analysis of Performance Measurement of Construction Projects in Malaysia In: Ogunlana et al (eds) *Globalization and Construction in Developing Countries*, AIT Conference Centre, Bangkok, Thailand, 17-19<sup>th</sup> November, pp534-546
- Van Scotter, J.R., and Motowidlo, S. J (1996) Interpersonal Facilitation and Job Dedication as Separate Facets of Contextual Performance, *Journal of Applied Psychology*, Vol. 81 (5), pp 525-531
- Walker, A (2002) Project management in Construction, Blackwell science, UK
- Warren, H.C. (1934) Dictionary of psychology Boston: Houghton-Mifflin
- Weitz, J. (1961) Criteria for Criteria, *American Psychologist*, Vol.16, pp.228-232
- Wilkinson, S (2001) An Analysis of the problems faced by project management companies managing construction projects, *Journal of Engineering, Construction and Architectural Management*, Vol. 8 (3), pp160-170
- Zammuto, R.F (1984) A comparisons of multiple constituency models of organizational effectiveness, *Academy of Management Review*, Vol. 9, pp 606-616