



Competencies required of project managers at the design phase of mass house building projects

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Abstract: Contemporary management researchers argue that competency-based measures are the only viable means for refocusing project managers (PMs) on what it takes to achieve managerial excellence towards engendering their professional development in a modern competitive work environment. Subsequently, a study has identified the need to establish and match the competency profiles of PMs to the project lifecycle in Mass House Building projects (MHBPs), to help improve managerial performance on these projects from inception to completion. Drawing on the well acclaimed task-contextual organizational theory of job performance, 110 structured questionnaires containing design related behavioural competencies were delivered to Property Developers in Ghana to establish their consensus on what they consider to be the core competencies that PMs must possess at the design phase of MHBPs. The data was then subjected to multiple regression analysis (stepwise method) towards isolating the relevant competencies. The findings suggest that from the perspective of senior managers (specifically managing directors of housing development companies in Ghana), they expect PMs to possess the following competencies towards ensuring effective design management at the design phase of the lifecycle of MHBPs: *job-knowledge of mass contract packaging; job knowledge of performance characteristics of materials for design of MHBPs; technical quality of strategies for managing the design process; job knowledge of thermal comfort assessment and provisions in the design of MHBPs and then job knowledge of relevant design codes, legislation and regulation for MHBPs*. The paper provides an important empirical impetus to a foundation paper which has already established competencies for the construction phase of the lifecycle of MHBPs. It is therefore important that PMs focus their attention on these findings towards improving their managerial and professional development for effective design management of MHBPs.

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1. Introduction

In recent times, there has been considerable interest towards understanding and delineating the competency profiles of project managers (PMs) in many industries including the construction sector (cf. Heffmann and Flood, 2000; Brophy and Kiely, 2002; Dainty et al., 2004, 2005a, 2005b; Pereira and Carvalho, 2009). There is also a growing need that it is high time that all PMBOKS on competencies align themselves to specific project types and also

the project lifecycle (Omidvar et al., 2011). Within this context, attempts at understanding and delineating the competency profiles of PMs in Mass House Building Projects (MHBPs) have attracted considerable attention, especially in the context of developing countries (Ahadzie et al., 2008). To this extent, a multidimensional competency-based conceptual framework focusing on the project lifecycle of MHBPs, namely; conception, planning, design, tender, construction and operational phases was developed (Ahadzie et al., 2009). The research went on to confirm the competency profiles required by PMs at the construction phase and has since been reviewed for industrial application (Ahadzie et al., 2009; Manaana, 2013). This research seeking to identify the core competencies of PM's at the design phase of MHBPs is a sequel and aligns very much with the need to match PMs

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competencies to specific project types and lifecycles (cf. McCaffer, 2009; Omidvar et al., 2011).

Contextually, Cornick (1991) reports of several studies that suggest that large percentage of problems in buildings arise through actions taken in the design phase. Equally within the housing sector, the design phase is recognized to have multiple implications which tend to affect the success of all other phases of the project lifecycle (Formoso et al., 1999; Hamzah et al., 2011). The increasing use of specialist knowledge especially regarding technological advancement, economic and professional pressures at the design phase has made the role of the PM increasingly relevant in modern construction projects (Gray and Hughes, 2012). However, and as noted by Gray and Hughes (2012), it is not the mere presence of such complexities that is the challenge, but the inability of PMs to deal with it. Thus, knowledge of PMs managerial competencies at the design phase is crucial in the current construction environment including housing projects and this is what is presented herein.

A review of the significance of design management as a crucial phase of the project lifecycle in general construction including housing projects is first presented followed by an overview of the project management environment in the study area in Ghana. Thereafter, the role of PMs in the design phase of MHBPs including how this links to the emerging importance of the competency movement in construction is discussed. The methodology involved in the study is then described including data collection, analysis and reportage of the findings. This is then followed by the discussion of the findings after which the paper concludes with a summary of the issues discussed including the way forward for developing the further phases of the proposed conceptual framework.

2. Design management in construction and house building

The emergence of the importance of design management in construction is no doubt encouraged by the growing complexity of buildings and process in terms of functional and technical requirements (Koskela et al., 2002; Owen et al., 2010). According to Gray and Hughes (2012), one of the most important reasons behind the complexity is the increase use of specialist knowledge and contributors to the design. They argue that, the process of specialization with its attendant economic and professional pressure often compounds the need for many different disciplines to come together during the design process. Designers are therefore being confronted with numerous alternative combinations of possible sub-solutions but are often left with limited and few options to make appropriate selections (Hamzah et al., 2011; Loon, 1998), especially because PMs are not adequately prepared managerially to deal with the modern design challenges (Gray and Hughes, 2012). Koskela et al. (2002) have also observed that the management of design and engineering is poorly carried out in construction projects and one of the reasons is that, appropriate, sound and managerial approaches are not being followed.

Certainly, within the house building sector, researchers have also noted that the design phase poses a particular challenge to realizing the success of these projects (cf. Formoso et al., 1999, 2002). For instance, Haller and Stehn (2011) also argue that as

much as 50% or more of rework in housing projects originate from faulty output from the design. Extant review of the literature reveals a number of current studies focusing on bringing about appropriate solutions into perspective especially at the design phase (cf. Andi and Minto, 2003; Cheng et al., 2013; Haller and Stehn, 2011) Baichie et al. (2006), Barlow (2005), Rahman et al. (2008) and Malmqvist and Glaumann (2009) have also earlier looked at improving design solutions from various perspectives. Significantly, these studies also do admit that, among others, good project management and for that matter PMs' competencies holds the key to a successful design management.

3. The project management environment in Ghana

Bredillet et al. (2009) draw on two main criteria for assessing the project management development in a country. That is, "project management advancement" measured in terms of the extent of the advancement of theoretical and practical knowledge and "project management deployment" measured in terms of size of human resources plus level of acceptance and adoption of PM practices. Drawing on Hofstede's (1984) cultural dimension that "no project management activity can be culture free" Bredillet et al. (2009) tested the impact of a country's state of development on project management deployment on four variables, namely; power distance index (PDI), individualism index (IDV), masculinity index (MAS), uncertainty avoidance index (UAI) and GDP/capita. Bredillet et al. (2009) concluded that countries with high GDP/capita facilitate good project management development. Bredillet et al. (2009) also found out that low PDI and UAI dimensions support cultural values for PM deployment for High-GDP countries high PDI, UAI and IDV dimensions dominates in relatively low GDP/capita countries.

Ghana is touted as one of the fastest growing economy's in Africa in recent times currently posting an average GDP of over 8% (Mallory, 2013). Concurrently, project management as a profession has indeed gain some popularity and acceptance within the construction sector within the last decade, to the extent that the title of the PM is now developing some recognition in the construction sector and is acknowledged in the Procurement Act (Act 663, 2003). However, as a developing economy with a relatively low GDP/capita the project management environment in Ghana has not been spared inherent challenges such as inefficiency in construction procurement, excessive bureaucratic conditions, largely informal labour market, poor communication and administrative practices and lengthy payment procedures (Crown Agents, 1998; Fugar and Agyarkwa-Baah, 2010; Anvuur and Kumaraswamy, 2006).

Furthermore, notwithstanding the provision of Ghana's procurement Act (as defined in clauses 5.18 – 5.23 of the manuals to the Act), the precise interpretation of the role of the PM is not well understood as there are many instances where professionals who have no knowledge or training in project management profess that they are PMs. Also whereas in project management practices all contractual communications should emanate from PMs on behalf of the client, in the Ghanaian setting, architects in particular (because of their traditional role as team leaders) are finding it difficult to accept the role of a

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