

CORE COMPETENCIES AND THE PRACTICE OF CONSTRUCTION MANAGEMENT: A PILOT SOUTH AFRICAN STUDY

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International literature indicates that core competencies in the form of three categories, namely self concept, traits, and motives, are important competencies in terms of the practice of construction management and the achievement of project success. The competencies per category are as follows. Self-concept: values; aptitude; attitude, and self-image. Traits: self-confidence; team player, and handle ambiguity. Motives: focus on client success; preservation of organisation integrity, and preservation of personal integrity. The research reported on in the paper constitutes the exploratory phase of the study 'Core competencies and the practice of construction management.' The exploratory study was undertaken in the form of a quantitative survey conducted among members of the Chartered Institute of Building (CIOB) based in South Africa. Findings include that all the core competencies are important in terms of the practice of construction management at all three levels, and the achievement of project success. The paper concludes that the core competencies are at the very least equally important to the surface competencies in the form of knowledge and skills, which alone will not assure the optimum practice of construction management and project success. The paper recommends that construction management undergraduate and honours programmes need to focus on the development of the core competencies through a range of interventions such as: focus on ethics; engendering an understanding and appreciation for granting all project parameters equal status and for the synergistic relationship between them; student presentations; group projects, and integrative projects.

Keywords: construction management, core competencies, performance, project success, South Africa.

BACKGROUND

Construction managers, certainly members of the CIOB in Southern Africa have being noted for spending a limited number of years at operational management level, and more at middle and top management level (Smallwood, 2006). According to the research findings by Smallwood (2006) the most frequently used subject areas in the construction management domain therefore reflects the focus at these respective levels of management: top - the management of the business of construction; middle -the management of a number of projects, and operational - the management of specific projects. However, the management of either the business of construction or construction projects requires an appreciable amount of 'competence' and 'competency' as they are prerequisites for the attainment of the envisaged

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performance (Sanghi, 2004; Mooney, 2007). A core competence is thus an organisational capability to perform some aspect of a production function in a manner consistently superior to its competition that in turn leads to above-average organisational performance (Clardy, 2007). According to Clardy (2007) core competencies lead to persistent superior performance in several ways as they generate more efficient and effective performance that allow firms to adapt better changing conditions by providing a platform for continuous innovation in products and services. In this context, competence means a skill and the standard of performance reached while competency refers to the behaviour by which it is achieved. In other words, competences refer to the range of skills which are satisfactorily performed, while competencies refer to the behaviour adopted in competent performance. Further, (Sanghi, 2004; Vazirani, 2010) suggest that competencies are divided into two categories: the surface, which are required to be at least effective, and core, which distinguishes superior performance from average performance. The surface competencies are:

- Knowledge: information regarding content, and
- Skills: ability to perform a task.

The core competencies are:

- Self-concept: values, aptitude, attitude, and self-image;
- Traits: self-confidence, team player, and handles ambiguity, and
- Motives: focus on client success, and preserves organisation / personal integrity.

As illustrated in Figure 1, knowledge, skills, traits, and motives are characteristics that may not be easily observable but rather exist ‘under the surface’, though it should be noted that knowledge and skill competencies tend to be visible and relatively ‘on the surface’, however, self-concept, trait and motives competencies are more hidden and central to personality (Sanghi, 2004; Vazirani, 2010).



Figure 1 Competencies related unobservable behaviour (adapted from Sanghi, 2004: 5)

Though the term ‘competencies’ has multiple definitions that reflect the varied history of the concept, the current use of the term is traceable to McClelland (1973), who contends that competencies constitute components of performance associated with important life outcomes and constitutes an alternative to the traditional trait and intelligence approaches to guessing performance. Thus, competencies used in this way refer to broad psychological and / or behavioural attributes that are related to

successful results (Chan, 2006; Vazirani, 2010). Competency therefore embodies the capacity to transfer skills and abilities from one area to another as competencies are the characteristics of managers that lead to the demonstration of skills and abilities, which in turn lead to effective performance (Sanghi, 2004). The value of core competencies is thus evident when they form a basis for competitive advantage (Mooney, 2007).

Given the importance of core competencies according to the limited literature available, and the lack of focused research relative to core competencies and the practice of construction management, a pilot study was conducted to determine the importance of core competencies relative to the practice of construction management and their contribution to project success in South Africa. The study was underscored by the need to determine the difference (if any) between core competencies valued by practitioners and scholars. Thus, the research problem statement argues that there are gaps between educational programmes and core competencies perceived to be important by practicing construction managers. A case in point is the widely reported sustained superior performance recorded by organisations such as Wal-Mart, Southwest Airlines, and Nucor Steel, which is reportedly due to the presence of a 'core competencies' that provides competitive advantage (Hamel and Prahalad, 1994 cited by Clardy, 2007).

COMPETENCIES AND PERFORMANCE

The terms competencies, competence and competent refer to a state or quality of being able and fit (Vazirani, 2010). Vazirani (2010) suggests that the terms, competency and competence, arise from different streams of thought on the concept of fitness at work. He is of the opinion that competency is a description of behaviour, while competence is a description of work tasks or job outputs. In brief, competency can be defined as an underlying characteristic of a person that leads to superior and / or effective performance in a task (Boyatzis, 1982 cited by Chan, 2006). An underlying characteristic, Vazirani (2010) suggested, could include a motive, trait, skill, an aspect of one's self image or social role, or a body of knowledge. This definition acts as a forerunner to a range of characteristics attributable to competencies. According to Shippmann *et al.* (2000 cited by Chan, 2006), the characteristics of competencies include:

- Cluster of knowledge, skills, abilities, motivation, beliefs, values, and interests;
- Relate to a major part of the job;
- Associated with effective and / or superior performance;
- Observable and measurable against well-accepted standards;
- Linked to future strategic directions, and
- Can be improved through training and development.

Essentially a core competence is central to a firm's value-generating activities, as it entails the capability of a firm rather than their mere ownership of resources and it also assists a firm to achieve its purpose (Mooney, 2007). To be succinct, competency that may take the form of knowledge, attitude, skill, and other characteristics of an individual that includes motives, values, and self-concepts can actually support success at work (Kavitha *et al.*, 2010). In particular, within the construction management context, research conducted by Dainty *et al.* (2005) discovered that superior-performing managers will evidence higher levels of specific key behaviours that underpin effective management performance than average-performing managers. In addition, they contend that superior construction management performance can be predicted against a much-simplified model comprising two core competencies

underpinning the functional role: team leadership and self control. Given the important roles construction managers continue to play in the construction process as they are required to, inter-alia, build, nurture, and maintain project teams without losing their cool in a stressful environment, the findings by Dainty *et al.* (2005) can be deemed to reflect the importance of these core competencies.

Furthermore, as most construction projects are so massive and persuasive that no single individual can possess the competencies required to see them through to successful completion, it is therefore imperative for organisations, albeit construction organisations, to identify, develop and manage organisational core competencies that tend to drive large enterprise wide critical projects (Sanghi, 2004). This argument is based on the assumption that workplace competencies tend to focus on individuals instead of the organisation, and they vary by job positions versus enterprise endeavours. Consequently, it can be argued that core competencies relevance is organisational, strategic, useful for business units and processes, and global in nature. In the strategic context, Clardy (2007) citing several authors suggests that in general, difficult-to-appropriate sustainable strategic factors should meet a number of standards. First, the factor must be valuable. Second, the factor must be rare or not widely available. Third, the factor must be difficult to imitate or copy. Fourth, the factor must be non-substitutable. Fifth, the factor must be sustainable over the long-term. In other words, these factors cum core competencies should (Prahalad and Hamel 1990 cited by Lampel, 2001):

- Embody the collective learning of the organisation: it is the tested and proven knowledge the firm acquires in the process of learning its business;
- Embody coordinating skills: skills to coordinate diverse operations, skills to harmonise different technologies, and skills to coordinate relationships with a heterogeneous client base;
- Embody a shared understanding of the product and market possibilities that are inherent in the firm's technological knowledge base, and
- Embody intangibles such as culture and ideology that serve to bind the firm's various businesses together.

Based on the abovementioned characteristics, it can be argued that core competencies based on superior organisational processes provide an ideal source for sustainable competitive advantage as learned core competencies are the skills that coordinate and drive performances of employees in a variety of tasks that are vital for project realisation (Clardy, 2007). Thus, core competencies in an organisation directly influence the performance of its managers, and the competitive advantage the firm enjoys in the marketplace (Sanghi, 2004). For instance, firms sustain competitive advantage when their competencies in the form of either core competence or distinctive competence possess strong causal ambiguity because competitors are less likely to understand such competencies well enough to imitate them (Mooney, 2007).

RESEARCH

The sample stratum consisted of South African non-student members of the Chartered Institute of Building (Africa), which were surveyed per e-mail using a structured questionnaire consisting of twelve questions. Eleven of the questions were close ended and one was open ended. Two of the eleven close ended questions were five-point Likert scale type questions, which also included an 'unsure' response option.

Twenty-two responses were included in the analysis of the data using MS Excel to compute descriptive statistics, namely frequencies in the form of percentages and a measure of central tendency in the form of a mean score (MS).

Findings

Respondents were involved with a range of types of construction in, 2009, commercial (59.1%) predominating, followed by industrial (45.5%) (Table 1). Table 2 indicates that respondents are experienced in that 68.2% of respondents have worked at top management level for an average of 11.5 years, meaning that they had worked at operational and middle management levels. Virtually an equal number of respondents are currently working at middle and top management level (Table 3). The three percentages do not total 100% as one respondent is currently working at all three levels of management.

Table 1: Types of construction respondents were involved with in 2009

Type	Yes (%)
Industrial	45.5
Commercial	59.1
Domestic	13.6
Infrastructure	31.8
Other e.g. educational, govt. facilities, sports stadia	27.3

Table 2: Levels of construction management respondents have worked at and the related period of time

Level	Yes (%)	Years (No.)
Operational	68.2	7.1
Middle	86.4	6.1
Top	68.2	11.5

Table 3: Levels of construction management respondents are currently working at

Level	Yes (%)
Operational	4.5
Middle	50.0
Top	54.5

Table 4 indicates that the reliability of scale relative to self-concept achieved a Cronbach alpha score of 0.59 at the operational level, 0.77 at the middle management level, and 0.01 at the top management level. At the operational level, and middle management levels, the reliability relative to traits is 0.65 and 0.88 respectively; while at operational and middle management levels, the reliability relative to motives are 0.69 and 0.53 respectively. However, the reliability of scales relative to traits and motives did not record any score because there was not variation between the scores recorded perhaps due to the limited number of respondents that completed the survey. Nevertheless, the table suggests that the reliability of scale relative to the importance of core competencies to the practice of construction management range from questionable to good.

Table 5 indicates the importance of core competencies in terms of the practice of construction management relative to the three levels of management in terms of MSs based upon percentage responses to a scale of 1 (not important) to 5 (very important). Mean MSs based upon the MSs of the three levels of management are also presented. It is notable that all the MSs are > 3.00 , which indicates that in general the competencies can be deemed to be important in terms of the practice of construction management at the three levels of management. However, a review of the MSs in terms of ranges provides a more detailed perspective. MSs $> 4.20 \leq 5.00$ indicate that the importance of the competencies can be deemed to be between more than important to very important / very important: 4 (40%) operational; 8 (80%) middle; 10 (100%)

top; 8 (80%) mean, and 22 (73.3%) all levels. The other MSs are $> 3.40 \leq 4.20$, which indicates the importance of the competencies can be deemed to be between important to more than important / more than important: 6 (60%) operational; 2 (20%) middle; 2 (20%) mean, and 8 (26.7%) all levels. In terms of the difference in MSs at the various levels, it is notable that all the top management MSs are higher than the operational and middle management MSs and 8 of the 10 middle management MSs are higher than the operational management MSs.

Table 4: Reliability of scale: Importance of core competencies

Competency	Cronbach Alpha per level of management		
	Operational	Middle	Top
Self-concept	0.59	0.77	0.01
Traits	0.65	0.88	-
Motives	0.69	0.53	-

Table 5: Importance of core competencies in terms of the practice of construction management at the three levels of management

Competency	Operational		Middle		Top		Mean	
	MS	Rank	MS	Rank	MS	Rank	MS	Rank
Self-concept:								
Values	4.25	4	4.50	1	4.87	4	4.54	3
Aptitude	4.13	5	4.00	10	4.53	8	4.22	8
Attitude	4.56	1	4.50	2	4.80	5	4.62	2
Self-image	3.94	8	4.11	9	4.40	10	4.15	9
Category mean	4.22		4.28		4.65		4.38	
Traits:								
Self-confidence	4.00	6	4.44	4	5.00	1	4.48	4
Team player	4.38	2	4.44	5	4.53	9	4.45	5
Handle ambiguity	3.94	7	4.44	6	4.80	6	4.39	6
Category mean	4.11		4.44		4.78		4.44	
Motives:								
Focus on client success	3.56	10	4.28	7	4.60	7	4.15	10
Preservation of organizational integrity	3.88	9	4.28	8	5.00	2	4.39	7
Preservation of personal integrity	4.38	3	4.50	3	5.00	3	4.63	1
Category mean	3.94		4.35		4.87		4.39	

Table 6: Reliability of scale: Core competencies contribution to project success

Competency	Cronbach Alpha per level of management		
	Operational	Middle	Top
Self-concept	0.74	0.67	0.58
Traits	0.49	0.77	0.71
Motives	0.88	0.76	0.62

In terms of categories the highest MSs recorded are as follows: self-concept at top management; traits at top management, and motives at top management. In terms of levels of management the highest MSs are: self-concept at operational; traits at middle; motives at top, and traits in terms of the mean. It is notable that in terms of the mean there is very little difference between the MSs.

Table 6 indicates that the reliability of scale relative to self-concept achieved a Cronbach alpha score of 0.74 at the operational level, 0.67 at the middle management level, and 0.58 at the top management level. At the operational level, middle, and top

management levels, the reliability relative to traits are 0.49, 0.77 and 0.71; while at operational, middle and top management levels, the reliability relative to motives are 0.88, 0.76 and 0.62 respectively. The table indicates that the reliability of scale relative to the contributions of core competencies to project success range from questionable to good.

Table 7: Extent to which core competencies contribute to project success in terms of the practice of construction management

Competency	Operational		Middle		Top		Mean	
	MS	Rank	MS	Rank	MS	Rank	MS	Rank
Self-concept:								
Values	4.07	5	4.50	4	4.73	2	4.43	3=
Aptitude	4.00	6	4.35	6	4.47	8	4.27	7
Attitude	4.73	1	4.59	2	4.67	3	4.66	1
Self-image	3.57	10	3.81	10	3.93	10	3.77	10
Category mean	4.09		4.31		4.45		4.28	
Traits:								
Self-confidence	3.87	8	4.29	9	4.60	4	4.25	8
Team player	4.53	2	4.76	1	4.53	7	4.61	2
Handle ambiguity	3.67	9	4.41	5	4.40	9	4.16	9
Category mean	4.02		4.49		4.51		4.34	
Motives:								
Focus on client success	4.13	4	4.53	3	4.60	5	4.42	5
Preservation of organizational integrity	3.93	7	4.35	7	4.80	1	4.36	6
Preservation of personal integrity	4.33	3	4.35	8	4.60	6	4.43	3=
Category mean	4.13		4.41		4.67		4.40	

Table 8: Comparison of the importance (Imp) of core competencies and the extent to which core competencies contribute (Cont) to project success in terms of the practice of construction management at the three levels of management

Competency	Operational		Middle		Top		Mean	
	Imp	Cont	Imp	Cont	Imp	Cont	Imp	Cont
Self-concept:								
Values	4.25	4.07	4.50	4.50	4.87	4.73	4.54	4.43
Aptitude	4.13	4.00	4.00	4.35	4.53	4.47	4.22	4.27
Attitude	4.56	4.73	4.50	4.59	4.80	4.67	4.62	4.66
Self-image	3.94	3.57	4.11	3.81	4.40	3.93	4.15	3.77
Category mean	4.22	4.09	4.28	4.31	4.65	4.45	4.38	4.28
Traits:								
Self-confidence	4.00	3.87	4.44	4.29	5.00	4.60	4.48	4.25
Team player	4.38	4.53	4.44	4.76	4.53	4.53	4.45	4.61
Handle ambiguity	3.94	3.67	4.44	4.41	4.80	4.40	4.39	4.16
Category mean	4.11	4.02	4.44	4.49	4.78	4.51	4.44	4.34
Motives:								
Focus on client success	3.56	4.13	4.28	4.53	4.60	4.60	4.15	4.42
Preservation of organizational integrity	3.88	3.93	4.28	4.35	5.00	4.80	4.39	4.36
Preservation of personal integrity	4.38	4.33	4.50	4.35	5.00	4.60	4.63	4.43
Category mean	3.94	4.13	4.35	4.41	4.87	4.67	4.39	4.40

Table 7 indicates the extent to which core competencies contribute to project success in terms of the practice of construction management relative to the three levels of management in terms of mean scores (MSs) based upon percentage responses to a scale of 1 (minor) to 5 (major). Mean MSs based upon the MSs of the three levels of management are also presented. It is notable that all the MSs are > 3.00, which

indicates that in general all the competencies can be deemed to contribute more of a major than a minor extent to project success in terms of the practice of construction management. However, a review of the MSs in terms of ranges provides a more detailed perspective. MSs $> 4.20 \leq 5.00$ indicate that the contribution can be deemed to be between a near major extent to a major extent / major extent: 3 (30%) operational; 9 (90%) middle; 9 (90%) top; 8 (80%) mean, and 21 (70%) all levels. The other MSs are $> 3.40 \leq 4.20$, which indicates the contribution can be deemed to be between a contribution to a near major contribution / near major contribution: 7 (70%) operational; 1 (10%) middle; 1 (10%) top, and 2 (20%) mean, and 9 (30%) all levels. In terms of the difference in MSs at the various levels, it is notable that 7 of the top management MSs are higher than the operational and middle management MSs, and 9 of the 10 middle management MSs are higher than the operational management MSs. In terms of categories the highest MSs recorded are as follows: self-concept at top management; traits at top management, and motives at top management. In terms of levels of management the highest MSs are: motives at operational; traits at middle; motives at top, and motives in terms of the mean. It is notable that in terms of the mean there is very little difference between the MSs.

Although inferential statistical analysis was not possible due to the response sample, a comparison of the importance of core competencies and the extent to which core competencies contribute to project success in terms of the practice of construction management is presented in Table 8. The competencies, where the MS of the contribution to project success is higher than the MS of the importance have been highlighted. At operational level: attitude; team player; focus on client success, and preservation of organisational integrity.

At middle management level, aptitude; attitude; team player; handle ambiguity; focus on client success, and preservation of organisational integrity. In terms of the mean: aptitude; attitude; team player, and focus on success. Clearly, it appears that aptitude, attitude, team player, focus on client success, and preservation of organisational integrity are critical core competencies.

DISCUSSION

The findings amplify the importance of employability skills as evident in the Confederation of British Industry (CBI), 2008 report. The CBI (2008) observed that what employers look for in graduates is a positive attitude and the wider employability skills needed in the workplace. In particular, the report revealed that board executives (86%) overwhelmingly rank positive attitude and employability skills at the top of their demands. These employability skills include, inter-alia:

- Self-management - readiness to accept responsibility and improve performance, flexibility, and time management;
- Team working - respecting others, co-operating, persuading, and contributing to discussions;
- Business and customer awareness - basic understanding of the key drivers for business success and the need to satisfy the customer, and
- Problem solving - analysing facts, issues, and applying creative thinking to develop appropriate solutions.

It can therefore be argued that core competencies contribute significantly to the efficacy of employability skills. In addition, the recent CIOB definition of construction management suggests that core competencies could be important to the practice of the discipline. The definition, which states that construction management is

the management of the development and improvement of the built environment; exercised at a variety of levels from the site and project, through the corporate organisations of the industry and its clients, to society as a whole; embracing the entire construction value stream from inception to recycling, and focusing upon a commitment to sustainable construction; incorporating a wide range of specialist services; guided by a system of values demonstrating responsibility to humanity and to the future of our planet; and informed, supported and challenged by an independent academic discipline, indicates that core competencies are essential to the professional practice especially in terms of the business and project aspects of the profession.

CONCLUSIONS

Although surface competencies in the form of knowledge and skills are important with respect to the practice of construction management, the empirical findings of the study clearly indicate the importance of core competencies in terms of the practice of construction management and their contribution to project success. Clearly, tertiary construction management education programs and training must develop such core competencies. In terms of the importance of core competencies, no particular category predominates, which is underscored by the limited difference between the MSs of the mean of the three levels of management. Furthermore, within the respective levels of management no particular category predominates. However, there is no common category among the highest ranking categories in the respective levels. Therefore, in terms of the importance of core competencies, it can be concluded that all categories are equally important. In terms of the contribution of core competencies to project success, no particular category predominates, which is underscored by the limited difference between the MSs of the mean of the three levels of management. Furthermore, within the respective levels of management no particular category predominates. However, in terms of a common category among the highest ranking categories in the respective levels, motives have the highest MS at operational and top management, and also in terms of the mean. Therefore, in terms of the contribution of core competencies to project success, it can be concluded that overall all categories are equally important. However, motives are a major contributor. In terms of specific core competencies, based upon their contribution to project success relative to their importance it can be concluded that aptitude, attitude, team player, focus on client success, and preservation of organisational integrity are critical core competencies. Further research in the form of a major study vis-a-vis a pilot study with a larger response rate, is likely to yield illuminating results.

REFERENCES

- Bale, J. (2010), *CIOB's professionalism: an inclusive definition of construction management*, Berkshire, UK.
- Confederation of British Industry (2008), *Taking stock: CBI education and skills survey, 2008*, CBI, London, UK.
- Chan, D.C. (2006), "Core competencies and performance management in Canadian public libraries", *Library Management*, **27**(3), 144-53.
- Clardy, A. (2007), "Strategy, core competencies and human resource development", *Human Resource Development International*, **10** (3), 339-349.

- Dainty, A.R.J., Cheng, M.I. and Moore, D.R. (2005), "Competency-based model for predicting construction project manager's performance", *Journal of Management in Engineering*, **21**(1), 2-9.
- Kavitha, S.F., Vasugi, S.P.M. and Murugadoss, S. (2010), "An empirical study on employee core competencies: a proven tool for an organisation's success", *Interdisciplinary Journal of Contemporary Research in Business*, **2**(8), 120-32.
- Lampel, J. (2001), "The core competencies of effective project execution: the challenge of diversity", *International Journal of Project Management*, **19**(8), 471-483.
- McClelland, D.C. (1973), "Testing for competence rather than intelligence", *American Psychologist*, **28**(1), 1-14.
- Mooney, A. (2007), "Core competence, distinctive competence, and competitive advantage: what is the difference?", *Journal of Education for Business*, **83** (2), 110-115.
- Sanghi, S. (2004), *The handbook of competency mapping*, Response Books, New Delhi, India.
- Smallwood, J.J. (2006), "The practice of construction management", *Acta Structilia*, **13**(2).
- Vazirani, N. (2010), "Competencies and competency model-a brief overview of its development and application", *SIES Journal of Management*, **7** (1), 121-131.