

# UNDERSTANDING OF PROJECT MANAGEMENT GOOD PRACTICES BY CONSTRUCTION PROJECT MANAGERS: THE CASE OF ABCD

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Most people become construction project managers (CPM) by accident. The usual path to the job is through expertise in a technical speciality as an engineer, quantity surveyor, architect or any other related speciality. In short, those with technical skill are told to run projects because they have technical knowledge about the projects. The technical part of a construction project is often the smallest and easiest part. Technical success does not necessarily lead to project success; it is necessary but not sufficient. In order to manage projects successfully one of the requirements for a project manager (PM) is to have sufficient knowledge base in construction project management, and coupled with practical experience, the PM will have sufficient understanding of PM good practices. This paper reports on a South African research project which was conducted to evaluate CPM understanding of project management good practices. One major public sector organization employing more than 800 construction project managers was selected as a case study. In order to maintain the organization's anonymity it is referred to in this paper as ABCD. From intensive literature review, universally accepted project management good practices were identified. These were used to evaluate the extent to which ABCD project managers understand project management good practices through a self administered questionnaire. The research results found that even though there are several areas of project management good practices in which ABCD project managers were found to have high levels of understanding, there were also significant areas of PM good practices which were not well understood. These findings have implications for CPM practices in South Africa and beyond. Recommendations are made to address the status quo in order to strengthen PM practices.

Keywords: project manager, good practice, South Africa.

## INTRODUCTION

Worldwide organizations are finally accepting that alternative approaches to management are needed to help them meet their business objectives. Many proactive organizations are changing in nature as more of them are accomplishing their business objectives through projects. Construction Project management (CPM) offers a structured approach to managing construction projects to ensure a successful completion.

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Project management is no longer viewed as a process that is nice to have, but rather which is necessary for the survival of the organization. During the second half of the 20th century, there has been an evolution in the nature of organizations moving from the functional structure almost universally adopted in the first half of the century to the project based organization (Kerzner 2004). This evolution has been caused by the changing nature of work from mass production, with essential stable customer requirements and slowly changing technology to the current situation whereby product design, technology and markets change continuously and rapidly these changes have affected construction based organizations like ABCD.

All of these factors have allowed a multitude of companies to achieve some degree of excellence in project management (Hyvari 2006). Effective CPM requires extensive planning and co ordination. As a result work flow and project co-ordination must be managed horizontally and not vertically as traditional management. Organizations that have mastered horizontal work flows are generally more profitable than those that continue to use vertical work flow exclusively (Kerzner 2004). CPM is no longer viewed as a system entirely internal to the organization. It is now a competitive weapon that brings higher levels of quality and increased value added to the client and can be defined as the planning, scheduling and controlling of a series of integrated tasks such that the objectives of the project are achieved successfully and in the best interest of the project's stakeholders (Kerzner 2004).

Corporations (including construction based public entities like ABCD) throughout the world are losing billions in wasted project spending. A global study conducted by Stanleigh (2006) of over 750 organizations around the world show that one of the biggest contributing factors to this waste is a severe lack of alignment between projects and corporate strategy. Alignment of projects with the strategic goals of the organizations is critical for project success and proper return of investment (Morris and Jamieson 2005). Superior business performance is dependent on good CPM as well as the creation of a culture that supports projects (Zwikael 2008). Studies conducted across private and public sectors in several countries across the globe reassured that top management support is significant for project success (Fortune and White 2002, Fortune and White 2006, Hyvari 2006, Zwikael 2008).

Studies examining good practices in Canadian organizations (e.g. Loo 2002) and critical project related success factors in a variety of UK organizations in both the public and private sectors (Clark 1999, Fortune and White 2002, Hyvari 2006), allude to the PMI's (2008) knowledge areas of good practices. Also, in many companies knowledge management is considered a good practice to create documented accounts of what has been learned in projects (Ajmal and Koskinen 2008). Good practices do not emerge from a vacuum, rather, an organizational culture must exist that values and nurtures good practices (Cooper 1998). Leadership and the project team, represents the way the construction project manager runs the project and how the tasks and responsibilities are divided (Westerveld 2003).

The common causes of project failure in the South African Public Sector, which are also reported by the UK office of Government Commerce (Hargovan 2006) are: lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success; lack of clear senior management and ministerial ownership and leadership; lack of effective engagement with stakeholders; lack of skills and proven approach to project management and risk management; too little attention to breaking development and implementation into manageable steps;

evaluation of proposals driven by initial price rather than long-term value for money (especially securing delivery of business benefits); lack of understanding of, and contact with the supply industry at senior levels in the organization; and lack of effective project team integration between clients, the supplier team and the supply chain.

The South African economy extending its boundaries by regionalization in Africa has been growing at a higher rate and therefore the demand for infrastructure is outstripping the supply (Griggs 2008). The role of utility organizations ranging from those involved in water to power management and supply have become vital in the economic development of the country and in order to meet the growing infrastructure demand, billions of rands will need to be invested each year in power plants, transmission and distribution facilities (Gupta and Sravat 1998). Currently with the global recession, it is very hard to organize funding for large capital projects. Hence, within these constraints utility organizations need to select the right projects and execute them with excellence to meet infrastructure demand and improve return on capital employed (ROCE) (Lavingia 2006).

Project managers play a vital role in the execution of project excellence and are viewed as the key drivers for project success. Project Management has become a core skill in the make-up of all public sector managers and professionals. However, it still leaves the competency profile of existing public sector appointments with respect to project management skills in a questionable position (Kohler 2003).

Project management should become integrated in the overall government and public service approach. It must become part of the organizational culture as recommended by Ajmal and Koskinen (2008). Project managers understanding of good practices is one of the key ingredients for effective project management (PMI 2008).

The purpose of the research reported in this paper was to evaluate Project managers understanding of project management good practices. ABCD – a public utility company was selected for this purpose due to its large construction capital expansion programmes and its impact on the South African economy for sustainable growth and development.

### **Research question and hypothesis**

To remain focused on the research theme, a research problem question and hypothesis were formulated:

Main research problem question:

Do ABCD Project managers understand project management good practices?

Sub research questions:

What are project management good practices?

Do ABCD Project managers understand project management good practices?

Research hypotheses:

H<sub>A</sub>: ABCD Project managers do understand project management good practices.

H<sub>O</sub>: ABCD Project managers do not understand project management good practices.

## BRIEF BACKGROUND OVERVIEW OF ABCD

ABCD is a giant public utility company and wholly owned by the South African government and has a responsibility to the country to ensure that sustainable development becomes a reality. ABCD has four core divisions which influence its organization structure. Its strategic objectives are implemented through its portfolios, programmes and projects to fulfil its national mandate.

## PM GOOD PRACTICES: THEORY AND PRACTICE

In this section the performance shaping theories and practices that emanated from the various studies conducted world-wide, which have a contributory impact on project management are discussed. The immediate theories and practices from the literature which revealed to be project management good practices will be discussed briefly due to lack of space and brevity and integrated into the survey. Also, some of the key organizational context factors, specifically, leadership style and organizational culture are reviewed briefly.

Over the past fifty years a considerable body of knowledge has built up around project management tools, skills and techniques across the world. The purpose of the body of knowledge is to identify and describe the good practices that are applicable to most projects most of the time (PMI 2008, Dixon 2000, ENNA 2005, Caupin *et al.* 2006, Burke 2003). There is a common approval about their value and usefulness.

There is a very strong link between the definition of a project management body of knowledge and the development of standards with a number of guidelines to aspects of the project management body of knowledge being treated as standards for what project management practitioners are expected to know. Although the general territory or coverage of a project management body of knowledge may be defined, the entire body of knowledge, which encompasses tacit and explicit knowledge embodied in published and unpublished material and in the established and emerging practices can't be captured in any single document. Therefore, any documentation of that knowledge must be considered as a guide to one view or aspect of the project management body of knowledge at a point in time.

The most widely known, distributed, and used guides and standards for project management focusing on projects are presented in Figure 1.

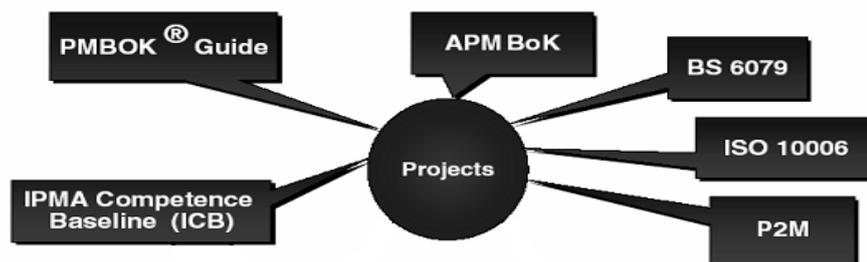


Figure 1: Summary of Standards Available that Focus on Projects

As indicated in Figure 1, those standards and guides that focus primarily on what project management practitioners need to know (knowledge guides) are also those dealing essentially with management of individual projects. The Japanese P2M stands out as the one exception, specifically extending the focus beyond the management of single projects to management of programmes of projects in the context of corporate strategy implementation and enterprise innovation and management. Other standards

include the Project Management Institute's 'Guide to the Project Management Body of Knowledge (Project Management Institute 2008); Association of Project Management Body of Knowledge (APM BoK) (Dixon 2006); the International Project Management Association's (IPMA) ICB: IPMA Competence Baseline (ICB) (Caupin *et al.* 2006); P2M: A Guidebook of Project and Program Management for Enterprise Innovation (Engineering Advancement Association of Japan Project Management Development Committee) (ENAA 2005); BS6079 Guide to Project Management (British Standards Board 1996); and ISO 10006 Guidelines to Quality in Project Management (ISO 1997). All of these documents are considered to be standards, either formally or informally. All documents, except BS6079 and ISO 10006, are used as knowledge base or standard for professional certification programmes (Burke 2003). For lack of space and brevity the details of these standards are described elsewhere (Gvozdenovic *et al.* 2008, PMI 2008).

The most widely distributed standards, the PMBOK Guide, APM BoK and ICB, have been instrumental in the growth of interest in project management, they can also be seen as reductionist and deterministic in their approach that focus on knowledge and practices applicable to management of single projects.

Standards and guides for project management focusing on the organization such as Japan's P2M, the OPM3 and the work of the UK Office of Government Commerce (OGC) such as PRINCE2, Managing Successful Programmes and the Successful. The combination of this group of standards and the standards discussed above provides a fully fledged domain of what is acceptable as PM good practices. This combination was used as an inventory of PM good practices for this research project.

## **RESEARCH METHOD AND INSTRUMENT FOR THE STUDY**

### **Data collection strategies**

In conducting this research, primary as well as secondary data were used to acquire the necessary information.

Primary data – According to Diamantopoulos and Schlegelmilch (1997) data collected with a specific purpose in mind which is applicable to this particular research project. The factors in this study, which needed investigation, concern the attitudes, opinions knowledge level of the respondents, which could best be measured by the interrogation data collection method. Attitudes and knowledge level can also be more accurately determined by answers to direct questions than by observation, where only assumptions can be made about knowledge level of the project managers. Due to these factors, the research used the interrogation mode to obtain information about the knowledge level of ABCD project managers.

Self-administered questionnaires were used. The self-administered questionnaires were distributed to randomly selected ABCD project managers (respondents). Attitude and opinion data was collected to determine ABCD project manager's project management good practices knowledge level, in order to address the research objectives. Data was also collected on demographic information, in order to compile a respondent profile, which conforms to the specific parameters of the study.

Secondary data – a literature study was done as part of the secondary data phase. Various authors' viewpoints explored, as well as other sources. The literature study, which was conducted, provided data on different aspects of the research topic. However, no formal research was previously done in South Africa with regard to the research topic and the objectives identified.

In this research, all ABCD project managers were viewed as the elements of the population. But the possibility of approaching all ABCD Project Managers was highly improbable.

Population frame – the sample cut across the various ABCD core divisions. The sample of project managers was selected from three Provinces of South Africa close to the researcher, namely, Gauteng, Mpumalanga and Limpopo province.

The Research Instrument (the questionnaire) – the questions included to measure ABCD Project Manager’s knowledge of PM good practices were developed from the consolidated PM good practices domain discussed under ‘theory and practice’ section above.

## RESEARCH RESULTS

As indicated in Table 1, the questionnaire was distributed by hand and through e-mail to a sample of 120 ABCD Project Managers from a total population of 250 ABCD Project Managers in the three provinces: Gauteng, Mpumalanga and Limpopo.

*Table 1: Research population, sample size and response*

Provinces	Population	Sample size	Response	Response rate
Gauteng, Mpumalanga and Limpopo	250	120	50	41.7%

The sample cut across the four core divisions of ABCD. The response rate of ABCD project managers as illustrated in Table 1 (50PMs =41.7%) is similar to Loo’s (2002) study conducted on best practices in project management (22.7% response rate). Also a response rate of 23.7% in the study of Fortune and White (2002) on project management was achieved. Hence, based on Loo’s (2002) and Fortune and White (2002) studies, the response rate of 41.7% with a sample size of 50 respondents is found to be sufficient and representative of ABCD construction project managers.

ABCD is currently undergoing a massive capital expansion construction programme which encompasses construction of new engineering infrastructure properties. One of the divisions has been mandated as ABCD’s capital expansion division (CED) to undertake most of these large scale construction projects which in turn has drastically increased the number of construction project managers within this division. Thus the majority of the respondents (54% of 50 PMs) are from the respective division due to the influx of construction project managers for the capital expansion construction programme.

Question B1 requested respondents to rate their skill level for each knowledge area listed based on Figure 1 above. Responses were within Low, Medium and High levels with majority of respondents rating their skills level from Medium to High. Question B1 also requested respondents to rank each knowledge area in scales of importance from 1-5, with ‘5 being the most important and 4 the second most important and so forth’. The majority of respondents ranked Cost (72%), Time (70%), Scope (64%) and Quality (62%) as most important.

Section C of the questionnaire (comprising 36 multiple choice questions) – focussed on interpreting or assessing PMs level of skills or understanding of the knowledge areas (9 knowledge areas) and ultimately their overall skills level on project management good practices. The respondents results/scores range for each knowledge

area and for overall scores were set as: Scores <25% – Don't know; Scores 25-49% – Low; Scores 50-59% – Medium/Moderate; Scores 60-75% – High; and Scores >75% – Very high.

The respondent's levels of skill for overall project management good practices indicated that majority (54%) overall skills levels are within the high (44%) and very high (10%) levels. In order to assess the mean level of skills for the total sample of 50 respondents for each knowledge area, the mean value of the results for each knowledge area were calculated. The mean level of skills for the total sample for each of the knowledge areas was found to be within medium and high level levels. Furthermore, the mean level of skills for the total sample's overall knowledge on project management good practices was calculated and was found to fall in the lower end of the high level (61.1%).

## SYNTHESIS AND ANALYSIS OF RESEARCH RESULTS

Reliability analysis was conducted to measure the integrity of the Measurement instrument. Correlation analysis was conducted to check the degree of the relationship between the different project management good practice variables and with the overall variable. Descriptive analysis was conducted to compare the average scores of respondents on different project management good practice variables in line with standard deviation. The Chi-square test was conducted to test whether there is a significant difference between ABCD project managers on their level of understanding and importance rating of project management good practices due to demographic variables. Finally, T-test was conducted to test the hypothesis on whether ABCD project managers understand project management good practices.

*Table 2: Reliability statistics for individual and overall PM good practices dimensions*

Description	Alpha	$\alpha_{Va} > \alpha_{Di}$ ?
PM good practice (multiple choice)	0.491	Yes
Ranking 9 PM good practices	0.818	No
Project knowledge (H,M and L)	0.812	No
Grand total 54 question	0.539	Yes

Alpha value of variables =  $\alpha_{Va}$  and Alpha value of the dimension =  $\alpha_{Di}$

As shown in Table 2, the combined reliability for the 54-item scale of Project management good practices, computed by using Cronbach's coefficient alpha, was average ( $\alpha = 0.539$ ). In addition, the average alpha values among the "36 variables of multiple choice questions,  $\alpha = 0.491$ ", "9 variables ranked for the importance of one project management dimension over the other  $\alpha = 0.818$  and "variables to measure the level of knowledge of project managers,  $\alpha = 0.812$ ". Thus the dimensions indicate a good internal consistency among the items within each dimension. However, even though the alpha values for the three 'Project management good practices' dimensions and for the 'Overall 54-item scale of Project management good practices, dimension are high, the "alpha if item deleted" scores for the overall 54 item scale measurement and for the multiple questions dimension – showed higher variance from the aggregate value of 0.539 and 0.491 respectively. For lack of space and brevity comparison of variables are found elsewhere (Rwelamila and Asalan 2010). For the overall Project management good practices dimension (54 questions), the variables that showed higher Cronbach alpha than 0.539 are: the project plan is used to integrate all subsidiary plans:  $\alpha = 0.555$ ; and scope planning is developing a written scope statement:  $\alpha = 0.549$ .

The above two variables plus the 13 variables as described in detail elsewhere (Rwelamila and Asalan 2010) have greater alpha value than the overall alpha value of 0.539 reflect that there are no internal consistencies among the items within the overall 54 questions on project management good practice's dimension and the three individual dimensions.

Some researchers argue that the above higher Cronbach alpha variables should be excluded from further analysis. If these variables can be deleted – not used in the analysis, the aggregate alpha value could be improved from the original alpha value findings. However, as this research is exploratory and the variables that fall under the “Project management good practices’ dimension and the three sub dimensions are fundamental parts of this research, to make up equal number of questions under the multiple choice questions dimension (four questions under each dimension) for each project management good practice, the variables are retained. In general there is a fair internal consistency among the variables, as the scores are below 0.7 but above 0.5. That is, three quarters of the analysis have 0.5 and above. This means, the measurement variables used in this study can be replicated in another similar study and a fair replication of similar magnitude results could be expected.

When comparison of overall 54 questions with chi-square was done, there was significant difference with in Area base where the respondent is based at  $df(351,1)=0.066$ , at  $p<0.1$  and on whether respondent is registered with any professional body at  $df(195,1)=0.081$ , at  $p<0.1$  on the overall 54 questions of project management good practices The results indicate that ABCD construction project managers significantly differ on the overall questions of project management good practices in terms of their area base where the respondent is based, and on whether the respondent is registered with any professional body.

## **CONCLUSIONS AND RECOMMENDATIONS**

The objective of the research project was to establish from literature, universally accepted project management good practices, and then to evaluate the extent to which ABCD project managers understand these good practices. The research methodology was based on a quantitative survey method analysis. From the self administered questionnaire, three different approaches were used to measure the level of knowledge of ABCD project managers on project management good practices. Firstly, the respondents were asked to rate their knowledge on the established list of PM good practices on a scaled rating. Secondly, they were asked to rank each of these good practices in the scale of importance. The questionnaire included 36 multiple choice questions.

Each of the identified PM good practice dimensions was explored and the research implications were identified. It was found that even though there are several areas in project management in which ABCD project managers have high levels of knowledge, not surprising, there are also areas where scanty knowledge exists between ABCD project managers.

Some ABCD project managers do have extensive understanding of project management good practices and some have a very low understanding. However one interesting observation is that there is a co-relation between levels of PM knowledge and understanding of PM good practices. There are strong indications to suggest that those project managers without sufficient PM training seem to have a low understanding of PM good practices when compared with those who have gone

through significant training in PM. This finding confirms Rwelamila's (2010) findings that ability in technical expertise is not an overriding indicator of the effective construction project manager. It certainly provides increased credibility on the job in any construction industry, but most often is elevated in importance beyond what it deserves. Construction project managers need to have leadership potential, and this must be one of the knowledge base which CPMs should acquire. This is a significant finding, which strongly suggest that ABCD has a significant number of accidental project managers – a weakness which need to be addressed.

The weakness is so significant to warrant a conclusion that a significant number ABCD project managers need attention – to address the gap between 'accidental PMs' and 'PMs with sufficient PM knowledge base'. It is hence recommended that ABCD should look into the feasibility of training its 'accidental' project managers (within ABCD or outside) and make sure that all ABCD project managers transcend their 'technical knowledge' and acquire PM knowledge base.

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