



## **FACTORS INFLUENCING PROJECT PERFORMANCE AMONG KENYAN UNIVERSITIES IN KISUMU COUNTY**

<sup>1</sup>MBAWI Geoffrey Otonde & <sup>2</sup>MUCHELULE Yusuf

<sup>1</sup>MSc. Student, Jomo Kenyatta University of Agriculture and Technology, Kenya  
P.O. BOX 4842-30100 Kakamega Campus Kenya  
Email: [mbawikotonde@yahoo.com](mailto:mbawikotonde@yahoo.com)

<sup>2</sup>Lecturer, Jomo Kenyatta University of Agriculture and Technology, Kenya  
P.O. BOX 4842-30100 Kakamega Campus, Kenya  
Email: [ymuchelule@gmail.com](mailto:ymuchelule@gmail.com)

### **ABSTRACT**

Performance of the project is considered as a source of concern to both public and private sector clients. The main purpose of the study was to assess the factors influencing project performance among Kenyan Universities in Kisumu County. The study used a combination of cross-sectional and descriptive survey. In this particular study the population was made up of 12 project managers and 124 employees. The study employed stratified random sampling technique in which the researcher sub-divided his population into 4 public universities. Purposive sampling technique was used to draw a sample from population. In this study the sample consisted 30% of the target population. This study employed the use of questionnaires for project manager. A value of Cronbach alpha above 0.70 was used as a reasonable test of scale reliability. This entailed the use of mode, percentages for descriptive statistics and chi square for inferential statistics. Multiple regression model enabled the researcher to test the hypothesis stated. The study found that planning, management support, human capital, communication and monitoring evaluation have a positive and significant effect on project performance. The availability of professional evaluators has also made it possible for regular check of input activities. High performance is evidenced since the prescribed amount of work is accomplished within the stipulated time. There is also need for highly qualified personnel for the project and employees that are committed to working for the project. There therefore imperative for project planners to define the project objectives.

**Keywords:** Planning, Management Support, Human Capital, Communication And Monitoring Evaluation & Control.

### **INTRODUCTION**

Performance of the project is considered as a source of concern to both public and private sector clients. Kumaraswamy (2002) remarked that project performance measurement include time, budget, safety, quality and overall client satisfaction. Thomas (2002) defined performance measurement as monitoring and controlling of projects according on a regular basis. Kuprenas (2003) stated that project performance measurement means an improvement of cost, schedule, and quality for design and construction stages. Long *et al* (2004) stated that a project performance measurement is related to many indicators such as time, budget, quality, specifications and stakeholders' satisfaction.

The failure of any construction project is mainly related to the problems and failure in performance. Moreover, there are many reasons and factors which attribute to such problem. In US, Long *et al* (2004) remarked that performance problems arise in large construction projects due to many reasons such as: incompetent designers/contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. Navon (2005) stated that the main performance problem can be divided into two groups: (a) unrealistic target setting (i.e., planning) or (b) causes originating from the actual construction (in many cases the causes for deviation originate from

both sources). Chan and Kumaraswamy (2002) stated that construction time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization.

Cheung *et al* (2004) identified project performance categories such as people, cost, time, quality, safety and health, environment, client satisfaction, and communication. It is obtained by Navon (2005) that a control system is an important element to identify factors affecting project effort. Pheng and Chuan (2006) obtained that human factors played an important role in determining the performance of a project. Ling *et al* (2007) obtained that the most important of practices relating to scope management are controlling the quality of the contract document, quality of response to perceived variations and extent of changes to the contract.

In Nigeria, Chan and Kumaraswamy (2002) remarked that effective communication and fast information transfer between managers and participants help to accelerate the building construction process and performance. Kuprenas (2003) studied the impact of the use of a project management based organizational structure, project manager training, frequency of design meetings, and frequency of design reports on design phase cost performance. In addition, in East Africa countries such as Kenya, the factors affecting cost performance are: project manager's competence; top management support; project manager's coordinating and leadership skill; monitoring and feedback by the participants; decision making; coordination among project participants; owners' competence; social condition, economical condition and climatic condition. Coordination among project participants was as the most significant of all the factors having maximum influence on cost performance of projects (Iyer and Jha, 2005).

The high prestige and esteem that the public universities in Kenya enjoyed in the 1970s and early 1980s no longer exists, caused by a plethora of problems. Today, some public universities are seen as institutions that are nearly on the brink of collapse and almost beyond help. However, African Governments are committed to the development of university education on the premise that higher education is a most sensitive area of investment. It is politically and socially sensitive in that universities need both highly-trained people and top-quality research to formulate policies, plan programmes, and implement projects that are essential to university development. As a county, Kisumu has only one university, four satellite colleges, one national polytechnic, five youth polytechnics and various ranges of private colleges. Considering that the county is home to over 968,909 persons, of whom the youth comprise over 53 percent of this, the county is trailing in providing tertiary education to this population. With Maseno University considered as the major university present in the county, university campuses such as Nairobi University has recorded low enrolment from the residents within the county. Majority of students are from schools without the county.

### **Problem formulation**

In Kenya, the annual admission was reduced to 8,028 in the 2004/05 academic year compared to about 11,000 during the previous academic year (Abagi and Okumbe, 1993; GOK, 2005). Statistics have shown that more than 50% of projects initiated by universities in Kenya are unsuccessfully implemented (World Bank, 2009), a situation if it persists it will lead to closure of many public universities, if not so, low services quality. However, the challenge for the decade of the 1990s has been how to manage the university projects effectively in the context of fiscal constraints so that resources could be efficiently utilized this projects to meet the missions of the universities. Previous studies have addressed factors affecting performance project, however this studies have given little attention to performance of universities in Kenya giving a dearth gap in the existing literature, this study will address the above gap by addressing effect of project planning, management support, human capital communication monitoring, evaluation & control on project performance. This research therefore sought to look into the factors that had seen the universities fail in their projects within the county. It also looked into the strategies put in place during project implementation in increasing success rates. The study therefore hypothesized.

*H<sub>01</sub>: project planning has no significant effect on project performance in universities*

*H<sub>02</sub>: management support has no significant effect on project performance universities*

*H<sub>03</sub>: human capital has no significant effect on project performance universities*

**Theoretical Framework**

The theory of project is provided by the transformation view on operations. In the transformation view, a project is conceptualized as transformations of inputs to outputs. There are a number of principles, by means of which a project is managed. These principles suggest, for example, decomposing the total transformation hierarchically into smaller transformations, tasks, and minimizing the cost of each task independently (Shenhar, 2003).

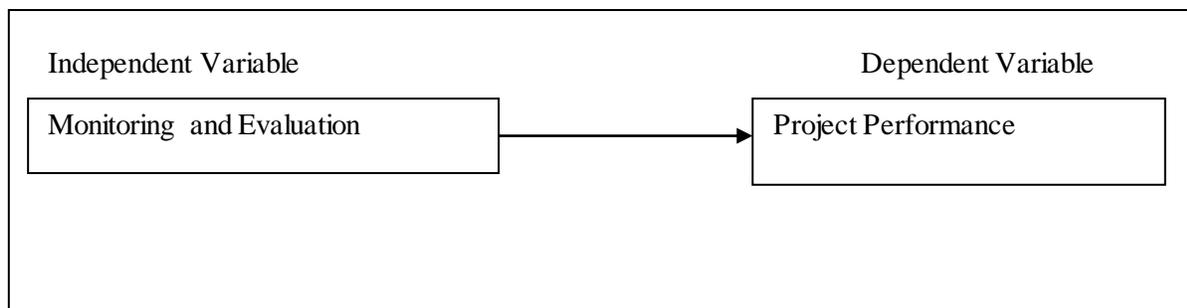
This underlying theoretical foundation of project management has been evaluated through four sources of evidence the plausibility and consistency of the theory in itself; empirical validity; competing theories; and alternative methods based on competing theories (Koskela and Howell 2002). The evidences from these four sources turn out to be strikingly consonant, indicating that the underlying theoretical foundation of project management is deficient.

Regarding the theory of project, the partial models of operations as flow and value generation add the consideration of time, variability and customer to the conceptualization provided by the transformation model (Koskela 2000). Similarly, the theoretical foundation of management has to be extended. Regarding planning, the approach of management-as-organizing adds the idea of human activity as inherently situated (Johnston and Brennan 1996).

Thus, planning should also focus on structuring the environment to contribute to purposeful acting. Concerning managerial execution, the language/action perspective, originated by Winograd and Flores (1986), conceptualizes two-way communication and commitment, instead of the mere one-way communication of the classical communication theory. The scientific experimentation model of control of Shewhart (Shewhart and Deming 1939) focuses on finding causes of deviations and acting on those causes, instead of only changing the performance level for achieving a predetermined goal in case of a deviation. The scientific experimentation model adds thus the aspect of learning to control.

**Related studies**

Project performance remains a prominent issue in project delivery all over the world. This is so because projects involve defined objectives which must be achieved and numerous resources which need to be efficiently utilized. The need for participants involved in construction project delivery to develop and use tools for performance measurement was emphasized in the UK and Sweden (Robinson *et al.* 2005). Several researchers also developed numerous parameters for measuring project performance (Naoum, 1999; Ling and Chan, 2002; Thomas *et al.*, 2002; Josephson and Lindstrom, 2007). In a review of the parameters used for measuring project performance in 16 journal papers, Josephson and Lindstrom (2007) identify 250 parameters. Michell *et al.* (2007) stated that timely completion of a construction project is frequently seen as a major criterion of project success by clients, contractors and consultants alike. They also added that cost overruns are identified by them as one of the principal factors leading to the high cost of construction.



**Effect of project planning on project performance in universities**

The need for planning in project development and delivery is crucial because of the complex nature of resources, processes, activities and parties that are involved. Naoum *et al.* (2004) describe planning as one of the key tools that stakeholders use to ensure that construction projects are successful hence high performance. The primary measure of construction planning effectiveness in a

study conducted by Faniran *et al.* (1994) is the ability of a construction firm to achieve its clients' time, cost and quality objectives.

Ling, (2004) asserts that in project planning, project objectives are first defined; thereafter the strategies to achieve them are formulated and presented as project plans and these are used in evaluating the achievement of the objectives. Project planning can therefore be regarded as the process of defining project objectives, determining the framework, methods, strategies, tactics, targets and deadlines to achieve the objectives and the techniques of communicating them to project stakeholders.

These plans communicate both project objectives and the strategies for achieving them, and they are the basis for determining the achievement of project objectives that otherwise refer to the success and high performance of a project. While planning is a process that requires effort, plans are the results of the process and the efforts put in. Planning that does not produce a plan can therefore be regarded as an effort without result. Planning efforts can be in the form of design, tendering and programming and the results are design documents, tender plans, charts, schedules and programmes of resources and works to be carried out (Michele, 2007).

Sommerville *et al.* (2004) described the documentation of information which invariably refers to planning as a key enabler to the running of any project, and identified inadequate documentation as one of the causes of conflicts. Faniran *et al.* (1998) described project planning as the process of determining appropriate strategies for the achievement of predefined project objectives. They classified project planning into preconstruction and construction planning. Preconstruction planning is regarded as pre-contract planning which refers to the planning done during the conception, design and tendering stages of a project while construction planning often refers to contract planning which describes the planning done during the construction of a project thus high performance.

In another classification of project planning, Dvir *et al.* (2003) identified three levels of project planning, namely: the end-user level where planning focuses mainly on the functional characteristics of the project end-product, the project deliverables that are needed to support the functional requirements, and the project management level that focuses on planning the activities and processes that need to be carried out to ensure that the technical work proceed effectively. These three levels of planning can otherwise be regarded as project conception planning, project design planning and contract planning. What is understood from the review above is that different forms of planning are carried out in each of the five stages namely: conception, design, tendering, construction and closeout (Puthamont and Charoenngam, 2004) in a project and project planning can be categorized by the stage at which it is done.

#### **Effect of management support on project performance in universities**

With a strongly increasing share of companies' spending for project-organized undertakings, the generally expected advantage in controllability for single projects comes along with a loss of transparency and hence effectiveness of the overall project landscape (Elonen and Artto, 2003). Thus, a structured and proactive management of the project landscape gets increasingly important in order to promote high project performance. Good project management is becoming a key competence for companies handling numerous projects simultaneously (Killen *et al.*, 2008; Martinsuo and Lehtonen, 2007). A project portfolio is seen as a group of projects that compete for scarce resources and are conducted under the sponsorship or management of a particular organization (Dye and Pennypacker, 2002).

Although literature recognizes the elements that should constitute portfolio success (Elonen and Artto, 2003), it remains difficult to capture the overall management system outcomes. That might be because project portfolios are dynamic, multiply interdependent systems that constantly change and develop. Hence, there is a need for a comprehensive success framework that is capable to cover the system as a whole and additionally takes into consideration that changes made within a management system will take some time to have an effect and success is realized at different points in time (Jonas *et al.*, 2010). Beyond that, for a firm's long-term success, solely financial measures to evaluate corporate success are insufficient (Shenhar *et al.*, 2001). This has led to the development of multi-dimensional success measurement models, such as The Balanced Scorecard (Kaplan and Norton, 1996) and sophisticated success dimensions (Dvir and Shenhar, 1992).

In project management literature it has also been suggested that project portfolio success should also be examined multi-dimensionally on the single project, portfolio, and corporate level (Blomquist and Müller, 2006; Müller *et al.*, 2008). Furthermore, system evaluation models often look at inputs, processes, and outcomes (Bou-Llusar *et al.*, 2009; Chang and Leu, 2006; Cohen and Bailey, 1997). The argument goes that it is not sufficient to assess end results only, but it is also necessary to consider how good processes are managed.

Finally, derived from Shenhar's *et al.* (2001) notion regarding the project success dimensions of business success and preparing for the future' and according to Richard *et al.* (2009), I propose to distinguish the outcome measures between portfolio success and corporate success (Dammer, 2008; Dammer *et al.*, 2006). This construct comprises three complementary constructs: information quality, allocation quality, and cooperation quality. Although these qualities are distinct, it is argued that they are closely related, and that their complementarities are essential for success. Information quality refers to the transparency that is achieved over the whole scope of projects of a certain project portfolio (Elonen and Artto, 2003), and is understood as multidimensional, using multiple criteria, such as: relevance, understandability, accuracy, conciseness, completeness, understandability, currency, timeliness, and usability of information (Dammer, 2008; Petter *et al.*, 2008).

Allocation quality refers to an effective and efficient distribution of human resources among the portfolio (Fricke and Shenhar, 2000). Thereby the quality of resource allocation also depends on the quality of information available and the company's capability to process information (Jacob and Kwak, 2003). Cooperation quality refers to the interplay between different management roles typically involved during a project portfolio management process cycle. It particularly focuses on the quality of cross-project cooperation (Yuan *et al.*, 2009) in terms of mutual assistance of different project teams and conflict solving between project managers.

Blomquist and Müller (2006) made use of a set of questions to measure the extent an organization uses program and portfolio management techniques and tools. Deriving from this approach and in combination with process-based understanding of portfolio management (Cooper, 2008; Cooper *et al.*, 1999, 2001), I structure the managerial tasks into one overall project portfolio management process using a chronological sequence of four highly interdependent phases: portfolio structuring, resource management, portfolio steering, and organizational learning.

Killen *et al.*, (2008) in his journal article highlighted the issue of roles and responsibilities of the project manager as follows: Construction management is literally, where the rubber meets the road. All the planning, preparation, design and cost estimating is put to the test in this fast paced phase of the project's life cycle. This phase begins after the award of the construction contract and continues through construction close out. Most researchers believe that the most important responsibilities of a project manager are project evaluation, setting up the team, setting up systems, planning, monitoring, control, negotiating contract conditions, training and communication. A project manager's success at managing his or her project is dependent on his or her competence, particularly the leadership style comprising emotional intelligence, management focus as well as intellectual capabilities.

### **Effect of Human Capital on Project Performance in Universities**

Human Resource is the most valuable asset to any organization. Unlike other assets, People are the only greatest potential asset and the only greatest potential liability that an organization will acquire as it moves about its business. Organizations are comprised of three types of major assets that are needful to an organization's ability to produce goods and services, namely, financial assets, Physical assets and Intangible assets. Intangible assets include intellectual capital, goodwill, and human capital which all help to improve project performance (Kotler, 2000).

Bowen, (2004) concluded that human capital is not just the people working in an organization. It's a broad combination of their experience, attitudes, abilities, culture etc. For more than three decades researchers from the areas of HRM have been interested in finding the relationship between human capital which includes education, knowledge, experience, and skills and the success of a project. A number of researches suggest a positive relationship between human capital and success of a project.

The human capital which consists of current task-related knowledge and skills has a positive relationship with the success of a project (Edward, 2007).

What makes project delivery successful is a topic of much academic debate. It is generally agreed that to be considered successful, a project must be fit for purpose and it must have achieved its delivery targets. Though project management literature often considers wider objectives and, the central PM delivery targets remain time, cost and quality. In view of this, the PM discipline has three key responsibilities (Walker, 2004).

There are many issues in implementation; however, of central importance is *capability*. Capability can be viewed as a function of education and experience. If these are deficient, there is a high probability that a project mission will be inappropriately specified from the outset, with the result that time; cost and quality targets will be compromised from the beginning. If this is the case, it is highly improbable that the resource base will be organized and mobilized to deliver time, cost and quality targets successfully (Nubi, 2001).

Carillo (2005) asserts that capability is an attribute which, although easily defined, is intractable from a measurement perspective. It is an attribute concerned with the qualities that individuals or organizations project possess. It follows that capability addresses whether or not individuals and organisations possess the necessary levels and combinations of knowledge and skill to complete the tasks that they are responsible for.

Gibson, (2001) argues that a project's performance will be influenced by its human capital is not a new concept. In theory, the higher a firm's stock of human capital, the more successful the project will be and the greater its competitive advantage over its rivals will be, and *vice versa*. The strategic importance of HC in terms of achieving enhanced performance is now becoming increasingly recognized. However, despite this, a precise understanding of how significant HC's role is in determining performance, remains unclear, and is the subject of much research in various industries.

Elhag, (2004) quantified the relative importance of each. His results indicated human skill was the most important, though conceptual and organizational skills were also determined to be significant. Technical skill was considered to be of lesser significance. Elhag's work confirms that successful PM must be strongly focused on the mobilization and motivation of human resources.

Other resources must be managed, but people represent the primary resource directly influenced by the activities of PM. If people are to be managed successfully, the project manager must rely on knowledge and experience. Working with people involves personal judgment and decision making that is not easily learned and cannot be solely based on systems or tools. A project manager needs to be more socially orientated than functional (Carmelli, 2009).

The recent literature above has not identified the link between project planning, Managerial support, communication, human resources and monitoring and evaluation and project performance. In addition, only few studies have been conducted in Africa particularly in Kenya creating a dearth gap in existing literature.

## RESEARCH METHODOLOGY

The study used a combination of cross-sectional and descriptive survey. A cross-sectional study sought to measure the relationship of variables at a specified time, either to describe the incidence of a phenomenon or how variables are related (Sunders *et al.*, 2007). Descriptive research gave a thorough and accurate description survey by determining the "how" or "why" the phenomena came into being and also what is involved in the situation (Robson, 2002). The study employed stratified random sampling technique in which the researcher sub-divided his population of 4 public universities. In this particular study the population was made up of 12 project managers and 124 employees. The accessible population constituted deans, heads of department and project managers in these tertiary institutions. Purposive sampling technique was used to draw a sample from population. In this study the sample consisted 30% of the target population. This study employed the use of questionnaires for project managers, interview schedules for deans and document analysis to collect information from the respondents. Cronbach Alpha

Coefficient was then computed to determine how items in the instrument correlated. A value of Cronbach alpha above 0.70 was used as a reasonable test of scale reliability.

**Data Analysis**

The study collected both quantitative and qualitative data therefore descriptive and inferential statistics was used to analyze the data. This entailed the use of mode, percentages for descriptive statistics and chi square for inferential statistics. Multiple regression model enabled the researcher to test the hypothesis stated. This test was preferred since data that was collected was based on nominal scale. Data obtained from interviews was analyzed by generating themes and codes.

**RESULTS AND DISCUSSION**

In general, performance had a mean of 3.88 and a standard deviation of 0.52. Project planning summed up to a mean of 4.05 and standard deviation of 0.36. Generally, management support summed up to a mean of 3.73 and standard deviation of 0.65. Generally, human capital had a mean of 3.88 and standard deviation of 0.51. Pearson Correlations results in table 1 showed that human capital was positively and significantly correlated to project performance ( $r=0.675, p<0.01$ ). Management support was the second component that was positively related with project performance ( $r= 0.674, p<0.01$ ) Planning was positively associated with project performance as shown by  $r = 0.569, p<0.01$  Findings provided enough evidence to suggest that there was linear relationship between monitoring evaluation, planning, communication, human capital and management support with project performance.

**Table 1. Pearson Correlations**

	Mean	Standard deviations	Performance	Planning	Management support	Human capital
Performance	3.88	0.52	1			
Planning	4.05	0.36	.569**	1		
Management support	3.73	0.65	.674**	.507**	1	
Human capital	3.88	0.51	.675**	.504**	.667**	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Regression and test of hypothesis**

It is useful to check the existence of multicollinearity between the independent variables before embarking on multiple regression analysis. As evidenced in table 2, the VIF for all the estimated parameters were found to be less than 4 which indicate the absence of multi-Collinearity among the independent factors.

The results of multiple regressions, as presented in table 2 revealed that planning has a positive and significant effect on project performance with a beta value of  $\beta_1 = 0.352$  ( $p\text{-value} = 0.001$  which is less than  $\alpha = 0.05$ ). Therefore, the study rejects the null hypothesis and it is accepted that for each unit increase in planning, there is 0.352 unit increase in project performance.

Furthermore, the results of table 2 showed that the standardized coefficient beta and p value of management support was positive and significant ( $\beta = 0.258, p < 0.05$ ). Thus, the study rejects the null hypothesis and it is accepted that, management support has a positive and significant effect on project performance. Thus, for each unit increase in management support, there is 0.258 unit increase in project performance. As shown in table 2, p-value is significant ( $p < 0.05$ ), and the beta value of human capital was positive ( $\beta = 0.288$ ). Therefore, the researcher rejects the null hypothesis and concludes that human capital has a positive and significant effect on project performance. Consequently, for each unit increase in human capital, there is 0.288 unit increase in project performance.

**Table 2**            **Coefficient of Estimate**

	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
(Constant)	-0.26	0.565		-0.461	0.646		
Planning	0.507	0.147	0.352	3.45	0.001	0.582	1.718
management support	0.218	0.098	0.258	2.222	0.03	0.451	2.217
human capital	0.269	0.102	0.288	2.629	0.011	0.504	1.986
R Square	0.636						
Adjusted R Square	0.606						
F	21.003						
Sig.	.000b						

a Dependent Variable: performance

### CONCLUSION AND RECOMMENDATION

Project planning aids in communicating project objectives and strategies and the ways to achieve them. Communication connects every member of the project team to a common set of strategies thereby leading to high project performance. A large pool of human resource that is highly qualified has also led to the success of the project. Finally, the findings of the study indicate that management support leads to the success of a project. The study has established that project planning plays a key role in the success of a project. It is therefore imperative for project planners to define the project objectives they intend to accomplish and the strategies to be employed so as to achieve the said objectives. Firms and educational institutions need to modify and upgrade their specific technical skills while retaining and developing new skills. There is also need for highly qualified personnel for the project and employees that are committed to working for the project. Project leaders need to take ownership and better communicate the benefits of projects to those responsible for their implementation. There is also need for the university management to provide all the resources needed to complete the project. Also, a lot of interest and concern with the project needs to be emphasized. Furthermore, major contextual and settings to be considered in future researches should consider insights from this study influencing project performance including the five factors: 1) *monitoring evaluation*; 2) *planning*; 3) *communication*; 4) *human capital and management support as playing* an important role in enhancing project performance.

### REFERENCES

- Adams, J., Khan, H. T., Raeside, R., & White, D. (2007). *Research methods for graduate business and social science students*. New Delhi: SAGE Publications India Pvt Ltd. doi: <http://dx.doi.org/10.4135/9788132108498>
- Blomquist, T., & Müller, R. (2006). Practices, Roles, and Responsibilities of Middle Managers in Program and Portfolio Management. *Project Management Journal*, 37(2), 52–66.
- Bou-Llusar, J.C., Escrig-Tena, A.B., Roca-Puig, V., Beltran-Martin, I., 2009. An empirical assessment of the EFQM excellence model: evaluation as a TQM framework relative to the MBNQA model. *Journal of Operations Management* 27 (1), 1–22
- Carmeli, A., Halevi Meyrav, Y., 2009. How top management team behavioral integration and behavioral complexity enable organizational ambidexterity: the moderating role of contextual ambidexterity. *Leadership Quarterly* 20 (2), 207–218.
- Carpenter, M.A., Geletkanycz, M.A., Sanders, W.G., 2004. Upper echelons research revisited: antecedents, elements, and consequences of top management team composition. *Journal of Management* 30 (6), 749–778.
- Chan Daniel w. M. and Kumaraswamy Mohan M., (2002), Compressing construction durations: lessons learned from Hong Kong building projects, *International Journal of Project Management*, Vol.20, PP. 23–35

- Chang, A.S., Leu, S.-S., 2006. Data mining model for identifying project profitability variables. *International Journal of Project Management* 24 (3), 199–206.
- Chao, R.O., Kavadias, S., 2008. A theoretical framework for managing the new product development portfolio: when and how to use strategic buckets. *Management Science* 54 (5), 907–921.
- Cheung Sai On, Suen Henry C.H. and Cheung Kevin K.W., (2004), PPMS: a Web-based construction Project Performance Monitoring System, *Automation in Construction*, Vol. 13, PP. 361– 376
- Cho, C. S. (2000). Development of the Project Definition Rating Index (PDRI) for Building Projects. Ph.D. Thesis, University of Texas at Austin, Austin, TX
- Cohen, S.G., Bailey, D.E., 1997. What makes teams work: group effectiveness research from the shop floor to the executive suite? *Journal of Management* 23 (3), 239–290.
- Cooper, R.G., 2008. Perspective: the Stage-Gate® idea-to-launch process—update, what's new, and Nexgen Systems. *The Journal of Product Innovation Management* 25 (3), 213.
- Cooper, R.G., Edgett, S.J., Kleinschmidt, E.J., 1999. New product portfolio management: practices and performance—an empirical survey. *Journal of Product Innovation Management* 16 (4), 333–351.
- Cooper, R.G., Edgett, S.J., Kleinschmidt, E.J., 2001. *Portfolio Management for New Products*. Perseus Pub, Cambridge, MA.
- Crawford, L., Cooke-Davies, T., Hobbs, B., Labuschagne, L., Remington, K., Chen, P., 2008. Governance and support in the sponsoring of projects and programs. *Project Management Journal* 39 (S1), 43–55.
- Dammer, H., 2008. Multi-project management. GWV Fachverlage, Gabler, Wiesbaden.
- Dammer, H., Gemünden, H.G., Lettl, C., 2006. Qualitätsdimensionen Des Multiprojekt-Managements. Eine Konzeptionelle Analyse. *Zeitschrift für Führung und Organisation* 75, 148–155.
- Dissanayaka Sunnil M. and Kumaraswamy Mohan M., (1999), Comparing contributors to time and cost performance in building projects, *Building and Environment*, Vol. 34, PP. 31- 42
- Dvir, D., Raz, T. and Shenhar, J. (2003) ‘An empirical analysis of the relationship between project planning and project success’, *International Journal of Project Management*, 21(2), 1-7.
- Dvir, D., Shenhar, A.J., 1992. Measuring the success of technology-based strategic business units. *Engineering Management Journal* 4 (4), 33–38.
- Dye, L.D., Pennypacker, J.S., 2002. Project portfolio management and managing multiple projects: two sides of the same coin? In: Pennypacker, J.S., Dye, L.D. (Eds.), *Managing Multiple Projects: Planning, Scheduling, and Allocating Resources for Competitive Advantage*. Dekker, New York, NY, USA, pp. 1–10.
- Elhag, T. M. S. (2004). Cost modeling: Neural networks vs. regression techniques. *Int. Conf. on Construction Information Technology (INCITE)*, Langkawi, Malaysia, Construction Industry Development Board Malaysia (CIDB).
- Elonen, S., Artto, K.A., 2003. Problems in managing internal development projects in multi-project environments. *International Journal of Project Management* 21 (6), 395–402
- Faniran, O.O., Oluwoye, J.O. and Lenard, D. (1994) ‘Effective construction planning’, *Construction Management and Economics*, 12(6), 485-499.
- Faniran, O.O., Oluwoye, J.O. and Lenard, D. (1998) ‘Interactions between construction planning and influence factors’, *Journal of Construction Engineering and Management*, 124(4), 245-256.
- Federal Government of Nigeria (2009) *Appropriation acts of the Federal Republic of Nigeria from 2000-2008*, Lagos: Federal Government Press.
- Fricke, S. E., & Shenhar, A. J. (2000). Managing Multiple Engineering Projects in a Manufacturing Support Environment. *IEEE transaction of Engineering Management*, 47(2), 258–268.
- Hatush, Z. and Skitmore, M. (1997) ‘Evaluating contractor prequalification data: selection criteria and project success factors’, *Construction Management and Economics*, 15(2), 129-147.
- Idoro, G.I. (2008) ‘Effect of mechanization on project performance in the Nigerian construction industry’, in proceedings of the RICS Construction and Building Research Conference COBRA 2008, Dublin, 4-5 September.

- Iyer K.C. and Jha K.N., (2005), Factors affecting cost performance: evidence from Indian construction projects, *International Journal of Project Management*, Vol. 23, PP. 283–295
- Jacob, W.F., Kwak, Y.H., 2003. In search of innovative techniques to evaluate pharmaceutical R & D projects. *Technovation* 23 (4), 291–296
- Johnson, R. B., & Onwuegbuzie, A. J. (2010). Mixed research. In R. B. Johnson & L. B. Christensen, *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed., pp. 439-459). Thousand Oaks, CA: Sage.
- Johnston, R.B. and Brennan, M. (1996). Planning or Organizing: the Implications of Theories of Activity for Management of Operations. *Omega, Int. J. Mgmt. Sc.*, Vol. 24, No. 4, pp. 367-384.
- Jonas, D., Kock, A., Gemuenden, H.G., 2010. The impact of portfolio management quality on project portfolio success. Paper presented at EURAM 2010, Rom, Italy
- Josephson, P.E. and Lindstrom, J. (2007). Measuring performance in construction projects. In R. Milford and T.O. Haupt (eds). *Construction for Development: Proceedings of CIB 2007 World Building Congress*. Cape Town, ZA, South Africa, 14–18 May. Rotterdam: International Council of Building Research (CIB), 383–394.
- Jwan, J. and C. Ong'ondo (2011) *Qualitative Research: An Introduction to Principles and Techniques*. Eldoret: Moi University Press.
- Kaplan, R.S., Norton, D.P., 1996. *The Balanced Scorecard*. Harvard Business School Press, Boston
- Killen, C.P., Hunt, R.A., Kleinschmidt, E.J., 2008. Project portfolio management for product innovation. *The International Journal of Quality & Reliability Management* 25 (1), 24–38
- Koskela, Lauri (2000). An exploration towards a production theory and its application to construction. Espoo, VTT Building Technology. 296 p. *VTT Publications*; 408. <http://www.inf.vtt.fi/pdf/publications/2000/P408.pdf>
- Koskela, Lauri and Howell, Greg (2002a). *The underlying theory of project management is obsolete*. Paper to be presented at the PMI Research Conference, August 2002, Seattle.
- Koskela, Lauri and Howell, Gregory A. (2002b). *The theory of project management -problem and opportunity*. Working paper. VTT Technical Research Centre of Finland & Lean Construction Institute.
- Kotler, P. (2000) *Administracao de Marketing* (10th edition), Prentice Hall Publishers.
- Kuprenas John A., (2003), Project management actions to improve design phase cost performance, *Journal of Management in Engineering*, Vol. 19, No.1, PP. 25-32
- Lehtonen Tutu Wegelius, (2001), Performance measurement in construction logistics, *International Journal of Production Economics*, Vol. 69, PP.107-116
- Ling Florence Yean Yng, Low Sui Pheng, Wang Shou Qing and Lim Hwee Hua, (2007), Key project management practices affecting Singaporean firms' project performance in China, *International Journal of Project Management*
- Ling, F.Y.Y. (2004) 'Key determinants of performance of DBB projects in Singapore', *Building Research and Information*, 32(2), 128-139.
- Ling, F.Y.Y. and Chan, S.L. (2002). Performance evaluation of alternative project procurement methods. Research brief. National University of Singapore
- Ling, F.Y.Y., Chan, S.L., Chong, E. and El, P. (2004) 'Predicting performance of design-build and design-bid-build projects', *Journal of Construction Engineering and Management*, 130(1), 10-20.
- Long Nguyen Duy, Ogunlana Stephen, Quang Truong and Lam Ka Chi, (2004), large construction projects in developing countries: a case study from Vietnam, *International Journal of Project Management*, Vol. 22, PP. 553–561
- Marjolein, C., Janita, A. and Vos, F.J. (2008) 'Investigating the use of the stakeholder notion in project management literature: a meta-analysis', *International Journal of Project Management*, 26(3), 749-757.
- Martinsuo, M., Lehtonen, P., 2007. Role of single-project management in achieving portfolio management efficiency. *International Journal of Project Management* 25 (1), 56–64

- McMillan, J. H., & Schumacher, S. (2001). *Research in Education. A Conceptual Introduction* (5th ed.). New York: Longman.
- Michell, K., Bowen, P., Cattell, K., Edward, P. and Pearl, R. (2007) 'Stakeholder perceptions of contractor time, cost and quality management on building projects', in proceeding of the CIB World Building Conference on Construction for Development, Cape Town, 14-18 May, 231-240.
- Milton, J.S., and Arnold J.C. (2003). *Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences*, 4e. McGraw-Hill, NY
- Mugenda, O.M & Mugenda. A.G (1999). *Research methods. Quantitative and qualitative approaches*. (pp. 46 - 48). Nairobi, Kenya: ACTS Press.
- Müller, et at. (2008). Project Portfolio Control and Portfolio Management Performance in Different Contexts. *Project Management Journal*, 39(23), 28-42
- Naoum, S., Fong, D. and Walker, G. (2004) 'Critical success factors in project management', in proceedings of International Symposium on Globalization and Construction, Thailand, 17-19 September.
- NavonRonie, (2005), Automated project performance control of construction projects, *Automation in Construction*, Vol. 14, PP. 467– 476
- Neto, J.B., Mourao, Y.R., Ferreira de Freitas, A.A. and Aves, T.L.(2007) 'A method to evaluate and manage client requirements in housing projects', in proceedings of the CIB World Building Conference on Construction for Development, Cape Town, 14-18 May, 310-321.
- Nsubuga, E. H. K. (2000): *The teacher as a professional*. Kampala: MK Publishers
- Nubi, T.O. (2001) 'Comparative study of construction industries in Nigeria and Egypt', *Construction*, 18(1), 18-33.
- Okumbe, J.A. and Abagi, O., *Financing of Education in Kenya*, UNDP/Government of Kenya Project – 1993 UNDP/ Government of Kenya Project
- Okun, B.O. (2009) 'The impact of time-overrun on the final cost of Federal Government projects', Master of Project Management Project thesis, University of Lagos, Nigeria.
- Oso WY, Onen D (2005). *A General Guide to Writing Research Proposal and Report: A Handbook for Beginning Researchers*. Kisumu, Kenya: Option Press and Publishers.
- Payne, J.H., Turner, R.J., 1999. Company-wide project management: the planning and control of programmes of projects of different type. *International Journal of Project Management* 17 (1), 55–59.
- Petter, S., Delone, W., McLean, E., 2008. Measuring information systems success: models, dimensions, measures, and interrelationships. *European Journal of Information Systems* 17 (3), 236–263
- Pheng Low Sui and Chuan Quek Tai, (2006), Environmental factors and work performance of project managers in the construction industry, *International Journal of Project Management*, Vol. 24, PP. 24–37
- Pheng, L.S. and Ting, D.L.L. (1998) 'Factors influencing design development time of commercial properties in Singapore', *Facilities*, 16(1/2), 40-51.
- Project Management Institute (2004) *Project management body of knowledge (PMBOK)*, Pennsylvania: The Project Management Institute Inc.
- Reichelt Kimberly and Lyneis James, (1999), The dynamic of project performance: Benchmarking the drivers of cost and schedule overrun, *European management journal*, Vol. 17, No.2, PP. 135-150
- Richard, P.J., Devinney, T.M., Yip, G.S., Johnson, G., 2009. Measuring organizational performance: towards methodological best practice. *Journal of Management* 35 (3), 718–804
- Robinson, H., Anumba, C., Carillo, P. and Al-Ghassani, A. (2005) 'Business performance measurement in construction engineering
- Robson, C. (2002). *Real world research*, 2<sup>nd</sup> Edition, Oxford, Blackwell Publication
- Sanchez, H., Robert, B., Pellerin, R., 2008. A project portfolio risk–opportunity identification framework. *Project Management Journal* 39 (3), 97–109
- Shenhar, A.J., Dvir, D., Levy, O., Maltz, A.C., 2001. Project success: a multidimensional strategic concept. *Long Range Planning* 34 (6), 699–725.

- Söderlund, J., 2004. On the broadening scope of the research on projects: are view and a model for analysis. *International Journal of Project Management* 22 (8), 655–667
- Thomas, S.R., Macken, C.L., Chung, T.H. and Kim, I. (2002). *Measuring the Impact of the Delivery System on Project Performance: Design-Build and Design-Bid-Build NIST GCR 02-840*. Austin, US: Construction Industry Institute.
- Vincent, K.O. and Joel, E.R. (1995). *Principles of Total Quality*. London: Kogan Page
- Winograd, Terry and Flores, Fernando (1986): *Understanding Computers and Cognition: A New Foundation for Design*. Reading MA, Addison-Wesley Publishing
- Yuan, M., Zhang, X., Chen, Z., Vogel, D.R., Chu, X., 2009. Antecedents of coordination effectiveness of software developer dyads from interacting teams: an empirical investigation. *Engineering Management, IEEE Transactions* 56 (3), 494–507