The Need for a Change in the Practice of Project Management in Kenya

Gwaya Abednego, Wanyona Githae, Masu Sylvester Munguti

ABSTRACT- Several countries at various levels of socio-economic development have recognized the need and importance of taking measures to improve the performance of their construction industries. One of the means to this end has been to ensure performance efficiency in construction projects execution. As has been widely acknowledged, this requires a deliberate process of continuously monitoring the performance of projects based on relevant indicators. Many project management models have been proposed in literature which measure projects performance under the broad headings of critical success factors and key performance indicators.

However, these objectives are faced with several drawbacks. These have to do with the difficulty in developing a realistic and agreed set of indicators due to the very nature of the industry; the number of indicators necessary to give a complete picture and offer relevance and accuracy to the overall result will be very large; the difficulty in collecting and processing the required raw data for estimating the indicators, especially in developing countries; and the need to amend or adapt these criteria and indicators for each country. At the core of these problems is the fact that most of the existing models emphasize the use of lagging measures instead of leading measures. Worse, they do not emphasize continuous assessment of the project, and finally, these models do not pay attention to needs of the clients as initiators of the project. It also takes into consideration the particular circumstances of the project. In addressing the problems, it is necessary to reconfigure project management in the following regards:

(i) Moving away from expecting "project autopsy reports" towards "project health reports"

(ii) Moving away from considering the outcomes of a project in terms of success/failure dichotomy into project performance results in identifiable criteria

(iii) Acknowledging the uniqueness of every project and the contingency factors which calls for contingency measures of assessment.

KEY WORDS: project management, modelling, leading measures and lagging measure

I. INTRODUCTION

Successful project execution is about getting a quality project done on time and on budget and more often, taking a lifecycle approach to make sure that the built asset is maintained over the long term. Execution strategies can be placed into one of the following four categories; namely, traditional, collaborative, integrative and partnership (KPMG 2010).

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The traditional method of project execution assumes that the project owner has completely and accurately defined the scope of the work through its design consultant and that a qualified contractor will be hired to construct the work. This is the approach normally used in Kenya notwithstanding its challenges.

The collaborative model involves construction professionals in the early planning and design phases of the project and eases the barriers to communication that existed previously between the project owner and the main contractor. One of the most well-known collaborative project delivery approaches of design and build involves the design consultant and the main contractor joining forces. By joining forces, the two parties can offer a "one-stop shop" to the project owner for delivering a large capital project under a single contractual agreement.

The integrative model of project execution is a relatively new approach with risk sharing features unlike either the traditional or the collaborative models. In the integrative model, the project owner, the design consultant, and the contractor work as one team to develop, define and deliver the project. Examples include Alliancing, Partnering and Integrated Project Delivery.

The partnership model is a form of project execution strategy where the design, construction and operation of a building, highway, hospital plant or other facility is completed by one of the contracting parties for the benefit and use of another, including the general public. Typically the party responsible for executing the project is also responsible for financing the project in whole or in part and most significantly, maintains the responsibility for the quality of the infrastructure over the long term. Examples include Build-operate-transfer, Build-own-operate, Build-own-operate-transfer, Concession, Design –build-finance-and-operate, Private finance initiative and Public Private Partnerships (PPPs). All these approaches have not been very common in Kenya.

Project management in construction is a professional and scientific specialization that differs from traditional/general management by the generally limited, temporary, innovative, unique and multidisciplinary nature of projects—it is widely recognized that project management requires its own tools and techniques (Munns & Bjeirmi, 1996). It would be inadequate to speak of construction project management as a group of specific tools and techniques that one simply has to apply towards the attainment of specific management objectives. In terms of research, it is evident that project scheduling problems as well as planning techniques such as program evaluation and review technique (PERT) and critical path method (CPM) have preoccupied investigators and practitioners for decades. These people have shared a deep conviction that the development of better scheduling techniques would lead to better project management and, thus, project

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success (Belassi & Tukel, 1996). However, scheduling techniques alone cannot lead to project success but a structured project management application can.

II. PROBLEMS IN THE CONSTRUCTION INDUSTRY IN KENYA

According to Gichunge (2000) the most serious source of cost and time risks in building projects during the construction period is 'extra work' (technically termed as variations), which normally occurs in 73.50% of the building projects in the population whereas defective materials accounted for 38.20%. Mbatha (1986), Talukhaba (1988) and Mbeche *et al* (1986) established that time and Cost performance of projects in Kenya are unacceptable to the extent that, over 70% of the projects initiated are likely to escalate in time with a magnitude of over 50%. In addition over 50% of the projects are likely to escalate in cost with a magnitude of over 20%.

Masu (2006); has argued that cost and time overruns are still a major problem in the construction industry in Kenya. He dealt with causes of this poor state of affairs. This was a follow up on Mbatha's (1986) and Talukhaba's (1988) work on performance of construction firms who are responsible for projects execution. He investigated the causes and impact of resource mix practices in the performance of construction firms in Kenya. What the aforementioned studies have not addressed are the probable solutions to unacceptable project execution results in Kenya.

It is evident from the foregoing studies that there is a problem in the construction industry in Kenya in terms of improper monitoring and evaluation of the construction process. It will require a different approach to address the time and cost problems hence the development of a project management model to guide the structure and application of project management in Kenya.

III. EXISTING PROJECT MANAGEMENT MODELS IN THE WORLD

There are a number of models in use in the world today including Project Management Institute's Project Management Body of Knowledge(PMBOK); PRINCE2, HERMES and Global Alliance for Project Performance Standards (GAPPS). GAPPS sets to provide standards that describe levels of acceptable workplace performance standards.

The Project Management Institute (PMI);focuses on nine distinct areas requiring project manager knowledge and attention (PMI, 2010):

1. Project integration management to ensure that the various project elements are effectively coordinated.
2. Project scope management to ensure that all the work required (and only the required work) is included.
3. Project time management to provide an effective project schedule.
4. Project cost management to identify needed resources and maintain budget control.
5. Project quality management to ensure functional requirements are met.
6. Project human resource management to develop and effectively employ project personnel.
7. Project communications management to ensure effective internal and external communications.
8. Project risk management to analyze and mitigate potential risks.
9. Project procurement management to obtain necessary resources from external sources.

PRINCE2 (short for "Projects In Controlled Environments") is the de facto standard in the UK. It was developed for and is used extensively by the UK government, and is widely used in the private sector, in the UK and internationally. PRINCE2 is in the public domain, offering non-proprietary best-practice guidance on project management. Anyone may use this methodology, and the manual describing PRINCE2 can be purchased through online booksellers, as well as through the UK government website, http://www.ogc.gov.uk/methods_prince_2.asp. PRINCE2 is supported by a rigorous accreditation process, including accreditation of training organizations, trainers, practitioners and consultants. (The accrediting body is the APM Group, http:// www.PRINCE2.org.uk; their website lists accredited training organizations, consultants and practitioners.)

PRINCE2 extracts and focuses on key elements (Themes) which it identifies as being crucial to the successful assessment and completion of all projects. It contains a structured Process to tie those elements together to reduce overall project risk, with several useful techniques to support them. In its publication, PMI; (2013) the Project Management Institute (PMI®) says: "…the PMBOK® Guide is intended to help practitioners recognize the general process of project management practice and the associated input and outputs," and "due to its general nature and generic application, the PMBOK® Guide is neither a textbook, nor a step-by-step or 'how-to' type of reference." The PMBOK® GUIDE calls on the practitioner to apply a project management methodology (as a tool), and PRINCE2 provides a reliable and practical one. Kenya can also model its own and or borrow from the existing project management models and adapt it to its local situation

IV. REVIEWS OF CONCEPTS LEADING TO A PARADIGM SHIFT IN PERFORMANCE ASSESSMENT IN KENYA

This section is devoted to reviewing some key concepts which supports the need for a paradigm shift in the approach of assessing construction project performance for improvement purposes.

A. Arguments For Multidimensional, Multi-Criteria Concept Of Performance Measures

Performance theorists are propagating the need to use multi-dimensional criteria or a balance scorecard to assess the performance of a business or a project (Kaplan & Norton, 1992; Shenhar et al, 1997; Van develde et al, 2002). Atkinson (1999) calls for a break from the 50-year old tradition of measuring project performance (success and failure) in terms of the "iron triangle" that is cost, time, and quality. The use of multi-dimensions or multi-criteria in assessing project has been well acknowledged in project management literature (Pinto and Mantel, 1990; Freeman and Beale, 1992; Lipovetsky et al, 1997). In particular, Pinto and Mantel (1990) provided an empirical justification for a multidimensional construct of project failure, encompassing both internal efficiency and external effectiveness aspects. They established that critical factors associated with failure depend on how failure is defined and also how organisations make judgment on the matter. They suggested that future research on project failure must take into account a variety of contingency variables, such as the type of project, and the stage of the project in its life cycle. The strength in using multi-measures to assess project is also rooted in the fact that several factors often combine together to result in the performance or non-performance of a project. Ojiako et al. (2008) confirmed that: “there is no single project factor that will, in its entirety, influence the chances of a project failing or succeeding; rather, project failure or success occurs through a combination of events occurring on a continuous basis”. In the business world, this has also been noted. Writing under the topic “performance measurement manifesto”, Eccles (1991) submitted that “the leading indicators of business performance cannot be found in financial data alone. Quality, customer satisfaction, innovation, market share –metrics like these often reflect a company's economic condition and growth prospects better than its reported earnings do. Depending on an accounting department to reveal a company's future will leave it hopelessly mirrored in the past”. The paradigm shift that occurred thereafter is that most managers began “changing their company's performance measurement systems to track non-financial measures and reinforce new competitive strategies”. According to Eccles (1991), this has been made possible and economically feasible by new technologies and sophisticated databases. “Industry and trade associations, consulting firms, and public accounting firms that already have well-developed methods for assessing market share and other performance metrics can add to the revolution's momentum –as well as profit from the business opportunities it presents”. Eccles hopes that when one leading company can demonstrate the long-term advantage of its superior performance on quality or innovation or any other non-financial measure, it will change the rules for all its rivals forever.

B. Project Performance: Moving From “Autopsy” Reports To “Health” Reports

According to Beatham et al (2004) the present practice of project success/failure measurement encourages the measurement of project performance with “lagging indicators” and leads us to expect project “autopsy reports”. This, however, does not offer opportunity for change and improvements as expected from assessment in the first place. If the concept of organisational learning, as explained bySenge (2006), could be of benefit to the on-going project, and if lessons learned from a completed project could provide a guide for future projects, then it is the case that assessment should cover its entire “life story”. The question here is, whether the success or failure of a project is of any relevance to the project after they had occurred? To correct these, such measurements should always be aimed at giving opportunities to change and, always leading to improvements in performance. This suggests, then, that the assessment of a typical construction project should be done:

i. throughout its life cycle,
ii. with the intention of declaring the true state at any point in time,
iii. in order to ensure that the necessary objectives are achieved,
iv. to ensure improvements in those areas where success in not being achieved. This calls for the determination of what is happening to the project in all its aspects throughout its life cycle and be able to predict performance based on real-time information (Russel et al., 1997). Indeed, Mian et al (2004) noted that as human health is maintained by identifying and monitoring those factors which have the potential of influencing it, so must those critical factors be monitored which have the potential of influencing the project’s health; and “this approach”, they opined, “is applicable to all phases of the construction projects and many construction procurement methods”. In that article “project health” was said to be synonymous to “project performance”. In a related article Humphreys, et al (2004) identified some parallels between construction project health and human health:

- State of health influences performance;
- Health often has associated symptoms;
- Symptoms can be used as a starting point to quickly assess health;
- Symptoms of poor health are not always present or obvious;
- State of health can be assessed by measuring key areas and comparing these values to established norms;
- Health changes temporally;
- Remedies can often be prescribed to return to good health; and
- Correct, accurate and timely diagnosis of poor health can avoid *(prevent)*small problems becoming large.

Willard (2005) proposes that project could be declared “challenged”, “failed”, “successful”. Within this framework, it is possible to describe a project’s “health” in several ways depending on the conditions of its “health”: *frustrated, disturbed, paralyzed and distressed* towards the undesirable end; and then, expressions like *healthy, improved, progressing, and satisfactory,* towards the desirable end. Success itself could be qualified, for example, *very, quite, extremely, somewhat successful* and so on, based on technical definitions ascribed to them. Hence project management writers have used the term “project performance” interchangeably with success/failure and “performance measurement” with “success/failure measurement” (Mian et al, 2004; Beatham et al, 2004). This has been followed by the use of such terms as “performance Indicators” or “Performance measures”. The term “Performance” is thus the key word in this research used to represent how a project is succeeding in achieving its set goals and objectives by continuous assessment. This paper focusing on construction projects within its life cycle and appreciating the required continuous monitoring and evaluation during the implementation period, prefer the use of the expression “project performance” to represent the overall state of the project based on the degrees of success or failure at any stage. Ojiako et al. (2008) also prefer to use the same expression. By this consideration, performance will be assessed in multi-criteria; and in various degrees on a continuum ranging from excellent performance (very successful) to poor performance (overall failure) in specific criteria or dimensions. This calls for the identification of the key sets of principles, measures, indicators as would be necessary for the measurement of the performance of projects. The quest towards what

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constitute a successful project is, thus, directly linked with the greater quest for improvements in project performance.

V. METHODOLOGY

A survey was carried out based on 100 Architects, 100 Civil Engineers, 100 Quantity Surveyors, 100 Project Managers and 100 Contractors. The Architects, Civil Engineers, Quantity Surveyors, Project Managers and Contractors were subjected to the same research instrument while Clients were subjected to a different research instrument. Towards the proposed model all practitioners and contractors contribute 82% towards model formulation; in total (clients 18% and practitioners and contractors at 82% to make a total of 100%). It is on this criterion of the developed model that projects shall be evaluated in project management performance.

VI. RESULTS

The field study was undertaken with the purpose of obtaining data of a primary nature. Principal component analysis was used to reduce the factors to six which were used in the model formulation.

Analysis of the factors argued to affect the Project management model is presented in table 1.1 below:

Table 1.1: Factors affecting project management in Kenya

Factors	Mean	Likert scale Ratings	Std. Deviation	Ranking
Project Integration Management Factor	4.1818	Important	.84666	6
Project Scope Management Factor	4.3838	Important	.69322	4
Project Time Management Factor	4.6364	Very Important	.61162	3
Project Cost Management Factor	4.7374	Very Important	.46323	1
Project Quality Management Factor	4.6465	Very Important	.55714	2
Project Human Resource Management Factor	4.0404	Important	.87672	7
Project Information Management Factor	3.9495	Important	.91578	8
Project Risk Management Factor	4.0404	Important	.87672	7
Project Performance Management Factor	3.9899	Important	1.00164	9
Value Engineering Factor	3.9091	Important	.95604	10
Construction Site Management Factor	4.2222	Important	.93962	5

Source: Own field survey

From the mean scores above, the general respondents' data shows two categories of ratings namely; very important and important. The data factors that were being evaluated qualified as being critical in the project management model for the construction industry. The ranking clearly appreciates the current management factors; time, quality and cost as being critical in the management practice of the construction industry as shown in Table 1.1 above.

There is a statistical significance for the factors under study ($p < 0.05$), at Kaiser-Meyer-Olkin (KMO) 78.4% The KMO measures the sampling adequacy of the data which is very good to subject the factors for analysis as illustrated in table 1.2 below:

Table 1.2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.784
Bartlett's Test of Sphericity	Approx. Chi-Square	1646.263
	df	55
	Sig.	.000

Source: Own field survey

Table 1.3 below represents the percentage of variability attributed to the model amongst the factors that were being investigated. Project performance management factor accounted for 72.9% of the variance of the extracted factors, project information management accounting for 69.4% while project quality management rated at 68.3%. Other factors which rated above the threshold variation of 60% were project scope (64.2), cost management (66.1%), human resource (61.2%) and time management at 68.1%. However Value engineering factor, project risk management, project integration and project site management were rated below the threshold variation thus disqualified to be included in the appropriate model.

Table 1.3: Communalities of the project management factors

	Initial	Extraction	Rank
Project integration Management Factor	1.000	.461	9
Project Scope Management Factor	1.000	.642	6
Project Time Management Factor	1.000	.681	4
Project Cost Management Factor	1.000	.661	5
Project Quality Management Factor	1.000	.683	3
Project Human Resource Management Factor	1.000	.612	7
Project Information Management Factor	1.000	.694	2
Project Risk Management Factor	1.000	.436	10
Project Performance Management Factor	1.000	.729	1
Value Engineering Factor	1.000	.431	11
Construction Site Management Factor	1.000	.589	8

Extraction Method: Principal Component Analysis. Rotation method: varimax.

Source: Own filed survey

From the table 1.3 above; all factors ranked from 1-7 qualified to be in the final project management model. Four factors were dropped because they did not meetthe

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minimum threshold of 60% as per Principal Component Analysis evaluation criteria.

VII. COST REGRESSION EQUATION

The modeling of cost against other identified variables showed that the cost explained 56.3% of the regression. From table 1.4 below it is evident that cost alone cannot be used to model for project management.

Table 1.4 Model Summary for cost model

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate
dimension0	1	.751[a]	.563	.554	.30817

a. Predictors: (Constant), Project Performance Management Factor, Project Time Management Factor, Project Quality Management Factor, Project Human Resource Management Factor, Project Scope Management Factor, Project Information Management Factor

b. Dependent Variable: Project Cost Management Factor

Generalized linear regression equation on the selected factors produced the below co-efficients which would be useful in developing the project management model.

Table 1.5: Coefficients generated from the cost regression equation

Model		Unstandardized Coefficients		T	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	1.586	.180	8.801	.000		
	Project Scope Management Factor	.056	.037	1.511	.132	.489	2.045
	Project Time Management Factor	.150	.039	3.904	.000	.575	1.738
	Project Quality Management Factor	.382	.043	8.935	.000	.557	1.797
	Project Human Resource Management Factor	.064	.030	2.123	.035	.464	2.155
	Project Information Management Factor	.049	.029	1.701	.090	.450	2.222
	Project Performance Management Factor	.004	.023	-.168	.867	.598	1.673

a. Dependent Variable: Project Cost Management Factor

Source: Own field survey

From the table 1.5 above; the General Linear Model (equation) is given by

PC = 1.586 + 0.056PS + 0.150PT +0.382PQ +0.064PH + 0.049PI + 0.004PP + e

Where

PC = Project Cost

PS = Project Scope

PT = Project Time

PQ = Project Quality

PH = ProjectHuman Resource

PI = Project Information Management

e = Error

All the other variables were subjected to a similar process to generate coefficients.

The weighted Principal Component Model Project Management Model (PMM) is given by:

PMM = 17.67%PT+18.80%PC+18.23%PQ+ 17.11PH + 14.47%PP + 13.72%PS

Where:

PT is project time, PC project cost, PQ project quality, PH project human resources; PS is project scope and PP project performance and e for error. The variables weightings should be agreed upon at the start of a project and be subjected to routine assessment as the project carries on. Any variable scoring below 50% apart from e should be investigated further and remedy employed to rectify the negative contributors before it fails completely.

The above model measures 82% overall project performance while 18% is attributed to the client's contribution towards performance of projects. When the model was subjected to an actual performance assessment in the field the following results as discussed under section 1.7 were obtained.

VIII. ACTUAL INDUSTRY VALIDATION

The generated model was tested based on five number very senior consultants with over 20 years' experience and based on three number projects per consultant. In total fifteen number projects were evaluated to establish the accuracy and/or efficiency of the model in evaluating performance of construction projects. Table 1.6 below gives the results.

Table 1.6 Actual industry validation scores compared with model scores

Project	Predicted performance (%) model	Actual performance (%) consultant	Deviation (%)	Yes	No
1	81.72	80.9	0.82	√	
2	86.64	86.36	0.28	√	
3	85	85	0	√	
4	78.11	77.29	0.82	√	
5	60.42	58.86	1.56	√	
6	90	90	0	√	
7	85	85	0	√	
8	60	58.63	1.37	√	
9	77.7	70.01	0.69	√	
10	75.08	75.9	-0.82	√	
11	78.52	77.7	0.82	√	
12	75.90	74.53	1.37	√	
13	63.60	62.23	1.37	√	
14	70.16	70.43	-0.27	√	
15	58.52	59.07	-0.55	√	

Source: Own field study

The evaluation indicated a tie on 3 projects; 9 projects received a slightly favourable score by the model while 3 projects received a slightly unfavourable score by the model. All in all the standard variance was less than 0.5% which is a very accurate score. None of the projects received a deviation of more than 1.56%.

Mainly the respondents had more than 20 years of experience and comprised of two architects and three quantity surveyors. Two respondents were from the public sector while three were from the private sector.

IX. CONCLUSION

This paper has suggested the need for Kenya to adopt a different approach in the application of project management, evaluation, measurement, culture and execution processes of its construction industry. There is need to move away from projects using lagging measures to leading measures in the execution of construction projects. There is also need to develop and adopt a locally developed Project Management Model developed on the basis of PMI's Project Management Body of Knowledge (PMBOK model) in USA, HERMES Model in Swiss, PRINCE2 model in UK and GAPPS applications. The developed model can be used to assess the performance of construction projects and improvements on it over time enhanced so that Kenya,a developing country can also have its Project Management Model which takes cognizance of its situation.

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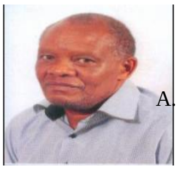

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