

THE ROLE OF KNOWLEDGE MANAGEMENT ENABLERS IN SUCCESSFUL PROJECTS: CASE OF CONSTRUCTION INDUSTRY IN KENYA.

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ABSTRACT

Construction companies which are highly project based, have always relied on their knowledge assets to provide services to clients. Recently, the term 'knowledge management' has been introduced; to promote greater collaboration through exchange of vital information among project teams, assist in necessary knowledge retention within organization, and to facilitate capturing and using of lessons learned from previous projects, so as to ensure greater project success. Hence, the research study intended to investigate the influence of integrating KM on the success of projects in the construction industry in Kenya, and a descriptive design was used to study the research objectives. Questionnaires were administered to about 65 professionals who were randomly selected from 28 Structural engineering firms, derived from a body; Association of Consulting Engineers of Kenya. Subsequently, descriptive statistics and inferential statistics were used to analyze the data before reporting and making recommendations. The study finally found out that KM is indeed in existence in most of the construction firms even though it was not fully grown. It was established that the KM enablers that are comprised of; organizational culture, structure, members of project and IT, have proved to be vital in the establishment of KM practice in these organizations, and the practice has with time been proving to be supportive in the successful management of projects. Finally, the study recommended that critical activities for adequately adopting KM enablers should be established and organizational members should further be enlightened on the importance of KM process and appropriate means for creating and sharing knowledge.

Keywords: *Role of Knowledge Management Enablers in Successful Projects.*

Introduction

Knowledge management and project management so far have been receiving recognition as practices that are of supreme importance to the competitive advantage of organizations, as well as a major agent of change in the new era of the knowledge economy (Al-Zayyat et al, 2009). Knowledge has been touted as one of the crucial asset that can offer organizations a competitive advantage as there is a strong linkage between core competence and knowledge (Prahalad & Hamel, 1990). In the recent times, Moran (2006) notes that knowledge management has become an emerging discipline and practice in organizations because it is turning out to be more valuable and involves more human participation. Given the importance of such an asset, it is not surprising that organizations everywhere are paying attention to knowledge by exploring what it is and how to create, transfer, and use it more effectively, which has resulted to Knowledge management, in particular, to recently blossom (Moran, 2006).

In addition, numerous efforts are also being made to improve on the profession of project management to enable the successful delivery of projects (Al-Zayyat et al, 2009). PMBOK which is a body of collection of processes and knowledge areas that are generally accepted as best practice within the project management discipline, is an internationally recognized standard (IEEE Std 1490-2003) that provides the fundamentals of project management irrespective of the type of project be it; construction, software, engineering, automotive and so on. Subsequently, according to PMBOK (2000) knowledge management therefore is a practice that has become applicable in all the areas of project management that affects the project life cycle, and recently it has turned out to be a prerequisite in sustaining a competitive advantage in project-based organizations (PMBOK, 2000).

The body recognizes that there are ten knowledge areas that act as guidelines, through which project teams can integrate knowledge management practice in every aspect of a project, so as to ensure it is being properly managed (PMI, 2008). These areas are typical of almost all projects and they include: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, project procurement management and project stakeholder management. All these areas run through the

entire project's life cycle; initiation, planning, execution, monitoring and control and closure, as a means that can help project teams to manage projects more effectively (PMBOK, 2000; PMI 2008).

Statement of the Problem

According to Brown (2010) most organizations are becoming project-based and the question that keeps on coming up is how do they share knowledge between projects and project teams, and what type of knowledge is generated during projects. Obviously, such arguments are very dependent on how an organization conducts itself and the kind of structures that it has put in place to support the activities of its projects (Brown, 2010). During project execution, critical knowledge resides with the team members, who need to understand the value of knowledge and the value of sharing that knowledge (Hawamdeh et al 2010). This is because, these members are normally assembled to steer projects whose success has generally been judged when it is completed within the scope, time and cost, which have commonly been regarded as the areas of critical constraint (Yeong & Lim, 2010).

Surprisingly, Turner (2009) argues that this definition of project success is simplistic and even dangerous. He gives an example of a project that was finished on cost and in time, but five years later was judged to be a failure. Thus, Projects delivered on time, within cost and meeting performance requirements might contribute to profits, but we may not be able to identify whether the project itself was managed correctly to ensure a lasting success (Kerzner, 2009). In addition, according to the Standish Group's Chaos Report (2009) only 32% of all surveyed projects are considered to be successful and are delivered on time, on budget, with the required features and functions, leaving 68% as unsuccessful in the long run.

This could be an indication that project management professionals may have not fully acquired and transferred knowledge learned from past projects and even amongst themselves to ensure a higher success rate for current and future projects. Kasvi et al (2003) affirms that there are other aspects that could contribute to project success, such as integrating KM practice in projects, whose application in the past had been weak and unsystematic.

Hence, focusing on construction industry which is highly project based, it has not also integrated this practice as expected, due to time constraint and some impeding practices (Ly et al 2005). This is evident from many reported cases of structures collapsing during and even after construction, despite the fact that this is one of the oldest industries full of experiential knowledge that could support projects adequately. Here in Kenya, we have witnessed a surging number of collapsing houses, for instance, Sunbeam building in Nairobi and another building at Nyamakima in 2006. This could be as a result of issues that have to do with rushing of projects to completion in order to be on time, save costs and the culture of knowledge sharing amongst team members and related projects having not been adequately embraced owing to competition and protection of status. It is in this view that the study aspired to investigate how knowledge management enablers would impact on projects in this industry, so as to continue being successful even into the future.

Objectives of the Study

General Objective

The general objective of the study was to establish the role of knowledge management enablers in successful projects within the construction industry in Kenya.

Specific Objectives

The specific objectives that the study sought to establish were as follows:

1. To determine the effect of organizational culture on project success in construction industry.
2. To determine the effect of organizational structure on project success in the construction industry
3. To ascertain the influence of Members of project on projects success in the construction industry.
4. To ascertain the influence of communication technology on project success in the construction industry.

Literature Review

Social Exchange Theory

One way of analyzing social interaction among project team members is through the social exchange theory. This theory also called the communication theory of social exchange is a commonly used theoretical base for investigating individual's knowledge-sharing behavior. According to Blau (1964) and Molms (2001), this theory explains how individuals regulate their interactions with other individuals based on a self-interest analysis of the costs and benefits of such an interaction. That is, it suggests that that human beings make social decisions based on perceived costs and benefits, such that they seek to maximize their benefits and minimize their costs when exchanging resources with others (Blau, 1964) and (Molm, 2001). These benefits need not be tangible since individuals may engage in an interaction with the expectation of reciprocity (Gouldner, 1960).

In such exchanges, people help others with the general expectation of some future returns, such as gaining desired resources through social reciprocity. In order to maximize the resources gained, individuals may build social relationships with others by sharing their knowledge. The fundamental dimension in the social exchange theory is individual cognition, which may include perceived benefits and organizational commitment. Forsythe et al (2006) defined the term "perceived benefits" as the individuals subjective perception of gain from their behaviors. The theory thus declares that individuals engage in social interaction based on the expectation that it will in some way lead to social rewards such as approval, status, and respect (Forsythe et al, 2006).

For example, Kankanhalli et al. (2005) believes that an individual's perceived benefit is one of the major factors that encourage employees to contribute knowledge to electronic knowledge repositories. According to Ma and Agarwal (2007), the amount of knowledge that people contribute to a virtual community depends on the level of satisfaction that they too derive from being members of the community.

Theory of Reasoned Action (TRA)

The theory of reasoned action explains how a person's behavior is influenced by one's intention to do something (Ajzen & Fishbein, 1980). This theory as explained by Warshaw (1980) and Jogiyanto (2007), states that the intention of sharing knowledge is determined by an individual's attitude towards behavior and the subjective norm. In addition, Fishbein and Ajzen (1975) and Korzaan (2003), indicate that an individual's intention to perform a behavior and their actual

behavior can be determined by their attitude towards this behavior. Individuals may behave differently when their attitude towards a certain type of behavior is changed. Specifically, individuals are usually more likely to perform a behavior if they possess positive attitude towards this behavior and vice versa.

Consequently, based on this theory and in the context of knowledge sharing, it is expected that individuals with respect to knowledge may demonstrate more knowledge sharing behavior if they hold positive attitude towards KS. Therefore, it is meaningful to identify the factors that are influential to individuals' attitude towards knowledge sharing behaviors (Fishbein & Ajzen, 1975; Korzaan, 2003). Industrial surveys suggest that senior management can drive KM efforts. Management has control over employee compensation policies, performance appraisal and career advancement. As such, it is only natural that employees would want to comply with the management expectations of engaging in knowledge sharing behavior if the former supports it.

Theory of Planned Behavior

The theory of planned behavior (TPB) of Ajzen (1991) is an expanded version of the theory of reasoned action, and is perhaps the most influential and the popular social-psychological model for explaining and predicting human behavior in specific contexts. According to Chennamaneni (2006) the theory of planned behavior indicates that human behavior is guided by three kinds of considerations: beliefs about the likely consequences of the behavior (behavioral beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behavior (control beliefs).

As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question (Ajzen, 2001) and (Chennamaneni, 2006). Lin and Lee (2004) published a paper using the TPB model to describe factors that influence KS behavior. They found that the encouraging intention of senior managers was the main determinants of an enterprise KS behavior. This means that managerial interventions (governance mechanisms) should be considered so that managers can influence Knowledge sharing behavior among individuals (Minbaeva, 2010).

Empirical Review

Generally, given that project success has been judged when it is completed within the scope, time and cost, these have commonly been regarded as the areas of critical constraint (Yeong, 2010). This means that traditionally, project success tends to focus on the successful delivery of a planned project by meeting timelines, adhering to specifications and working within allocated budgets (Stolovitsky, 2010). These three constraints according to Tsongas (2011) are closely interrelated and each one of them changes whenever the other is altered. The study conducted research to establish how project success can be achieved in the wake of their increasing failures even after being declared successful once they got completed. This is what forms the basis of the argument that Turner (2009) indicated that the above definition of project success is simplistic and even dangerous, as he gives an example of a project that was finished on cost and in time, but five years later was judged to be a failure. In addition, the findings of a report filed by Standish group chaos report (2009) affirms that only 32% of projects completed within the triple constraints remained successful, while the rest turned out to be failures much later. Though, it is commonly known that projects delivered on time, within cost and meeting performance requirements might contribute to profits, but it might not be easy to identify whether such projects were managed correctly to ensure a lasting success (Kerzner, 2009).

Therefore, the study tried to establish how knowledge management can assist projects to achieve the so needed success even long after they are completed. The rationale of the study was prompted by the fact that authors like Kasvi et al (2003) who suggested that there are aspects that could assist projects to be successful, such as integrating Knowledge management practice in its processes. Cope III et al (2006) also suggested that knowledge management is a practice that makes sense for improving project management. They stated that if the knowledge could be captured and shared within the project management community, organizations would benefit a lot (Cope III et al., 2006).

According to Koenig and Srikantaiah (2003) they too presented a study conducted by Ernst and Young in 1997 among 431 US and European organizations who found many reported benefits from having organized Knowledge management programs. They included improved: innovativeness, efficiency, responsiveness, decision making, flexibility, quality, employee empowerment and reduced duplication of effort (Koenig & Srikantaiah, 2003).

Considering the above discussion, certainly organizations are fast incorporating projects to deliver their products and services. However, the discussions do not consider the industrial settings and geographical locations of the various organizations, and seems to generalize the practice of KM. In addition, most discussions of KM practice tend to focus more on organizations as a whole as compared to its effects on projects. Lierni and Ribiere (2008) observed that very few academic publications focused on the role of using KM to improve the management of projects. Conversely, Rono (2011) from his study on KM practice in commercial banks in Kenya affirms that this practice is still at the infancy level and is yet to be formally entrenched as part of corporate strategy in organizations. Also, Mosoti and Masheka (1998) found out that despite the existence of so many literatures on KM, there has been little research on its practice among organizations here in Kenya, even though some of them use the practice to some extent. This is evidenced by the scanty information on KM especially in the management of projects in Kenya, particularly in the construction industry. Probably this could be due to the fact that the concept is still new and growing within this sector.

Even though the attention of KM is becoming more popularized in the establishment of successful projects within organizations, Adenfelt & Lagerstrom (2006) reveal that its leverage still presents major challenges. This prompted them to explore enabling factors, which are approaches that would allow KM practice to take place. These enablers are divided into two perspective; the first being the social perspective which encompasses: organizational culture, organizational structure and collection of individuals, while the second perspective encompasses: information technology (Lee & Choi, 2003; Adenfelt & Lagerstrom, 2006).

Consequently, Adenfelt and Lagerstrom (2005) in their research on KM enablers in transnational projects found that organizational culture is built on the establishment of an appropriate culture that encourages individuals to create and share knowledge. In addition, Lee and Choi (2000) assert that trust is an essential part of culture as lack of it can be detrimental to the knowledge creation process in projects. Successful KM process is also determined by the type of organizational structure in place. Adenfelt and Lagerstrom (2006) established that organizations must also adopt structures which would allow them to create and transfer as much knowledge as possible. Subsequently, Chen and Huang (2007) found that a decentralized structure was more supportive

in propelling matters of KM, as it motivated employees to participate in decision-making process, which ultimately leads to knowledge sharing.

Owing to the fact that the People are the heart of creating and sharing knowledge, Leonard-Barton (1995) found that knowledge, competence and skills can be acquired by an organization through hiring employees with desirable skills, particularly the T-shaped skilled who integrate diverse knowledge assets. Consequently, such personnel can greatly contribute to the efforts of an organization achieving its objectives, once they are able to share, transfer and create knowledge. Shifting focus on information technology, McCann et al (2004) argues that there is no doubt that effective KM is impossible without effective IT that enables information acquisition, retention, and sharing. This is because; both have been widely accepted as an important contributor for organization's capacity to manage knowledge. This strategy in essence focuses on the use of technological tools to facilitate the capture, access and reuse of information and knowledge (Earl, 2001; O'Leary 2001).

Ahmad et al (2009) found that information technology may serve as a cost effective and fast medium to acquire, store, share and transfer knowledge but it needs human's motive and willingness to engage in KM. Some of the IT facilities that can be used to support KM practice include; groupware, online databases, internet, intranet, management softwares and virtual communities (Lin, 2006; Choi et al, 2008). Lin (2006) also found that IT plays a critical role in leveraging knowledge in the company and helps to create new knowledge, through data processing, content management, communication technologies, system and storage (Lin, 2006).

Data Analysis/Findings

Multiple Regression Analysis of Variables

The regression analysis sought to establish the relationship between success of projects, and organizational culture, organizational structure, members of project and information technology, as indicated by the summary on Table 4.16, which has summarized the findings of the multiple regression model that was used for the study.

Table 4.16 Regression Analysis Model Summary

R	R Square	Adjusted R Square	Std. Error of Estimate	P value
.768 ^a	.590	.554	0.0649	0.048

The result on Table 4.16 indicates that the goodness of fit of the model was satisfactory. These findings are supported by a correlation coefficient (R^2) of 0.590 and an adjusted R^2 of 0.554. This means that all the independent variables; organizational culture, organizational structure, Members of project and information technology contributes 55.4 percent of the variations in success of projects.

Results on Table 4.17 display an Analysis of Variance (ANOVA) to explain the significance of the variables that were under the research study.

Table 4.17 Analysis of Variance Summary

Model	Sum of Square	df	Mean of Square	F	Sig.
1 Regression	7.375	4	1.844	16.187	.001 ^a
Residual	5.125	45	0.114		
Total	12.500	49			

- a. Predictor: (Constant), culture, structure, Members of project and IT
- b. Dependent Variable: Project success

Finding on Table 4.17 indicates that the overall model was significant. This was supported by an f statistic of 16.187 (P value = 0.001). The ANOVA results demonstrated that the independent variables; organizational culture, organizational structure, members of project and information technology are good predictor of project Success.

Results on Table 4.18 display the regression analysis of the independent variables and the dependent variable. The findings indicate that the independent variables; organizational culture, organizational structure, Members of project and information technology are positively related to project success.

Table 4.18 Regression Analysis of Variables

Variables	Coefficient	t-Statistics	P Value
Constant Term	-0.799	-4.575	0.02
Organizational Culture	0.229	1.769	0.03
Organizational Structure	0.189	1.401	0.021
Members of project	0.306	1.832	0.04
Information Technology	0.215	1.742	0.031
R – square	0.590		
Adjusted R – squared	0.554		

Correlation is significant at 0.05 level (1- tailed).

This positive relation was evidence by an adjusted R – square which was found to be 55.4 percent. The relationship was significant at 0.05 critical value since the reported p value 0.048 as displayed on Table 4.16 was less than the critical value of 0.05, and according to Kumar (2005) P values of less than 0.05 (predetermined significance level) implies that the results are statistically meaningful .

Consequently, this means that organizational culture, organizational structure, Members of project and information technology accounts for 55.4 percent of variations in success of projects. Moreover, the research study ascertained relationship between the indicators of project success in relation to the four knowledge management enablers as shown on Table 4.18. The coefficient of correlation (r) as presented on Table 4.16 determines the degree or strength of relationship between the variables, and its value lies between -1 and 1. A value of 0 implies there is no relationship between the variables; value of 1 implies a positive relationship while -1 indicates a negative relationship. A value of r lying between 0.5 and less than 1 implies a strong relationship between the variables, while a value of r found between 0.3 to 0.5 reveals a moderate relationship, with the relationship regarded as weak when the value of r is less than 0.3.

4.12 Inference of Correlation

The research study found that all the independent variables had a positive correlation to the dependent variable. Organizational culture as an enabler is positively related to project success and has a statistical significant coefficient as shown by a t-ratio of 1.769 in Table 4.18, which is also supported by a positive sign coefficient. According to Adenfelt and Lagerstrom (2005) in their research on knowledge management enablers in transnational projects, they found that organizational culture is built on the establishment of an appropriate culture that encourages individuals to create and share knowledge. This means with a favorable cultural practice in place, it is possible to practice knowledge management which would in turn promote project success.

In addition, there is also a positive relationship between organizational structure and project success. This relationship has a statistical significant coefficient as indicated by a t-ratio of 1.401 in Table 4.18. Mintzberg (1979) defines organizational structure as a means through which work is divided into diverse tasks in order to ensure adequate coordination within the organization. This means that organizations must adopt structures which will allow them to create and transfer as much knowledge as possible (Adenfelt & Lagerstrom, 2006). Consequently, it has been found by Chen and Huang (2007) that in a decentralized structure, workers have the freedom to determine what decisions and actions to make since they have the opportunity to provide their ideas. This shows that this structure is more favorable in promoting knowledge sharing behavior that would lead to KM practice (Chen & Huang, 2007) which would contribute to project success.

Furthermore, Members of project as a knowledge management enabler is positively related to project success. This relationship has a statistical significant coefficient as indicated by a t-ratio of 1.832 in Table 4.18 Given that the success of knowledge management depends upon people, together with their willingness and ability to share and utilize knowledge (Cong & Pandya, 2003), it means that organizations should seek to hire employees with desirable skills (Leonard-Barton, 1995) as they are key in creating and sharing of knowledge which contributes to the management and successful completion of projects (Adenfelt & Lagerstrom, 2006).

Lastly, information technology is positively related to project success. This relationship has a statistical significant coefficient with a t-ratio of 1.742 in Table 4.18. This is because information technology can provide instant, integrated, and a smarter interface platform that can make knowledge management much easier to employ (Tiwana, 2000). As a result, information technology will enable rapid creation, gathering, storing, retrieving, and availing of the right information, in supporting collaboration and communication between organization's employees (Huysman & Wuft, 2006) such that management of projects will be made easier, leading to their successful completion.

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