

Investigating Pre-Construction Planning in the Construction Industry of Kenya: Practitioners Perspective

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Abstract: The subject of pre-construction planning is central to the success of project controls and performance during the implementation of construction projects. However, projects have been failing pointing to the need to relook at the planning for projects implementation. In the construction industry of Kenya, performances challenges during projects implementation is a chronic problem. Projects do not achieve their planned cost, time and quality objectives among other performance measures. This study sought to investigate pre-construction planning in the construction industry of Kenya, with emphasis on its adequacy. This cross-sectional research adopted a mixed-method design consisting of analysis of a questionnaire survey administered to active 95No. (NCA1, NCA2 and NCA3) contractors selected by way of stratified random sampling. A similar approach was also used to select 92No. Consultants with a response rate of 54.73% and 46.73% respectively. In addition, 11No. practitioners were interviewed in the current study. Data analysis techniques employed include descriptive statistics and thematic analysis. The study established five (5No.) issues that need to be given careful attention when planning for projects implementation. The issues in order of importance include; Clarity of Scope Statement (RII=0.896), Clarity of performance benchmarks (RII=0.865), Competency of the project team (RII=0.0.682), Clarity of roles definition (RII=0.764) and Contractors selection criteria (RII=0.726). The study concludes by compiling views of the practitioners on what they consider good practice in improving the pre-construction planning practice. The study recommends the use of the good-practice checklist developed for better projects performance.

Keywords: Pre-construction planning, construction industry, good-Practice checklist, Kenya.

I. INTRODUCTION

Globally, the construction Industry is crucial for the economy of any country since it has linkages with other sectors of the economy by providing necessary infrastructure such as roads, hospitals, schools and other basic enhancement facilities (Kenny 2007 and, Hillebrandit 2000). In Kenya, the construction industry is a crucial sector for the growth of the economy. According to the Kenya National Bureau of statistics (KNBS;2015), the construction industry contributed to 4.1%,4.2%,4.4 and 4.8% towards Gross Domestic Product (GDP) for the years 2011,2012,2013 and 2014 respectively. However, this industry faces many challenges. Performance challenges during projects implementation remains a concern amongst practitioners and academic researchers since construction projects are rarely completed within the specified performance targets.

Pre-construction planning is a critical practice in ensuring projects are executed diligently and efficiently, this paper therefore, sought to get the views of the industry practitioners in Kenya on the adequacy of this practice and eventually formulate a good practice checklist to enhance its effectiveness.

II. PROJECTS IMPLEMENTATION CHALLENGES

When delivering construction projects, On-time, within-budget, desired quality and client satisfaction are common requirements among other performance related requirements. Unfortunately, in practice many projects suffer from delays, budget overspends, poor quality, safety concerns amongst other challenges. This is a global concern, for example, In Saudi Arabia, Assaf and Al-Hejji (2006) found that only 30% of construction projects were completed within the scheduled completion dates and that the average time overrun was between 10% and 30%. Odeyinka and Yusuf (1997) have shown that seven out of ten projects surveyed in Nigeria suffered delays in their execution. Ogunlana and Promkuntong (1996) conducted a study on construction delays in Thailand. Al-Momani (2000) carried out a quantitative analysis on construction delays in Jordan. Frimpong et al. (2003) conducted a survey to identify and evaluate the relative importance of the significant factors contributing to delay and cost overruns in Ghana groundwater construction projects. The concern in many of these studies is failure in timely delivery of construction projects which is one of the challenges projects face during implementation.

Locally, in the construction industry of Kenya, these challenges are chronic as most projects do not achieve their planned cost, time and quality objectives among other performance measures. The challenges are common in all elements of the construction industry. A review of related research works reveals a situation requiring an urgent solution. For example, Ayman (2000) in an article titled "Construction delay: a qualitative analysis" undertook a survey of 130 projects in the public sector where delay was attributed to poor pre-construction planning, change orders, late delivery, poor design and increase in quantities amongst other factors. The same author indicates that construction delay and time overruns are critical problems in the implementation of construction projects in Kenya. Interestingly, many construction researchers have spent considerable time studying this subject matter and the trend is still continuing.

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Munano (2012), in her research thesis, has observed that majority of projects undertaken for public sectors are not completed on time. For example project completion rates for the government of Kenya for 4 years up to 2010/2011 financial years were 37.97%, 47.53%, 33.14% and 21.88% respectively. This is happening despite the use of the Building Operations and Organization Manual (BOOM) an official government document which is meant to guide on the implementation of construction projects. This shows an average completion rate of 35.6% which is dismal. According to this author, this state of affairs is attributed to causes such as; slow progress by the contractors; delays in decision making by various players, delayed payments to contractors amongst other factors.

In the private sector, many authors have observed that the trend of poor performances of projects during implementation is a chronic problem. Gichunge (2000) in his research thesis amplifies this and notes that majority projects are dwarfed with cost and time overruns and has attributed this to poor planning, lack of experience in related projects, fluid brief from clients, indecisiveness, poor scope definition amongst many other reasons. The same argument is supported by Gwaya 2015, Muchungu 2012, Wanyona 2005, Talukhaba 1999, and Wachira 1996.

III. PRE-CONSTRUCTION PLANNING

1.1 Pre-Construction Planning

The subject of planning and pre-construction planning is central to project control process and by extension to overall project Success. Ack off,(1970)cited in Tucker (1987) defines planning's decision making process derived in advance of execution, meant to design desired future with ways of implementation wherein planning answers questions what, how, bywho, with what and when. The purpose of planning explained by Tucker (1987) is to assist the manager to fulfill his primary functions of direction and control in the implementation of project components, coordinate and communicate with the many parties. George (2008) says that at the planning phase many potential problems are identified proactively before the ycan greatly affect project cost and schedule during the implementation phase. What is clear here is that planning and control are like Siamese twins, if you have no plan, you have no control.

Project planning helps to create a benchmark for execution. (Harrison, 2007), argues that clear benchmarks are critical as they are used at execution to provide direction for the project team as events unfold. To do this task, the PM has to assemble the most competent team and take in to consideration cultural differences. Muller, (2009) Advise that project team members from different cultural backgrounds will have varying decision-making styles.

IV. RESEARCH METHODOLOGY

Structured questionnaire Survey was carried out to collect the data. Ordinal scale adopted by (Adnan Enshassi et al.,2009). The relative importance Index method (RII) was used here to determine the contractors and consultants perceptions of the relative importance of the factors identified that are necessary for pre-construction planning.

The index was computed as per equation I below ;(Cheung et al, 2004; Lyer and jha, 2005; Ugwu and Haupt, 2007)

$$RII = \frac{\sum W}{A \times N} \dots \dots \dots \text{Equation I}$$

Where,

W is the weight given to each factor by the respondents and ranges from 1 to 5

A =the highest weight=5

N=The total number of respondents

A sample of 95 active contractors categories NCA1, NCA2 & NCA3 were selected for the study, 52 contractors responded giving a response rate of 54.73%. On the other hand a sample of 92 practicing consultants were selected with 43 responding to constitute 46.73% response rate. The response rate for various respondents who participated in the research indicated an overall percentage of 50.8% which was satisfactory to provide necessary information for the analysis.

Interviews were also conducted in the current study, Most Subject Matter Experts (SMEs) occupied managerial positions and were involved in various construction related activities. More than 64% of SMEs had more than 12 years of experience in their field while another 27% SMEs had more than 20 years. The profile information of the interviewees gives credibility to their opinion and helps to ensure data integrity and reliability.

As shown in table 4.1, the SMEs represent contractors, representatives of professional bodies and professional practitioners in the Kenyan construction industry. The information for profiling of the interviews included; position held in their organizations, professional associations, nature of job and work involvement and years of experience. (Table 4.1)

Table 4.1: Profile of Experts Interviewed

Interviewees (ID)	Representative organization	Position/Profession	Work Experience (Years)
SME01	Real Estate Financial institution	Head of projects Monitoring Section.	9 Years
SME02	Project Management firm	Projects Manager	12 Years
SME03	Civil Engineering & Construction	Associate director	19 Years
SME04	Buildings contractor	Quantity Surveying	27 Years
SME05	Architectural Firm	Studio director	13 Years
SME06	Architectural Firm	Director	23 Years
SME07	Quantity Surveying Firm	Contracts Manager	10 Years
SME08	Project Management firm	Projects Manager	6 Years
SME09	Architectural Association	Architect	13 Years
SME10	Civil construction Company	Civil engineer	7 Years
SME11	Construction Company	Civil Engineer	33 Years

Source: Researcher field findings (2015)

V. RESULTS AND DISCUSSION

Part A: Results and discussion from Questionnaire Survey

5.1 Results and discussion on factors for pre-construction Planning.

Table 5.1: The relative Importance Index (RII) and rank of factors related to Pre-construction planning.

Planning Factors	Contractors (N=53)		Consultants (N=42)		All Response	
	RII	Rank	RII	Rank	RII	Rank
Clarity of Scope Statement	0.903	1	0.889	1	0.896	1
Clarity of Performance benchmarks	0.883	2	0.847	2	0.865	2
Competency of project Team	0.725	4	0.639	5	0.682	5
Contractor Selection criteria	0.723	5	0.729	4	0.726	4
Clarity of roles definition	0.741	3	0.788	3	0.764	3

Source: Researcher’s field survey (2015)

The relevant importance index distribution of items that constitute planning factors as indicated in Table 5.1, reveal that both the contractors and consultants rank as “extremely important” to clearly state the scope statement for the project from the on-set, this was ranked first by the contractors and consultants with RII equal to 0.903 and 0.889 respectively. Clarity of benchmarks was ranked second by contractors and consultants with RII equal to 0.883 and 0.847 respectively, this finding concurs with Harrison (2007) who argues, that clear benchmarks are critical as they are used at execution to provide direction for the project team as events unfold. Clarity of roles definition has been ranked position three by both the contractors and consultants with RII equal to 0.741 and 0.788 respectively. Interestingly, the contractors rank last the selection criteria used to procure the contractor (RII=0.723), this position differs with consultants who consider awarding bids to the right contractor critical for successful implementation of projects by ranking it fourth with RII equal to 0.729. In order to have a competent contractor on site (Philips and Prince 2008) advocate the use of multiple criteria when selecting contractors. These criteria need to take into consideration, *inter alia*, track record, safety practices, quality management and technical ability. Considering both the contractors and consultants perceptions, the following factors in the order of importance were therefore confirmed to influence project control; Clarity of scope statement (RII=0.896), Clarity of benchmarks (RII=0.865), Clarity of roles definition (RII=0.764), Contractor selection criteria (RII=0.726) and competency of project team (RII=0.682).

Part B: Results and discussion from Experts interviews

5.2 Experts views on pre-construction planning in Kenya

In general, The SMEs views were that the current pre-construction planning is not adequate in most projects. One of the practitioners (SME11) a leading civil engineer attributes this to the competency of the project team, he argues that effective planning for projects implementation requires a team with the required skills for the job, however, he observes that many a times the planning exercise is often left to junior staff who have little experience in the construction process and therefore might not be fully understanding the complexity of the project at hand. On the same note, real estate finance expert (SME01) observes that the challenge thereof in the industry is that the people doing the planning for implementation of projects are not trained for the task. In addition, the people claiming to plan for project execution are not the actual implementers of projects hence a major missing link between planning and implementation of projects in Kenya therefore rendering project controls ineffective. These views seem to be in line with what many authors in the literature Hammond (1979), London et al., (2005) and, Muller (2009) who have discussed the need for competent team in projects. That an important but often overlooked aspect of the implementation process concerns the nature of the personnel involved. They further opine that in many projects personnel for the project team are chosen with less-than-full regard for the skills necessary to actively contribute to implementation success. It can be argued therefore that personnel issues including recruitment, selection and training should be given importance in the selection of the project team.

(SME02) believes pre-construction planning is being done to some extent and varies from project to project depending on the people involved in the project. Architectural studio director (SME05) harbors similar views by saying that planning is usually done in most projects only that contractors are often not keen to implement their plans to detail, he attributes this to lack of careful review of drawings by the contractors prior tendering or construction hence you can’t adequately plan as a contractor if you do not have sufficient information.

Interestingly, most of the interviewees (SME01, SME02, SME03, SME05 and SME11) believe consultants do not generate adequate designs before implementation of projects. (SME01) argues that there is often no distinction between when design change and a design development thereby rendering scope control difficult during the implementation process. (SME03) thinks there is a tendency to rush projects into implementation without detailed designs. Consequently, you find cases where design work continuous even when the contractor is on site, therefore according to him, we do not seem to have proper and firm project scopes before implementation commences. These findings seem to be in line to a similar study in the UK construction industry, done by Olawale and Sun (2012) who established fluid designs as a major problem rendering cost and time control difficult.

SME08 believes there is lack of realistic performance benchmarks at the planning stage of projects.

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He suspects most project implementers are out to please project sponsors or are under pressure to deliver projects. Using the case of commercial speculative projects, contractors often give unrealistic time estimates which is often accepted by the consulting team leading to eventual time overruns on the project. His views are supported by a leading architect (SME06) who argues that projects fail at implementation due to lack of clear performance baselines or as a buildings contractor (SME04) states, setting of milestones that are too ambitious without putting in place a concrete action plan to achieve them. These concerns are in line with what Harrison (2007), considers critical for projects execution. He further advises that clear benchmarks set during planning clears any ambiguity that might exist

during implementation thus facilitating decision making and as such benchmark setting should be conducted by the PM in consultation with experienced project team members and line managers SME07 observes that in most projects, pre-qualification exercise is never done to pick competent contractors. In addition, he argues even consultants are often picked through referrals without due diligence. SME09 conveys by suggesting that there is need for thorough pre-qualification process to pick the right people for projects since this is the first step in ensuring success in a project. These findings agree with Samuelson (2006), who believes that bids should be awarded to people with proven track record in the performance of projects and hold a cost-effective proposals.

Pre-construction Planning good practice checklist

1. Consultants should design projects exhaustively to a greater detail before tender stage.	8. Project briefs should be clear to all participants.
2. Freeze designs at the appropriate stage of a project or implementing intermediate design freezes at various project stages depending on the type of project.	9. Where a design change is inevitable it should be captured on a register with the corresponding cost and time implications for implementation.
3. Consultants should encourage the culture of conducting design workshops during the pre-construction stage in order to enhance harmony in both specifications and content.	10. Constitute a design coordination team to vet design changes and make decisions for execution
4. Make contractors pre-qualification exercise mandatory in projects and only contractors with success track record should be selected to bid for projects.	11. Ensure the project planner is experienced in the construction process and involve people from site in case you have an in-house planning team.
5. Contractors and consultants should prepare a statutory conformity due diligence checklist for projects and have this done prior projects implementation.	12. Setting of performance benchmarks should be realistic and practical and be done by an experienced project manager.
6. Develop and adopt a gate system approach to control of projects with proper due diligence checklists.	13. Involve specialists if any at the planning stage of the project to address any grey area prior implementation
7. Make pre-construction project workshops/seminars mandatory to enlighten the team on the project scope, performance baselines and general procedures to guide the project during implementation	14. Make the use of PID in projects mandatory in order to guide the project participants in the management of projects.

Source: Researcher field view compilation. (2015)

5.3 Preparation of good practice checklist for pre-construction planning

In summary, the following key observations were made by the interviewees regarding the current pre-construction planning process.

- There is lack of adequate pre-construction planning before implementation of projects in Kenya.
- People tasked with the planning of projects are often junior staff who have little experience in the construction process therefore might not be fully understanding the complexity of the project at hand.
- More often there is lack of detailed designs before projects implementation rendering scope management difficult going forward to execution.

- There is no clear distinction between design change and design development hence fluid designs throughout the construction period.
- Most contractors and consultants are picked for projects through referrals without proper pre-qualification process and due diligence hence at times compromising the competency of the project team.

Based on the above interviews with practitioners, suggestions were made on how to improve the pre-construction planning exercise. Below is a compilation of the good practices emerging from the interview experts.

VI. CONCLUSION

This article sought to investigate factors for pre-construction planning, in addition, the views of the industry practitioners were analyzed with a sharp focus on the adequacy of this practice in the construction industry of Kenya. The findings suggest that both the contractors and consultants strongly support the factors identified. It emerged that pre-construction planning is still not adequate in the construction industry of Kenya and that planning is often left to junior staff who might not be fully conversant with the complexity of the construction activities. Based on the findings of this study, it's recommended that projects implementers should enhance their pre-construction planning strategies. In addition, the good practice checklist prepared herein will go a long way in improving the practice of pre-construction planning hence ensuring success in execution of projects.

REFERENCES

1. Abd El-Razek, M. (2008). Causes of Delay in Building Construction Projects In Egypt. *Journal of Construction Engineering & Management*, 134(11),831-841.
2. Akintoye, A. (2007). Collaborative relationships in construction-The UK contractor's perception. *Engineering,Construction and Architectural Management*.
3. Atkinson, R. (1999). Project management: Cost,time and quality,two best guesses and a phenomena.its time to accept other success criteria. *International Journal of Project Management*. Vol 17,Issue 6 December,1999,Pages 337-342..
4. Chandara, P. (2002). *Projects Planning,Financing,Implementation and Review*. Tata: McGraw-Hill Publishing Company.
5. Chitkara, K. (2002). *Construction Project Management Planning,Scheduling and Control*. Hill Publishing Company Ltd.
6. Christenson, D. (2008). Using vision as a critical Success element in Project Management. *International Journal of Project Management*.
7. Cooke, B. W. (2004). *Construction Planning Programming and Control*. Oxford: Blackwell Publishing.
8. Cooke-Davies, T. (2002). "The real success factors on projects. *International Journal of Project Management*.
9. Egbu, C. (1998). "Planning and Control processes and techniques for refurbishment management.". *Construction Management and Economics*, 16(3),315-325.
10. Fena-Mora, F. (2001). Dynamic Planning and control methodologyfor design/build fast-track construction projects. *Journal of Construction Engineering and Management*, 127(1),1-17.
11. Floyd, L. (2004). " Application of appropriate control tools for contract type". *Cost Engineering*, 46(2),25-30.
12. Forsythe, P. (2008). Modelling customer perceived quality in housing. *International journal of project management,Elsevier Science Ltd and IPMA*.
13. Fortune, J. (2006). Framing of critical success factors by a systems model. *International Journal of Project Management,Elsevier Science Ltd and IPMA*.
14. Frimpong, Y. (2003). Delay and cost overruns in Construction of Ground water Projects in developing countries. *International Journal of Project Management*, 21,321-326.
15. George, R. (2008). Critical activities in front End planning process. *Journal of Management of Engineering*.
16. Gichunge, H. (2000). Risk management in the Building Industry in Kenya. Unpublished PHD.Thesis.University of Nairobi.
17. Goodman, L. (1988). *Project Planning and Management-an integrated system for improving productivity*. New York: Van Nostrand Reinhold Company Inc.
18. Greer, M. (1999). *Handbook of Human performance Technology*. San Francisco: Jossey-Bas.
19. Gwaya, A. (2014). Development of appropriate project management factors for the construction industry in Kenya. *International Journal of Soft Computing and Engineering (IJSCE)*, ISSN:2231-2307,Vol 4,Issue 1.
20. Hendrickson. (1999). Causes of Delay in Construction. *Journal of Construction Engineering and Management*, Vol 134,issue 11,p831.
21. Hillebrandt, P. (2000). *Economic theory and the construction Industry,3rd Edition*. London: Macmillan.
22. Iyer, K. J. (2005). Factors affecting cost performance evidence from indian construction projects. *International journal of project management*, 23 (4),283-295.
23. Jackson, B. (2004). *Construction Management Jump Start*. CA: Sybex Incorporated Alameda.
24. Johnson, G. (2006). *Exploring Corporate Strategy 7th Edition*. London: Pearson Education.
25. Kagiri, N. (2005). Time and Cost overrun in Power projects in Kenya: A case study of Kenya Electricity Generating Company Ltd. Unpublished MBA Thesis.University of Nairobi.
26. Kaming, P. (1997). Factors Influencing Construction Time and Cost Overruns on High-Rise Projects in Indonesia. *Journal of Construction Management and Economics*, 7,83-94.
27. Kenny, C. (2007). *Construction,Corruption and developing countries*. World Bank policy Research working paper.
28. Kerzner, H. (2006). *Project Management: A systems Approach to Planning,Scheduling and Controlling 9th Edition*. John Wiley & Sons publications.
29. Kongere, N. S. (2010). *Project Management,From Design to Implementation*. Nairobi: Richmond Designers and Printers.
30. Lester, A. (2000). *Project Planning and Control*. Oxford: Butterworth Heinemann.
31. Lindahl, G. (2007). Client's goals and the Construction Project Management Process. *Journal of Construction Management and Economics*.
32. Ling, F. (2009). How Project Managers can better control the performance of design build projects. *International Journal of Project Management*, 22(6),477-488.
33. Masu, S. (2006). An investigation into the causes and impact of resource mix practices in the performance of construction firms in Kenya. Nairobi: Unpublished Phd.Thesis.University of Nairobi.
34. Morris, S. (1990). *Cost and Time Overruns in Public Sector Projects*.
35. Muchungu, P. (2012). The contribution of human factors in the performance of construction projects in Kenya. Nairobi: Unpublished Phd.Thesis.University of Nairobi.
36. Munano, A. (2012). Pre-construction Planning: Exploring the factors that influence timelines of project completion for public sectors buildings in Kenya. Unpublished Master of Construction Management Thesis.Jomo Kenyatta University.
37. Musa, G. (1999). Determination of Factors Influencing Projects Delays in Water Projects in Kenya: The case of Government Funded Projects. Nairobi: Unpublished MBA Thesis University of Nairobi.
38. Mwandali, D. (1996). Analysis of Major Factors that affect Projects Management: A Case of Kenya Railways Projects. Nairobi: Unpublished MBA Thesis,University of Nairobi.
39. Nguyen, A. (2004). A study on Project success factors in large construction projects in Vietnam.
40. Nicholas, J. (2001). *Project Management for Business and Technology*. New Jersey: Prentice Hall.
41. Olawale, Y. a. (2010). "Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice". *Construction Management and Economics*, 28 (5),509-526.
42. Pellicer, E. (2005). Cost control in Consulting engineering firms. *Journal of Management in Engineering*, 21 (4),189-192.
43. Project Management Institute. (2013). *PMBOK: A guide to the Project Management Book of Knowledge*. Project Management Institute.
44. Rozenes, S. (2006). "Project Control: Literature review". *Project Management Journal*, 37(4) 4-14.
45. Samuelson, W. (2006). *Managerial Economics,5th Edition*. New Jersey: John Wiley & Sons.
46. Talukhaba, A. (1998). Time and Cost Performance of Construction Projects. Nairobi: Unpublished M.A.Thesis,University of Nairobi.
47. Tucker, L. A. (1987). Is Construction Project planning really doing its job?.A critical focus,role and progress in the construction management economic. Vol 5,243-266.
48. Wanyona, G. (2005). Risk Management in the cost planning and control of building projects.The case of quantity Surveying profession in Kenya. Unpublished PhD Thesis.University of Cape Town.
49. White, D. F. (2002). Current practice in project management-An Emperical study. *International Journal of Project Management*, 20(2),1-11.
50. Yakubu, O. a. (2009). Cost and time control of construction projects: A survey of Contractors and Consultants. *Construction Information Quarterly*, 11(2),53-59.
51. Zhen Yu, Z. (2010). Application of innovative Critical Chain Method for project planning and control. *Journal of Construction Engineering and Management*.

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