

Community engagement on public projects – case study of Hammanskraal Pedestrian Bridge, Gauteng, South Africa

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Abstract:

Construction projects in the public sector have often been affected by major challenges with regards to project ownership by stakeholders particularly the co-operation of local communities. Various government policies and regulations exist which supports the participation of small and medium scale enterprises within the built environment especially on public sector projects. This research study investigated the influence of local communities on public sector construction projects with a focus on the impact of the local community involved in the construction of the Hammanskraal Pedestrian Bridge over the R101 in Hammanskraal, Pretoria. Structured interviews were conducted with the main contractor, the professional team involved in the project and the municipality officials overseeing the project.

The findings show that the stakeholders from the Hammanskraal community had a high degree of influence on the project, unfortunately their influence on the project was negative.

Keywords:

Stakeholders; stakeholder management; community; project control;

1. Introduction

The concept of stakeholder management in project implementation particularly with regards to construction projects has gained grounds within the last decades. This is especially so with the increased move towards environmental awareness and the impact of construction projects on the environment and communities. Consequently, it has brought to the fore the issue of stakeholders. Equally, stakeholder management has become extremely relevant to project success. This according to Baharuddin, Wilkinson and Costello (2013) may be due to the fact that stakeholders in construction are affected directly and indirectly by projects. At implementation stage projects impacts on stakeholders optimistically and adversely due to the effects and nature of projects during its life-cycle. Baharuddin, *et al.*, (2013) opine that complications such as reworks, disagreements, cost escalations, inadequate communication, and poor supply chain process are some of the challenges experienced from stakeholder conflict during the construction phase. The above problems can be attributed to the fact that different project

stakeholders have differing goals and priorities, and it is, therefore, unlikely that all stakeholder expectations can be met on a project.

Researchers have advised that it is imperative for stakeholders to understand the goals and objective of the project and to be on board from the planning stage of the project. This minimizes conflict and encourage ownership (Hammad, 2013; Baharuddin, *et al.*, 2014; and Molwus, 2013). However, it appears that not all of the critical stakeholders are involved right from the inception of a project. Equally, there are few studies which have been conducted on the implications and how critical it is for stakeholders to be involved in construction projects right from the initiation phase.

Therefore this paper assessed the impact and level of community engagement during the project life cycle of the Hammanskraal pedestrian bridge in Pretoria, Gauteng, South Africa

2. Literature review

2.1 Project stakeholders

Project stakeholders have been defined in various ways by various researchers and professional bodies. Some researchers have argued that some of the definitions are too constricted, while some argue that the definition is too wide (Molwus, 2013). Researchers have defined stakeholders as the individuals, clusters, or businesses that can affect or be affected by a resolution, task, or consequence of the project (PMBOK (2013) Malkat and Byung- GYOO, (2012). Other researchers have categorized stakeholders (Olander, (2007); Aaltonen and Kujala, (2008); Chinyio and Akintoye, (2008) and Winch (2010) based on their characteristics and dispositions towards the project. Winch (2010) in particular, classified construction project stakeholders into two categories according to their relationship with the client:

- Internal stakeholders which are those who have legal contracts binding with the client, and
- External stakeholders which are those who although having direct interest in the project do not necessarily have direct contracts with the client.

Winch (2010) further broke the two groups down as internal and external stakeholders. Internal stakeholders are those grouped around the client on the demand side and those on the supply side. The external stakeholders are subdivided into private and public actors. El-Gohary, Osman, El-Diraby, (2006) define project stakeholders as clusters or entities, individuals who have stake in, or expectation of, the project's performance including clients, project managers, designers, subcontractors, suppliers, funding bodies, users and the community at large who has power and are effected by the development directly and indirectly

2.2 Stakeholder management

The importance of stakeholder management in construction projects has been emphasized and reported by a number of studies according to Yang, Shen Ho, Drew and Chan, (2009). Yang *et al.*, (2013) further posit that the construction industry has failed dismally in

effectively managing stakeholders in the last decade. Even though studies conducted within the industry has shown that some of the challenges of stakeholder management in construction projects include: inadequate engagement of stakeholders, project managers having unclear objectives of stakeholder management, difficulty to identify the “invisible” stakeholder, and inadequate communication with stakeholders. This assertion is in line with a study by Molvus (2013), which investigated the current practice of stakeholder management within the construction industry. His survey results, revealed that stakeholder management has yet to be fully embraced among the construction organisations.

In a research by Yang *et al.*, (2013) conducted on construction projects in Hong Kong, the top 3 critical success factors identified as effective in stakeholder management were: managing stakeholders with social responsibilities namely: economic, legal, environmental and ethical; exploring the stakeholders’ needs and constraints to the project, and communicating with and engaging stakeholders properly and frequently.

Molvus (2013) conducted a study on stakeholder management in the construction industry in the United Kingdom. The results of his study indicated that; there is a strong need for internal stakeholders to collaborate in undertaking stakeholder management in construction projects; there is need to put in place feedback mechanisms and early warning signs to track change in stakeholder interests / disposition throughout the project and finally that public hearings and design charrettes were considered the most important stakeholder engagement instruments.

In trying to understand the interrelations among the critical success factors for stakeholder management in construction, Molvus’s (2013), study showed that stakeholder analysis cannot directly impact / influence project success. However, stakeholder engagement / empowerment being the only construct found to directly influence project success depends on the understanding of stakeholder dynamism which also depends very strongly on the results of stakeholder analysis.

A study conducted by Malkat *et al.*, (2012) relative to stakeholders of construction projects in Dubai and adjacent regions, found that project managers ranked the highest and the community is the lowest ranked, in terms of their influence on the projects.

An investigation on salient stakeholder attributes, assigning only one attribute, power, legitimacy, and urgency to each stakeholder. The results gave an idea on the most significant stakeholders that counts in terms of attribute. The stakeholders include the client, sub-contractors, suppliers, financial firms, and community. Clients were found to be the core stakeholders at 67.5%, respondents feel the need to adhere to client’s wish and keep him satisfied. In additions, 81.8% of respondents believed that clients possess the power attribute. For legitimacy and urgency, third parties, communities and sub-contractors accounted for 55.8% respectively (Malkat *et al.*, 2012).

Initiating the engagement process in a project’s early phase ensures timely public access to all relevant information and gives the stakeholders an opportunity to provide input into the project design and the assessment of impacts (Baharuddin *et al.*, (2014). Hammad (2013) agrees with this and suggests that in today’s project environment, stakeholders are

an integral aspect of the successful delivery of projects as ever so often projects are motivated by the actions and decisions of relevant stakeholders.

3. Research Methods

The current study entailed a review of literature relevant to stakeholder management with particular focus on stakeholder engagement. The search included investigations of journal publications and materials from the academic community.

A case study on the Hammanskraal bridge project was conducted. To aid the empirical study, a questionnaire was designed, based on a review of the available literature pertaining to stakeholder management in construction projects.

The questionnaire was devised to understand which stakeholders had the most influence and impact on the project delivery process and the stakeholder factors which caused delays on the Hammanskraal bridge project. The questionnaire was framed and aligned to the major challenges experienced on the Hammanskraal bridge project, in order to assist with understanding the causes of conflicts and frictions on the project. The project was selected for this study because it was a community based project and had multiple stakeholders.

Respondents to the questionnaire included members of the professional team, client and the contractor. The study was limited to this group of people as they were at the fore of the project delivery process and were affected by the various challenges experienced on the project from various stakeholders.

This study was limited to one project where the procurement process involved evaluating experienced contractors as the project was a specialized one.

3.1 Case Study

A study was conducted on the construction of the Hammanskraal Pedestrian Bridge. The Hammanskraal Pedestrian Bridge project entailed the construction of a Pedestrian Bridge across the R101 (Route K97), linking the pedestrian walkway network between two major business nodes adjacent to the R101. The business nodes serve the entire Hammanskraal area. The project team identified the pedestrian bridge on the R101 in the Hammanskraal as a priority project for non-motorized infrastructure for the safety of members of the Hammanskraal community. The project was funded by the South African National Treasury under the Neighbourhood Development Partnership Grant (NDPG), in conjunction with the City of Tshwane. The South African National Treasury remained the client in the project although the City of Tshwane took ownership of the Pedestrian Bridge post-construction. The project was initially slated to be completed within five months. However, due to various challenges and delays the completed date had to be extended for another seven months resulting in cost overrun.

4. Research Findings

The Relative Importance Index (RII) method was used to rank the respondents' perceptions in order to determine which factors were ranked higher than others and hence

considered more important. The output from the analysis was presented in graphs, charts and tables.

The Relative Importance Index (RII) entails ranking of factors and groups in terms of their importance level. A five-point likert scale was used to obtain ratings from respondents using a scale of one (very low influence) to five (very high influence). Based on these ratings relative importance indices (RII) for each element were obtained.

Twelve (12) individuals, who worked as professionals within the construction industry and were directly involved in the construction of the Hammanskraal pedestrian bridge project, were contacted via email and requested to participate in the completion of the survey. From the selected twelve (12) individuals, nine (9) respondents completed and returned the questionnaires.

The respondent population was made up of professionals within the built environment industry with varying years of experiences in the industry. The first part of the questionnaire covered the demographics information of the respondents indicating their experience, job title, organisation, and the number of years their organisation has been operating within the industry this provided an idea into the extent of their experience.

From the respondents a total of seven were graduates, one had a postgraduate degree and one had a doctorate degree. Although all the respondents worked in the built environment, four of them had experience of between 5-10 years, two had experience of 15-20 years and three had experience of more than 20 years. The respondent's ranged between, top, middle and junior management levels. Although the project was funded by the public sector only two of the respondents worked for the public sector and seven of the respondents worked for the private sector.

The first objective of the research was to assess the extent to which stakeholders influenced the Hammanskraal pedestrian bridge project. The findings were that stakeholders had a high impact on the project with an aggregated relative importance index of 0.656. From the summary of results in Table 1, it was observed that the stakeholders ranked most influential on the project were the community (RII = 0.796), the Project Manager (RII = 0.778), the structural Engineer (RII = 0.741) and the traders union committee (RII = 0.704). It is notable that the result of the survey indicates that the community was more influential on the project than any member of the professional team which is contrary to extant literature which suggests that the project manager is the most influential stakeholder.

Table 1: Extent of stakeholders influence at the Hammanskraal Pedestrian Bridge project.

Stakeholders	Unsure	Low.....High					RII	Ranked
		1	2	3	4	5		
Community	0	0	0	0	2	7	0.796	1
Project Manager	0	0	0	0	3	6	0.778	2
Structural Engineer	0	0	0	1	3	5	0.741	3

Trader Union Committee	0	0	0	2	3	4	0.704	4
Contractor	0	0	0	3	1	5	0.704	5
Project Steering Committee	1	0	0	3	3	3	0.667	6
Community Liaison Officer	0	0	1	1	5	2	0.648	7
Gauteng transport and public works department-Gautrans	0	0	1	3	2	3	0.630	8
City of Tshwane	0	0	2	1	3	3	0.630	9
Client	0	1	1	1	4	2	0.593	10
Material Suppliers	0	0	2	1	6	0	0.574	11
Local labour	0	0	2	4	2	1	0.537	12
Subcontractors	0	0	2	5	1	1	0.519	13

The second objective of the survey was to establish the nature of stakeholders' influence on the project. Table 2 indicates the nature of stakeholder influence on the Hammanskraal Pedestrian Bridge project in terms of percentage responses to a scale of 1 (positive) to 5 (negative). The respondents attributed the top five stakeholders to have negatively influenced the project as Hawker Committee (RII = 0.685), the community (RII = 0.611), the community liaison officer (RII = 0.537), the project steering committee (RII = 0.444) and the local labour (RII = 0.444). It is notable that in general the respondents can be deemed to perceive that the local community and local community forums such as the hawker union had a negative influence on the Hammanskraal Pedestrian Bridge Project.

Table 2: Nature of stakeholder influence on the Hammanskraal Pedestrian Bridge project.

Stakeholders	Unsure	Positive.....Negative					RII	Ranked
		1	2	3	4	5		
Hawker Committee	0	0	2	0	2	5	0.685	1
Community	0	1	2	0	2	4	0.611	2
Community Liaison Officer	0	0	3	3	1	2	0.537	3
Project Steering Committee	1	1	2	2	2	1	0.444	4
Local labour	0	1	3	3	2	0	0.444	5
Government Agency: Gautrans	0	3	1	4	1	0	0.389	6
Subcontractors	0	1	5	3	0	0	0.370	7

City of Tshwane	0	2	4	3	0	0	0.352	8
Material Suppliers	0	2	6	0	1	0	0.333	9
Contractor	0	3	5	1	0	0	0.222	10
Structural Engineer	0	7	1	1	0	0	0.222	11
Client	0	7	1	1	0	0	0.222	12
Project Manager	0	7	2	0	0	0	0.204	13

The survey also sought to determine the factors that influenced the delay on the Hammanskraal pedestrian bridge project as a third objective in table 3. The survey found overall that community factors emerged as the highest factors influencing delays overall in the project, all of which exceed the aggregated relative importance index of 0.433. The respondents attributed the top five factors influencing delay as Socio-political factors in the form of strikes, civil unrest by the community (RII = 0.759), Local traders union Interference (RII = 0.667), Lack of support from the local ward councilor (RII = 0.611), Bad public relation practices in dealing with communities (RII = 0.611) and Conflict with local labour on site (RII = 0.574) .

Table 3: Factors that influenced delays on the Hammanskraal Pedestrian bridge project

Statements	Unsure	Minor.....Major					RII	Ranked
		1	2	3	4	5		
Socio-political factors in the form of strikes, civil unrest by the community	0	0	0	1	2	6	0.759	1
Local traders union Interference	0	1	1	0	2	5	0.667	2
Lack of support from the local ward councilor	0	0	1	4	1	3	0.611	3
Bad public relation practices in dealing with communities	0	0	0	4	4	1	0.611	4
Conflict with local labour on site	0	0	3	1	3	2	0.574	5
Lack of support from the community liaison officer	0	0	3	2	1	3	0.574	6
Local plant & equipment hire rates market related	0	1	1	2	5	0	0.537	7
Delayed approvals from government agencies	0	3	0	1	3	2	0.519	8

Lack of support from government agencies	0	2	1	4	0	2	0.481	9
Unavailability of plants and equipment	0	2	2	1	3	1	0.481	10
Disruption of site works due to health and safety concerns	0	1	3	4	1	0	0.426	11
Late production of revised drawings by engineer	0	2	4	2	0	1	0.389	12
Disruption of site works due to environmental concerns	0	2	3	3	1	0	0.389	13
Insufficient skills from the construction team	1	2	2	2	2	0	0.370	14
Mistakes and discrepancies in design documents	0	3	2	4	0	0	0.352	15
Late payment of labour's wages by contractor	0	1	6	2	0	0	0.352	16
Lack of clients understanding of the design, procurement, and construction processes	0	3	2	4	0	0	0.352	17
Inadequate design by the engineer	0	3	4	0	2	0	0.352	18
Late delivery of material to site	0	3	3	3	0	0	0.333	19
Incorrect material delivered to site	0	3	4	2	0	0	0.351	20
Lack of support from client	0	3	5	0	1	0	0.315	21
Change in material types and specifications during construction	1	3	2	3	0	0	0.296	22
Inadequate communication between the construction team and the project team	0	5	2	2	0	0	0.278	23
Inappropriate business practices	1	2	6	0	0	0	0.259	24

Late payment by client	0	7	2	0	0	0	0.204	25
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5. Discussion and Conclusion

Literature study revealed that stakeholder management is vital in ensuring the success of a construction project. It also showed that, although the local community is considered a stakeholder, minimal consideration and engagement is given to the local community as a stakeholder.

The study conducted by Malkat *et al.*, (2012) relative to stakeholders of construction projects in Dubai and adjacent regions, indicated that stakeholders ranking based on their highest influence on project spheres, revealed that project managers were the highest ranked and the community was the lowest ranked in terms of influence. However this survey shows a contrary view. Amongst all the stakeholders on the Hammanskraal Pedestrian Bridge Project, the local community proved to be the major influencers negatively influencing both time and cost.

This could be attributed to the fact that South Africa is a developing economy this could be a subsequent research topic.

Understanding and exploring the influence of community engagement on public projects would allow a possibility of improving time and cost measures within construction projects.

The survey ranked the client as the tenth most influential stakeholder relative to the extent of influence (Table 1). However, findings also contradicts Malkat *et al.*, (2012) study which reported that the client possess the power attribute. The findings may be explained by the fact that the Hammanskraal pedestrian bridge project, was funded by government.

For future research stakeholder engagement can be compared in both private and public sector projects to determine which stakeholder has the most influence and the nature of that influence.

Finally, it is interesting to note that the respondents perceive the local community, and local committees at the Hammanskraal pedestrian bridge Project to have a negative influence, despite the fact that the bridge was constructed to ensure safe pedestrian crossing between the major malls within the Hammanskraal community, and was prioritised by government to alleviate fatalities on a major route. Consequently a much more detailed study, which would seek to establish the underlying causes would be insightful.

6. Acknowledgement

It is to be noted that this conference paper forms part of a pilot study for Author 1's dissertation for a Master of Technology in Construction Management, which involves the investigation of the influences of communities on government projects.

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