

THE EFFECTS OF POOR PERFORMANCE ON ROADS INFRASTRUCTURE PROJECT

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Good performance increase productivity in the construction projects and it contribute positively to the growth of the South African Economy. The aim of the paper was to investigate the impacts of poor performance on roads infrastructure projects in the Gauteng Province. Questionnaires were distributed to various construction firms which were registered with South African approved council bodies and also with construction industry development board. The questionnaires were sent via emails and dispersed during site and briefing meeting for contractors. 76 out of 100 questionnaires were collected and were used for the study. Random sampling method was used. Research findings revealed that loss of productivity; Cost overrun; disease outbreak; Time overrun; Environmental impact; Conflicts; Disputes between owner and contractor; Loss of skilled workers; stress on the contractor; Reworks were the major impacts on the construction of road infrastructure, in the South African Construction industry. Therefore, cost overrun, and time overruns can be avoided by limiting change and variation orders. In addition, skills transfer is needed so that skilled workers can pass the knowledge to the new manpower before they retired. Poor performance creates stress on the contractor as the contractor will experience the problems such as reworks, termination of contract, and default on loan repayment by the contractor.

Keywords: Beneficiary, Cost overrun, Ecology, Reworks, Stakeholder.

1 INTRODUCTION

Road infrastructure is a useful catalyst for development of businesses and residential areas. It ease the strength of people and their goals, provides the link to the external world and specifically access to markets and public services such as ambulance and police services (Mashwama *et al.* 2018). Road construction creates jobs especially where labor intensive methods are used and this alleviates poverty and unemployment (TRH 26 2012). Roads that are in good condition, contribute to reduced travel time and savvy on fuel for vehicles, reduced production cost for the ever-growing number of goods shipment. In many instances, the client of public sector infrastructure is the government and the beneficiary is the community for that specific projects. Moreover, client, consultant and the contractor are the most important stakeholders of a construction project (Ngacho 2013). Normally beneficiaries of a project are the people who

usually experience the good and bad effects of projects. Hence, the study will investigate the bad effects of poor performance in road construction.

2 NEGATIVE EFFECTS OF ROADS INFRASTRUCTURE PERFORMANCE

Poor performance of a project articulates its failure. There are many components that cause poor performance and performance can be measured using different indicators such as progress (time), value (cost), standard of something (quality), client satisfaction, health and safety factors among others (Olatunji *et al.* 2016). Poor performance may affect cash flows, actual cost of a project far outweighs, money spent on project exceed the estimated cost, company's image can be destroyed if the company cannot full-fill the contract obligations (Oguya and Muturi 2016). Following is a brief background of the effects of poor performance on road infrastructure.

2.1 Abandonment of Project

Abandoned projects are normally caused by wrong estimation of construction cost; poor skilled workforce; poor methodology; lack of risk management on construction sites; poor grasping of work duties; corruption and poor transmission of information among stakeholders (Doraisamy *et al.* 2014).

2.2 Cost Overrun

Cost is very important and it has to be considered throughout the project life circle and is one of the factor that cause projects to delay and fail. Cost overrun in project, is caused by number of issues such as poor performance by the service providers, increase in material prices and current inflation (Shah 2016).

2.3 Time Overrun

Delays contribute to distraction of work, loss of production, progress loss, increased value of construction projects, construction claims and including termination of contracts. Furthermore, if a construction project is constantly showing signs of delays, such that the margin between actual progress and the scheduled work is more than thirty percent this are signs that the project is sick and it needs attention before it comes to halt (Hamzah *et al.* 2012).

2.4 Reworks

Reworks are the activities that have to be done more than once. Reworks are normally caused by change of scope, design changes or errors and quality deviation (Dougherty and Hughes 2012).

2.5 Damage to Company Reputation

Bad company's reputation damages the firm image and has a serious threat to it existence, since local and foreign investors won't have interest in such a company. Hence, good company reputation is very important to the health of an organization. Therefore, construction firm reputation may be affected direct or indirect by project delays (Akomah and Jackson 2016).

2.6 Decreased Productivity

Productivity is about units of work produced per man-hour ratio earned to actual hours. Uncertain weather has a huge impact on the decrease of productivity, if weather is too hot or cold,

safety regulations should be applied. Poor productivity can be caused by lack of planning and poor management of resources in construction (Shehata and El-Gohary 2011).

2.7 Decrease in Quality

Decreasing quality reduces productivity due to rework and waste. Workers attitude and confidence is important factor influencing construction productivity (Zue *et al.* 2011).

2.8 Ecology/ Environmental

Some of the natural features and archaeology features that contribute to environmental impact include dirt of the atmosphere, harmful vapors, solid and liquid wastes, earthquake, soil and ground pollution, construction and demolition waste, vibration, traffic, mud (Ametepety and Ansah 2014).

2.9 Increase in Diseases

Project may cause bad effects on economic and social activity in surrounding areas of the road project. Labor force in construction projects in mostly migratory hence, HIV/AIDS runs rampant among construction workforce. Construction camps contribute to the spread of the pandemic and other sexually transmitted diseases. Furthermore, the end result of casual sexual relationships is disregarded (Hlebel 2009).

3 RESEARCH METHODOLOGY

Quantitative method was used for the paper. Quantitative deals with the statistical analysis and numerical data to provide quantitative information. The main aim of research method chosen was to meet the objective of this study, which was to investigate the effects of poor performance on roads infrastructure projects in Gauteng Province of South Africa. Data was collected through a structured questionnaire which was the primary source of the paper. Furthermore, a five-point Likert scale was used to determine the effects of poor performance on road infrastructure projects. Secondary data was gathered from literature review including journal, articles, conference paper which are mostly Scopus index.

The computation of the mean item score (MIS) as expressed in Eq. (1) was calculated from the total of all weighted responses and then relating it to the total responses. This was based on the principle that respondents' score on all the selected criteria, considered together, are the empirically determined indices of relative importance.

$$MEAN = \frac{(1n1+2n2+3n3+4n4+5n5)}{\Sigma N} \quad (1)$$

where;

n1 =Number of respondents for 'Extremely unlikely' or 'Strongly disagree';

n2 =Number of respondents for 'Unlikely' or 'Disagree';

n3 =Number of respondents for 'Neutral';

n4 =Number of respondents for 'Likely' or 'Agree';

n5 =Number of respondents for 'Extremely likely' or 'Strongly agree';

N =Total number of respondents

After mathematical computations, the criteria are then ranked in descending order of their mean item score (from the highest to the lowest).

4 FINDINGS

4.1 Responded Background Information

From the 76 respondents who participated on the survey 51.30% were Males and 48.7 % were females. Figure 1 represent the experience of the respondents in the construction industry, where 27.6 % was the highest which represented the category of 6-10 years of experience, followed by 21.1% which represented the category of 11-15 years. Respondents with more than 20 years' experience were only 11.8% whereas the 1-5 years' experience and less than 1 year experience were 17.1% and 10.5 % respectively, of which less than 1 year experience is equal to 16-20 years' experience with 10.5 %.

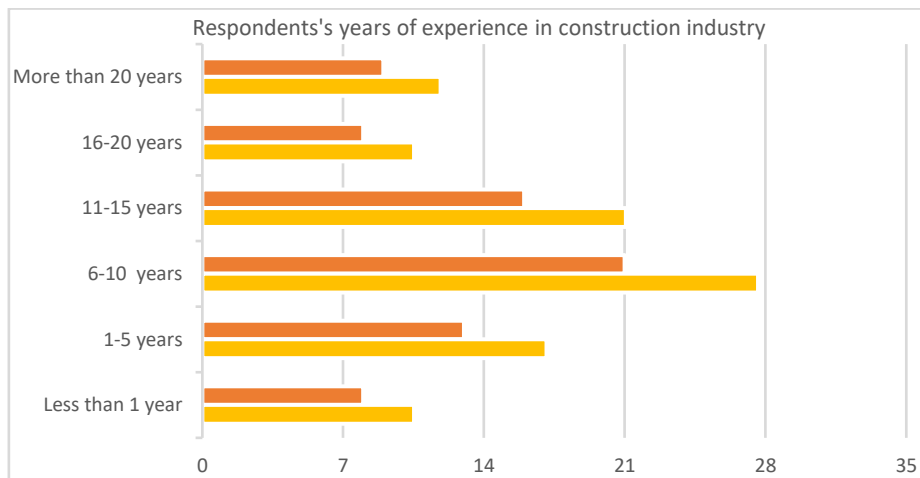


Figure 1. Years of experience in construction industry.

From the 76 respondents 32.9 % of the respondents were civil engineers, 28.9 % were project managers. Respondents of construction managers and construction project managers were equal with 10.5 %. The minority respondents were quantity surveyors and architects with 6.6 % and 1.3 % respectively. Respondents with other different professions are 7.9 %.

4.2 Descriptive Analysis Results

Table 1 below revealed the response of the respondents on the poor effects of performance and Loss of productivity was ranked first with (MIS=3.69 ; SD=1.048); followed by cost overrun which was ranked second with (MIS=3.62; SD=0.988); Disease outbreak was ranked third with (MIS= 3.58; SD=1.035); Time Overrun was ranked fourth with (MIS=3.52; SD=1.065); Environment impact was ranked fifth with (MIS=3.49; SD=0.984).

Conflicts was ranked sixth with (MIS=3.45; SD=0.957); Disputes between owner and contractor; Loss of skilled workers and Creates stress on the contractor was ranked seventh (MIS=3.36; SD=1.085; 1.067 and 1.104) respectively; Reworks was ranked eighth with (MIS=3.28; SD= 1.053); Termination of contract was ranked ninth with (MIS= 3.21; SD=1.037); Default on loan repayment by the contractor was ranked tenth with (MIS=3.16; SD=1.059); Abandonment of project and Liquidation /Bankruptcy was ranked eleventh (MIS=3.12;

SD=1.066 and 1.070); Damage to company's reputation was ranked twelfth with (MIS=2.99; SD=0.846); Poor quality was ranked thirteen with (MIS=2.95; SD=0.814).

Table 1. Bad effects of performance in road infrastructure projects.

| Item | Factors | Mean | SD | R |
|---------|---|------|-------|----|
| EOPP 1 | Loss of productivity | 3.69 | 1.048 | 1 |
| EOPP 2 | Cost overrun | 3.62 | 0.988 | 2 |
| EOPP 3 | Disease outbreak | 3.58 | 1.035 | 3 |
| EOPP 4 | Time Overrun | 3.52 | 1.065 | 4 |
| EOPP 5 | Environment impact | 3.49 | 0.984 | 5 |
| EOPP 6 | Conflicts | 3.45 | 0.957 | 6 |
| EOPP 7 | Disputes between owner and contractor | 3.36 | 1.085 | 7 |
| EOPP 8 | Loss of skilled workers | 3.36 | 1.067 | 7 |
| EOPP 9 | Creates stress on the contractor | 3.36 | 1.104 | 7 |
| EOPP 10 | Reworks | 3.28 | 1.053 | 8 |
| EOPP 11 | Termination of contract | 3.21 | 1.037 | 9 |
| EOPP 12 | Default on loan repayment by the contractor | 3.16 | 1.059 | 10 |
| EOPP 13 | Abandonment of project | 3.12 | 1.066 | 11 |
| EOPP 14 | Liquidation /Bankruptcy | 3.12 | 1.070 | 11 |
| EOPP 15 | Damage to company's reputation | 2.99 | 0.846 | 12 |
| EOPP 16 | Poor quality | 2.95 | 0.814 | 13 |

5 CONCLUSION

Several effects were identified such a loss of productivity, cost overrun caused by change of scope and disease outbreak among other causes; time overrun caused by the variation orders, conflict needs to be manage all the time to avoid disputes between owner and contractor, loss of skilled workers due to several reasons such as death and retirement always occurred within the organization, therefore, skills transfer is needed so that skilled workers can pass the knowledge to the new manpower before they retire; poor performance creates stress on the contractor as the contractor will experience problems such as reworks, termination of contract, default on loan repayment, abandonment of projects, liquidation/bankruptcy and damage to company's reputation. It is recommended therefore, to do it right the first time to avoid reworks, bad reputation, liquidation or even legal actions. Hence, effective communication is the key of any project success.

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