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Delays and cost overruns in the construction of roads: Can the causes be mitigated?

Overview

The inability to complete projects on time and within budget continues to be a chronic problem in Uganda's road construction industry.

During the FY2011/12, it was observed from the monitoring activities of the Budget Monitoring and Accountability Unit (BMAU) that 80% of the road construction projects were experiencing time delays while 40% had cost overruns.

The debate in the industry on how to minimize or eliminate delays and cost overruns has been ongoing for sometime among the various stakeholders and policy makers.

This brief highlights the frequent causes of delays and cost overruns in the road construction industry during the implementation or construction phase and discusses policy recommendations.

Key Issues

- ◆ Delayed payments from the development partners and Government of Uganda (GoU) which attract high rates of interest on certified payments.
- ◆ Inadequate and outdated road designs that are used in the procurement process. So there are changes in scope of the project works arising from the design reviews and unpredictable soil conditions.
- ◆ Inflation which leads to price escalation of materials causing losses to both contractors and funders.
- ◆ Land compensation which usually commences after construction works have began.
- ◆ Weather conditions like prolonged rainy seasons that affect the implementation of key activities.

Background

There is great concern for delays and cost overruns on road construction projects as most of them are financed using tax payers' money. Delays occur when the progress of a contract falls behind the scheduled program. On the other hand, a cost overrun occurs when the final cost of the project exceeds the original estimates.

It is common for large projects not to be completed on time and within the initial project budget as these often experience planning problems in this country. For example, the construction of the Northern by-pass in Kampala

started on August 2004 and was projected to end by November 30, 2006. However, the road was opened in October 2009, about 3 years after the initial completion date.

The final cost for the project was US\$50 million which was around US\$7 million over the initial budget. There are many issues contributing to delays and cost overruns in the road construction industry of Uganda. These are discussed below.

Factors contributing to construction delays and cost overruns

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1. Delayed payments; an issue that cuts across a number of projects. Delayed payments by the development partners, and GoU has had a knock on effect on the activities of the contractors, subcontractors and suppliers. Contractors tend to transfer the burden of accumulated interest to the client, hence causing cost overrun.

Delay of payments to contractors is usually caused by bureaucracy in the public sector and lack of proper documentation, and at times deficiency in transparency. In FY 2012/13 on the Fort Portal-Bundibugyo-Lamia road, the contractor's local component of the payment certificates for both the development partner and GoU amounting to Ug. Shs. 25 billion was in default and overdue by five months after the allowable contractual period.

The contractor threatened to slow down progress citing financial constraints and to claim interest on unpaid sums which would escalate the project costs. Another knock on effect would be the additional time needed to complete the works. On the Mbarara-Kikagati-Murongo bridge project, payments were coming in late and the contractor was threatening to suspend works. Ten Interim Payment Certificates (IPCs) had been submitted between May 2011 and December 2012 but only five had been paid. A case in point was IPC Four that was submitted in May 2012 and payment was made in November 2012. The supervision consultant had also not received any payments for the 2 invoices submitted between October 2012 and December 2012.

2. Inadequate designs; that arise from lack of client awareness, poor financing, insufficient time given to the planning phase, lack of geotechnical expertise, among others. Most road construction projects have suffered from unforeseen ground conditions forcing engineers to redesign or make adjustments during the implementation phase. This then requires the issuance of variations to the contract price and often an award for time extension becomes inevitable. The above factor leads to delays and cost overruns to a project.

The consequences of inadequate designs have proven to be severe for both the engineering and construction phases of a project but are probably even more serious when continued into full-life costing. For instance, on Tororo-Mbale-Soroti road, the contractor could not start works upon commencement in November 2010 due to lack of construction data since the design review was completed six months into the contract period and the first instructions were issued in April 2011. The lack of the required design and changes in the scope of works meant that the contractor had difficulty in executing the works.



A section of Kabale- Kisoro road that flaked off after completion of works. This was attributed to the inadequate design tolerances that were adopted.

3. Change in scope: project scope should define the results to be achieved in specific, tangible and measurable terms. Projects suffer from scope creep, which is a tendency for the project to expand over time

often by changing requirements, specifications and priorities. Change in scope often results in variation of price. Projects experience cost overruns due to change in scope.

Thus it is critical to have a sound change control process to keep the scope changes to a minimum. On construction projects, change in scope is often due to an execution of incomplete designs which lead to variations. Another major cause of change in scope is the varying ground conditions along project roads which usually stretch for over 50-Kms arising from inadequate material investigations.

The process of approving these scope changes is very bureaucratic leading to delays in decision making and adopting of the revised road designs. On Tororo-Mbale-Soroti road, the increased scope of works were not yet formalized by December 2012. These were not handled expeditiously and thus dragged on for close to over one year.

4. Inflation which leads to the escalation of prices of materials such as fuel, equipment costs and other inputs to the projects. The development partners and GoU are also affected as price adjustment is allowed for in most of the contracts. Cost overruns due to inflation are through allowing for a price adjustment.



A section of Ishaka-Kagamba road where the specified road width could not be achieved because of land compensation issues on top of the embankment.

5. Land compensation legalities; that are caused by delays in negotiations and compensation to land owners. Contractors take possession of sites before compensation issues are resolved along some sections on the project road. In most cases, the compensation process commences after the construction works have begun. The situation is worsened by some owners claiming exorbitant sums of money for their property, often these owners deny contractors access to sections of the site.

On Ishaka-Kagamba road, compensation was still ongoing at a contract time progress of 32.5%. This forced the contractor to skip the sections where property has not been compensated by GoU thus affecting the work program and mobilisation.

6. Weather conditions: The issue of prolonged heavy rains has manifested as a challenge on almost all the projects. Heavy rains have continued to slow down the construction works. Earthworks like excavations and filling have however continued with difficulties due to wet weather on all the projects monitored with some road becoming impassable to traffic like on the Vurra-Arua-Koboko road. In the Ishaka-

BMAU BRIEFING PAPER (7/13)

Kagamba project area, a longer rainy season was experienced beyond what was anticipated. The rains persisted for four months from September 2012 heavily impacting on the progress of earthworks. This caused a 16% slippage in works progress and was likely to cause an extension in the contract time. Other causes identified include; inadequate machinery and technical personnel; poor planning, supervision, and site management of the contractors; unreliable supply of materials from the local market; bureaucratic environment protection and mitigation procedures and poor monitoring and control. Conclusions The major causes of delays and cost overruns identified on the road construction projects monitored are; a) delayed payments, b) inadequate design, c) change in scope of works, d) inflation, e) land compensation legalities and f) unpredictable weather conditions. Apart from the weather conditions, all other causes can be reduced or eliminated completely. However, it has been noted that these aspects keep cropping up on almost every project that is implemented. These have also had a heavy impact on the contractors' cash flow as a number of them have kept works going with their own money and in some cases threatened to abandon works.

Recommendations

- Design-Build strategy; there should be improvement in project management; change from the traditional contract type to the design-build type in which the design and construction services are contracted by a single entity. The design-build approach has a number of advantages over the classic-design-bid-build method which include; a single source of accountability, budget management, enhanced communication, faster project implementation and quality control.
- Ensure that thorough designs are undertaken before bidding; this is aimed at minimizing the change in scope of a project. Studies and practice has shown that projects whose designs have been carefully prepared before implementation are more likely to be implemented within the given budget and on time. Stakeholders in the construction

industry should minimize change in scope of work as this is a major cause of cost and time overrun. Where a scope change generates improved benefit, it should be proposed with clear positive and negative impacts allowing timely amendments. The impact of change to the project should be fully reflected in the project's definition and performance criteria.

The site and ground investigations; and their planning, design and appraisal must be fully integrated into the project design and construction process before contractors are procured. This will eliminate claims arising from errors in design and unanticipated ground conditions.

- Improved cash flow; on the part of the government and development partners so as to reduce payment delays. The GoU should ensure that all the certified work and invoices are paid on time to avoid the accumulation of interest on payments that increase the cost of the projects.
- Contractor financing; the provision of debt free working capital to government helps meet some of the many challenges contractors face such as paying employees and suppliers on time. Government is also relieved of the burden arising from delayed payments to contractors.

References

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Budget Monitoring and Accountability Unit (BMAU)

Ministry of Finance, Planning and Economic Development
P. O. Box 8147 Kampala
Telephone: 0414 235055
www.finance.go.ug