ADOPTION OF FORCE ACCOUNT MECHANISM IN ROAD MAINTENANCE WORKS' PROCUREMENTS: STAKEHOLDERS' OPINIONS IN UGANDA

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I. INTRODUCTION

The adoption of the force account model as a mechanism of executing public works is not a new thing. In the business management literature, the model is very akin to the outsourcing-to-insourcing decision (Schniederjans & Zuckweiler, 2004). In the public sector, the model has been widely used in many developing countries especially on the Asian and African subcontinents where the private contractors in those countries are still undeveloped (Engelbert, Kaltenborn, & Reit-Born, 2016; Ohashi, 2009: Rwelamila, Talukhaba, & Ngowi, 2000). The force account mechanism (FAM) broadly refers to contracting for works albeit internally. It is also described in literature as "direct labor", "departmental forces" and "direct work" which typically involves the procuring organization executing the project (typically works procurements) through their own personnel and equipment (Satyanarayana, 2012).

The PPDA Act of 2003, the law under which procurement activities in Uganda are governed, defines FAM as undertaking the works of a procuring organization using own personnel and equipment or of another procuring organization. This same law suggests that there are many advantages to performing work internally including lower costs (on large volume jobs) as it utilizes existing resources that are already available "internally", close monitoring of the quality of work and rapid response as employees who work for the procurement agency, are aware of specific criteria, and can be made accountable. Moreover, there are suggestions that this reduces corruption too (Basheka, Oluka & Mugurusi, 2015). Yet up until this moment and aside from what is currently known from professional literature, FAM is still a mystery in both theory and in practice. In order to remedy this, we attempt to tell a story of how FAM is implemented in Uganda and how stakeholders perceive its implementation. We answer the research question: *how is force account mechanism perceived among stakeholders in the procurement space in Uganda, and what are the key benefits and challenges they face in its implementation*?

In answering this question, we seek to contribute to the public procurement literature by offering an in-depth understanding of FAM as an emergent public procurement model for works: one that empowers procuring organizations to own and manage end-to-end processes internally, thereby ensuring locally tailored service delivery. Without measuring its impact quantitatively, we argue that effective implementation of FAM has significant impact on value for money outcomes.

Contracting often times is a lengthy and time-consuming process and can even be more costly depending on the nature of procurement (Valdovinos & Lorick, 2013). Existing literature suggests that FAM seeks to remedy such obstacles. However, the effectiveness of the FAM approach is largely dependent on the availability of equipment, materials and adequate supervision within the procuring organization. According to Gongera & Petts (2003), FAM does not allow cost systems to reflect the full cost of maintenance; as other expenses such as salaries, unit infrastructure maintenance and initial cost of equipment are paid for by government. Government absorbs all related costs of finance, importation and taxes and other overheads hence the actual total cost over a period is difficult to ascertain; although this can be achieved.

The force account model exposes the government to the greatest degree of risk, since it cannot pass risk on to any other entity besides itself (Satyanarayana, 2012). FAM operations have fundamental inefficiencies including lack of financial discipline because they are not driven by profit motives, a procuring organization will often receive additional budget allocations when it generates cost overruns unlike a private firm that has a rigid budget constraint. In addition, unlike a private firm that must deliver before it is paid, allocations to force account units are often not tied to output. Although its efficiency can be increased through reform, it is unlikely to ever reach the efficiency achieved by contracting out to the private sector (Stock & Jan de Veen, 1996).

II. THE ADOPTION OF FORCE ACCOUNT MECHANISM IN UGANDA

In June 2012, the Government of Uganda made a policy shift from contracting the road maintenance works in Local Governments (LGs) to implementing FAM following the acquisition of a fleet of 1,425 pieces of new equipment distributed to LGs (Budget Monitoring and Accountability Unit (BMAU), 2015). The Ministry of Works and Transport (MoWT) issued guidelines to provide key stakeholders in the financing and implementation of district and urban maintenance program with a framework for approaching specific actions that will need to be taken to implement the force account policy for road maintenance.

The public procurement law (the PPDA act, 2003) was then amended in 2014 to provide for the FAM as a means of execution of public works by the Procuring and Disposing Entity (PDE). Specifically, section 95A of the Act provides for a PDE to undertake, in accordance with the regulations, works using the force account mechanism. The Uganda Government on average allocates about UGX 400 billion (ca. $108 million USD) annually towards national and district roads maintenance through the Uganda Road Fund (Uganda Ministry of Finance Planning and Economic Development, 2016). About 30% of this budget is allocated to road maintenance in the district LGs. Local governments are required to implement road maintenance works majorly by FAM using the guidelines issued by the MoWT and PPDA. Under these same guidelines, FAM is applicable under three interventions, which include: routine mechanized maintenance using light road equipment, periodic maintenance using heavy equipment used to rehabilitate (re-gravel) the district roads and rehabilitation, and then resealing using heavy equipment used to construct and reseal the urban roads.

Like some literature suggests (the PPDA Act, 2003: Satyanarayana, 2012, Asian Development Bank (ADB) Project Administration Instructions (PAI), 2014; Engelbert, Kaltenborn, & Reit-Born, 2016), the implementation of FAM should benefit procuring organizations, through: efficiency gains since the organization is able to execute works much faster than if it procured a contractor. The same literature suggests that the procuring organization attains cost savings through the use of internal resources hence switching these savings to other service needs. In fact, it is also argued that the FAM builds internal capacity of the procuring organization since works are executed and supervised by their own staff.

To contextualize the level of adoption of FAM in Uganda, a review of PPDA procurement audit reports for the financial year 2015/16 revealed that 40% of the audited procurements conducted using the FAM were rated unsatisfactory. The reasons for the unsatisfactory performance included among other aspects: irregularities in the procurement of the inputs used for force account mechanism, delays in executing the works, irregularities in contract management and accountabilities for force account activities among others. In addition, a report by Office of the Auditor General (2015) on the efficiency of road maintenance in Uganda highlighted a lethargy in implementation of the force account policy arising from inadequate understanding and appreciation of the issued implementation guidelines. (Value for Money audit report, 2015). Therefore, in this chapter, a survey of stakeholders was conducted to ascertain their opinions in the implementation of the force account mechanism across local governments in Uganda.

III. METHODOLOGY

To obtain the opinions of stakeholders in implementing the force account mechanism, a mini-survey was conducted. According to Kumar (1990), mini surveys typically focus on a narrowly defined issue, question, or problem. We were keen on contexts and broad patterns, trends, and tendencies rather than in precise measurements as large-scale surveys seek to do, hence our focus on the stakeholders directly involved in the implementation of the FAM.

For each FAM implementing organization, the survey targeted the district engineers, heads of procurement and disposal units and accounting officers. The participants were required to complete a semi-structured questionnaire that was delivered by email and in some cases administered by telephone. A total of 86 participants were invited to participate, out of these 48 (56%) completed the survey.

To increase both methodical strength and the validity of our findings, but also to overcome the challenges of mini-surveys (Olsen, 2004; Bush, 2007; Fielding, 2012), we supplemented survey data, with interviews. In 20I7, we carried out face-to-face interviews with 10 key informants from other relevant authorities in the FAM discourse including the Uganda Road Fund, Ministry of Works and Transport and staff from the performance monitoring department of PPDA.

For the mini-survey data, we use descriptives within Microsoft Excel for data analysis while for the face-to-face interview data, we adopt the constant comparative method (CCM) originally linked to the grounded theory (Glaser & Glaser, 1965). However, our interest in CCM is not in the strictest sense, but more as a basis for reflections on the survey data in order to develop a proposition that emerged that data (Fram, 2013; Boeije, 2002). As such, we used concurrent analyses and complemented this information with the other archival data including the PPDA annual audit reports for the financial years 2015/16 and 2016/17, annual report of the Auditor General for the year 2015.

IV. FINDINGS

4.1. The Force Account Mechanism Implementation: Policy Expectations, Application and Gaps

By its nature, the implementation of the FAM requires that the procuring organization use their own equipment to execute works. A complete road unit set for procuring organization, for example an LG in Uganda would require at least: a motor grader, two (2) dump trucks (tippers), a wheel loader, a backhoe excavator, a compactor (roller) and a water bowser (BMAU, 2015). The survey findings revealed that only 25% of the respondents reported that their procuring organizations had the basic equipment required to execute the works while 75% lacked the required equipment. Respondents further reported that some of the equipment distributed earlier in 2012 were grounded and not reliable due to poor maintenance. The FAM guidelines provide for equipment sharing among procuring organizations, however this has proved unachievable as most times the equipment is in continuous usage and hence not available. The procuring organizations have resorted to hiring which defeats the basic tenets of the FAM policy.

In addition, FAM requires that procuring organizations use their own personnel or of another procuring organization to supervise the works executed. The PPDA law stipulates that Accounting Officers are by obligation required to appoint a public officer to take responsibility for managing the works executed, preparing work plans for approval and a supervisor responsible for supervising the public officer - the force account manager. The findings however revealed that in most of the surveyed procuring organizations the force account manager performed both the roles of managing and supervising the works. The implication of such an action is the compromise of the quality of the works executed. 43% of the sampled respondents reported that their procuring organizations have the required technical personnel while 57% reported that there were no technical personnel to supervise and monitor the force account activities. In these cases, force account activities were manned by people in acting positions who were not very technically competent to supervise the works.

Moreover, since the introduction of the FAM; the concept appeared rather alien to most of the practitioners in the surveyed procuring organizations. The study asked whether the respondents were trained in the processes involved in the implementation of the force account mechanism. Findings revealed that only 32% of the total respondents reported to have been trained on the implementation of the force account mechanism. This includes 46% of the sampled district engineers and 23% of the sampled head Procurement Units that had been trained. Respondents reported that because the stakeholders are not trained, the implementation of the FAM is abused and seen as an avenue to earn allowances. The survey further revealed capacity gaps in the work planning, procurements of inputs for force account, monitoring force account activities among others.

The survey further sought the opinions of respondents on whether the force account mechanism led to enhancement of internal capacity of the procuring organizations since works were executed and supervised by their own staffs. The findings suggest that 30% of the surveyed respondents affirmed that there was enhancement of internal capacity, 43% of the sampled respondents disagreed while 27% were not sure.

On the aspect that the implementation of the force account mechanism was envisaged to bring about efficiency gains since the procuring organizations were able to execute works much faster than if contractors were procured. The survey findings revealed that 66% of the respondents agreed that the force account mechanism was efficient, 25% disagreed while 9% were not sure. Respondents reported that there was laxity from the force account managers in implementation of the works due to poor supervision and monitoring compared to contracting where the assignment is measured against the terms and conditions stated in the contract.

The PPDA Law required that the indirect and overhead costs to be incurred by a procuring organization using FAM are compared with the cost that would be incurred if a contractor executed the assignment. The survey sought to establish whether procuring organizations conducted comparisons to assess whether it was cheaper to use the FAM or contract out the works. The study revealed that only 32% of the respondents reported that they conducted a comparison study before they implemented the FAM where as 68% did not conduct the cost comparison study. The argument provided by the respondents is that since this was executive directive, the mechanism was implemented whether it is cheaper or not. Without this cost comparison, it is difficult to ascertain whether the government is saving because of using the force account mechanism.

Does FAM result into cost savings? One of the benefits envisaged for the application of the force account mechanism was that there would be cost savings attained using internal resources and therefore the procuring organization would be able to deliver services at a cheaper cost. The survey sought the opinions of the respondents on whether the force account mechanism leads to cost saving in public procurement system – in general. 34% acknowledged that the force account mechanism is cost saving, 43% of the respondents do not acknowledge that the implementation of the force account mechanism reduces costs while 23% were not sure about whether the mechanism saves costs or not. Respondents revealed that due to lack of equipment, there are additional costs of hiring and maintenance costs where the equipment is available.

4.2. Implementing Force Account Mechanism: What were the stakeholders Concerns?

Having reported several gaps on how stakeholders implemented the FAM policy, some concerns to explain the unsuccessful implementation are presented here below.

Firstly, there was a consistent view about the lack of adequate and reliable equipment generally. The force account equipment units allocated to most of the local governments were not complete. In most procuring organizations, the equipment was unreliable for example the tractors and graders had major mechanical problems, causing them to break down during the execution of works. This led to delays in the execution of works as the procuring organizations waited for the equipment to be repaired. The procuring organizations incurred high costs of hiring equipment where there was no equipment to execute the works which usually compromised on the scope of works to be covered. For example, hiring a grader would cost between UGX 1M and UGX 1.5M ($270-$405) per day, which typically causes financial loss to Government. One respondent observed that:

> The provider will charge per day regardless of whether the equipment is used or not, with the bureaucracies in government processes, sometimes hiring is done and the works are not executed right away.

It was also common that skilled personnel and staffing gaps were quite prevalent in most LGs. These staffing challenges in the local governments meant that the execution and supervision of the force account projects were visibly dependent on mostly one individual.

> The one responsible for preparing work plans and executing the works is the same person responsible for supervision of the works" reported a respondent.

It was also noted that the required technical personnel as highlighted in the MoWT guideline that is the headmen, road overseers, civil and mechanical foremen were not provided for in the public service organization structure. This greatly affected the monitoring and supervision of works and hence leading to poorly executed works.

More so, inadequate training on the implementation of the FAM especially to the key stakeholders including the political leaders, accounting officers, procurement staff and district engineers who did not clearly understand the guidelines on the implementation of the mechanism. In addition, the road equipment operators were not adequately trained on the management of this equipment which leads to poorly maintained equipment. The MoWT through Mt Elgon Labor Based Training Centre (MELTC) in Mbale district trains district local government engineers and other technical staff on how improve their own road network. However, the facilitation for these trainings is dependent on the budgets of the procuring organizations which are most times not adequate to enable trainings for the key staff involved in implementing the FAM.

Another challenge is that Local Governments received inadequate funds for maintenance of roads where FAM is applied. For example, the funds received were not sufficient to especially facilitate the repairs for broken down equipment. This led to delays in the execution of works or even cancelled projects.

The survey further revealed that with the implementation FAM, there was a risk of poor accountability for funds because of irregularities in the procurement of inputs for the FAM where the funds allocated for force account activities are disbursed directly to the force account manager who in most cases procured the materials directly. In addition, there was laxity in the submission of reports from the supervisors of the activities. In some cases where the inputs were used for multiple activities, it was difficult to ascertain the exact quantity used for a particular activity. This made it difficult to monitor and audit the performance of works executed. Stakeholders reported that for most of the works executed using the FAM, the terms were at the discretion of the force account manager and therefore there were no internal controls to ensure quality of the works executed.

There are gray areas in the Force Account guidelines for instance the remuneration for the road gangs, headmen as stated in the guidelines is too low and unrealistic. The guidelines state that road workers will be employed on a one (1) year contract (renewable) and at a gross monthly salary of UGX 100,000 ($207) for the gangs and UGX 150,000 ($402) for the headmen. The standard rates provided by the road fund did not put into consideration the terrain and the different challenges of the geographical regions. The guidelines were also not clear on equipment sharing and hiring.

V. DISCUSSION

The survey findings suggest significant capacity challenges within most implementing organizations. Like Thai et al. (2005) and Amemba, Nyaboke, Osoro, and Mburu (2013) observe, procurement systems in most developing countries are still undergoing reforms, as such they struggle with embedded legacies of the traditional public service. These systems require gradual change for the entire procurement system to function effectively (Schapper, Veiga Malta & Gilbert, 2006). In the Ugandan case, procuring local governments were not prepared to undertake road maintenance by FAM. The mechanism was rolled out amidst capacity challenges for example inadequate personnel that were not provided for within the existing human resource structures and yet the effectiveness of the FAM is largely dependent on the availability of the required personnel to manage its implementation.

To achieve value for money, the model should be critically evaluated in terms of the value of money spent by the Government in the procurement of the equipment and implementation of the policy as a whole compared to contracting of works in local governments. This is predominantly a make or buys decision, i.e. the trade of using in-house services in appropriate circumstances (Tadelis, 2002). The proponents of the make or buy thinking argue that the deciding factor is the transaction costs of making on one hand or buying in the other hand (Parker & Hartley, 2003). The push for adoption of the FAM was the notion that in-house transaction costs were much lower than if external contractors were used, but also would use available capacity available internally. Indeed, the findings confirm the benefits of implementing the policy from the stakeholders' perspective, the basis of which guide the modalities of implementing the mechanism. The stakeholders' opinions also show that the costs of maintenance as compared to the planned works is well justified. But to effectively implement this, as we reported above, requires internal capacity to tie in with the positive inertia to do it.

The findings suggest that that feasibility studies were not carried out to establish if resources and structures available could support the implementation of the FAM. The legal framework even though available did not empower the implementing units to adopt this approach, partly because this was not comprehensive enough. In order to achieve efficiency and effectiveness, the FAM should be implemented when it has been demonstrated to be cheaper or more effective than other contracting methods.

Finally, the implementation of the FAM was perceived to impact on the growth of the private sector. Zhang (2005) argues that reform in the public sector must work in tandem with the growing private sector, under the "public–private win–win principle". This is a strong argument for developing country public sectors that depend significantly on the supply base heavily dominated by the private sector. Particularly for infrastructure projects, Kwak, Chih, and Ibbs (2009) suggest that capacity for the public sector to generate knowledge and therefore decisions that drive value for money actions is limited because it's swamped up. As such the private sector closes this gap quite well. So, if the governments are currently introducing policies and strategies to promote the local industry so as to increase promote human capital development and creation of employment to foster local economic development and wealth creation for their nationals, would the FAM mechanism be the way to go? It was therefore observed that FAM was likely to hinder the benefits of local construction industry as all the works would eventually be executed using the equipment and personnel of the government.

VI. CONCLUSION

From this study, we can conclude that while it may be logical that governments can save money when procuring organizations use their own equipment and personnel rather than an estimate which is calculated to include the overheads and profits of an external provider, stakeholders if not sensitized, tend to view a new policy (in this case, FAM) as “another-one-of-those-policies”. For example, the findings in this paper indicate that stakeholders have reservations on the benefits of using this mechanism within their existing procurement space. Most of the challenges that inhibit FAMs implementation are beyond their control realms of the procurement organizations. From this evidence, we have proposed that government needs to address these challenges if it is to benefit from its implementation.

We suggest strengthening the training of stakeholders on the implementation of the mechanism; emphasize the need for efficient and effective work planning and comparative studies between using the FAM and other contracting mechanisms and ensure that there is accountability for materials and public resources used during the implementation of this mechanism. The oversight authority could be more effective in enforcing its implementation, by putting focus on monitoring of force account mechanism procurement activities. This could be through conducting contract audits on works executed and especially those whose circumstances suited this method.

To ensure value for money, Government agencies need to review the existing policies and guidelines governing the implementation of FAM. It is evident that the existing guidance from the competent organizations has not been fully operationalized, hence the inherent challenges in road maintenance works for those that implement it. Our findings suggested that those at the periphery like the local governments suffered most.

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REFERENCES

ADB PAI (2014, August). *Procurement Methods in Special Circumstances and Other Procurement Arrangements* (PAI 3.0713). [Online]. Available at https://www.adb.org/sites/default /files/institutional-document/33431/pai-3-07.pdf. (Accessed on February 10, 2018).

Amemba, C. S., Nyaboke, P. G., Osoro, A., & Mburu, N. (2013). “Challenges Affecting Public Procurement Performance Process in Kenya.” *International Journal of Research in Management, 3*(4): 41-55.

Basheka, B.C., Oluka, P.N., & Mugurusi, G. (2015). “Citizen-Driven Approaches for Combating Public Procurement Corruption in Uganda's Local Government Systems: An Empirical Survey.” *International Journal of Logistics Systems and Management, 21* (4): 442-464.

BMAU (June 2015). “Using Force Account for Road Maintenance: Were Local Governments Ready?” (Briefing Paper). Kampala, Uganda. [Online]. Available at http://mambosms.ug/Data/atha/finance/ dmdocuments/BMAU%20Briefing%20Paper%2017%20%20Using %20Roce%20Account%20for%20road%20maintenance%20%20 Were%20Local%20Governments%20ready.pdf.

Boeije, H. (2002). “A Purposeful Approach to the Constant Comparative Method in the Analysis of Qualitative Interviews.” *Quality and quantity*, *36*(4): 391-409.

Bush, T. (2007). “Authenticity in Research–Reliability, Validity and Triangulation.” *Research Methods in Educational Leadership and Management*, *91*: 75-87.

Engelbert, A., Kaltenborn, M., & Reit-Born, N. A. (2016). *Effective Corruption Control: Supplier Remedies in Public Procurement in Kenya, Uganda and Tanzania - A Comparative Analysis of Mechanisms and their Implementation* (Vol. 68). Berlin, Germany. Logos Verlag Berlin GmbH.

Fielding, N. G. (2012). “Triangulation and Mixed Methods Designs: Data Integration with New Research Technologies.” *Journal of Mixed Methods Research*, *6*(2): 124-136.

Fram, S. M. (2013). “The Constant Comparative Analysis Method Outside of Grounded Theory.” *The Qualitative Report, 18*(1): 1-25.

Glaser, B. G., & Glaser, B. G. (1965). “The Constant Comparative Method of Qualitative Analysis.” *Social Problems, 12*(4): 436-445.

Gongera, K., & Petts, R. C. (2003). “A Tractor and Labour Based Routine Maintenance System for Rural Roads.” (LCS Working Paper No. 5). Institution of Agricultural Engineers. Zambia. [Online]. Available at http://research4cap.org/Library/Pettsetal-2017 IntroductionTractorBasedRuralRoadMaintenanceZambia-T22017-170501-1.pdf.

Uganda Ministry of Finance Planning and Economic Development (2016). “National Budget Framework.” (Working Paper). Kampala, Uganda: Author. [Online]. Available at http://budget.go.ug/budget/sites/default/files/National%20Budget%20docs/National%20Budget%20Framework%20Paper%20(NBFP)%20FY%202016-17.pdf.

Kumar, K. (1990). *Conducting Mini Surveys in Developing Countries* (No. 15). Washington, DC: US Agency for International Development.

Kwak, Y. H., Chih, Y., & Ibbs, C. W. (2009). “Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development.” California Management Review, *51*(2): 51-78.

Office of the Auditor General (2015). *Annual Report of the Auditor General for the Financial Year Ended 30th June 2014 (Volume 5): Value for Money Audit*. Kampala, Uganda. [Online]. Available at http://www.oag.go.ug/wp-content/uploads/2015/06/Volume-5-Annual-Report-of-the-Auditor-General-For-the-Year-ended-30th-June-2014.pdf.

Ohashi, H. (2009). “Effects of Transparency in Procurement Practices on Government Expenditure: A Case Study of Municipal Public Works.” *Review of Industrial Organization*, *34*(3): 267-285.

Olsen, W. (2004). "Triangulation in Social Research: Qualitative and Quantitative Methods Can Really Be Mixed." *Developments in Sociology*, *20:* 103-118.

Parker, D., & Hartley, K. (2003). "Transaction Costs, Relational Contracting and Public Private Partnerships: A Case Study of UK Defence." *Journal of Purchasing and Supply Management, 9*(3): 97-108.

Rwelamila, P. D., Talukhaba, A. A., & Ngowi, A. B. (2000). "Project Procurement Systems in the Attainment of Sustainable Construction." *Sustainable Development*, *8*(1): 39-50.

Satyanarayana, J. (2012). *Managing Transformation: Objectives to Outcomes*. New Delhi, India: PHI Learning Pvt. Ltd.

Schapper, P. R., Veiga Malta, J. N., & Gilbert, D. L. (2006). "An Analytical Framework for the Management and Reform of Public Procurement." *Journal of Public Procurement, 6*(1&2): 1-26.

Schniederjans, M. J., & Zuckweiler, K. M. (2004). "A Quantitative Approach to the Outsourcing-Insourcing Decision in an International Context." *Management Decision, 42*(8): 974-986.

Stock, E. A., & de Veen, J. (1996). "Expanding Labour-Based Methods for Road Works in Africa." (Sub-Saharan Africa Transport Program (SSATP) Working Paper Series No.22). Washington, DC: World Bank.

Tadelis, S. (2002). "Complexity, flexibility, and the Make-or-Buy Decision." *American Economic Review, 92*(2): 433-437.

Thai, K.V. et al. (Eds.). (2005). *Challenges in Public Procurement: An International Perspective*. Boca Raton, FL: PrAcademics Press.

Valdovinos, V.P.E. & Lorick, H. C. (2013, September 3). "Getting Maintenance Work Done: In-House or by Others." (Water Online). [Online]. Available at https://www.wateronline.com/doc/getting-maintenance-work-done-in-house-or-by-others-0001 (Accessed: 02.05.2018)

Zhang, X. (2005). Critical Success Factors for Public–Private Partnerships in Infrastructure Development." *Journal of Construction Engineering and Management, 131*(1): 3-14.