PRIVATE FINANCE INITIATIVE AS A TOOL FOR BRIDGING THE INFRASTRUCTURAL DEFICIT IN DEVELOPING ECONOMIES

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A critical factor in the economic growth of any nation is its infrastructural development. For most developing countries, such as South Africa, the infrastructural deficit has been experienced over the years mainly due to low gross domestic savings. A viable tool in shoring up for the shortfalls of infrastructural investment is the private finance initiative (PFI), as it makes provision for private sector financing of construction projects. On this basis, this study seeks to assess the drivers of PFIs in the South African construction industry. Using a quantitative approach, the study elicited data from relevant stakeholders in the built environment. Retrieved data were subjected to data analysis methods such as mean item score, Kruskal Wallis h-test, and SNK post-hoc test. The analysis findings show that the most significant propelling measure for PFIs in the South African construction industry is overcoming public sector budget constraints, timely project completion, and improved service delivery. Based on the study’s conclusion, recommendations were made to help propagate the inclusion of PFI as an alternative for project financing in South Africa.

Keywords: PFI, Economic growth, Project financing, Infrastructure.

1 INTRODUCTION

The construction industry is a vital sector in the economy of any nation as it plays a significant role in the engagement of national development (Rangelova 2015). It is attributed to the creation of infrastructural development, which also serves other sectors of the economy. In the regulation of economic activities, the government uses the construction sector as a tool for stimulating the viability and resilience of the economy (Ikuabe et al. 2021). Furthermore, the construction industry serves as a massive employer of labour both in the formal and informal sectors (Statista 2021) while also contributing significantly to the Gross Domestic Product (GDP) due to its significant contributions to socio-economic development (Anugwo et al. 2018). All these give credence to the notion that the construction industry is indispensable to the economy of both developed and developing nations.

Due to low gross domestic savings, governments of emerging economies seek to pursue alternative funding models for infrastructure delivery. Moreover, the traditional route of construction project delivery has been portrayed to be overwhelmingly attributed to an array of challenges that pose antithetical to expected deliveries (Pitt et al. 2006). Procurement systems manage the delivery procedures of a construction project in various ways and are vital in deciding
the success or failure of any given project (Thwala and Mathonsi 2012). This calls for embracing other procurement models that seek to shore up the pitfalls of the conventional/traditional procurement method. One such is the private finance initiative (PFI). As one of the variants of the public-private partnership setup, this system uses private-sector financing to facilitate project delivery (Akintoye et al. 2003). In a PFI arrangement, the private sector is responsible for designing, constructing, operating, and financing brand-new infrastructure facilities for a long concession period. The deployment of this procurement route presents a two-prong facet deliverable: value for money and risk transfer (De Marco and Mangano 2013). Consequently, giving an edge over the use of the traditional procurement approach while also helping shore the infrastructure deficit through the provision of financing enabled by private entities. On this premise, this study evaluates the propelling measures for the embracement of PFI as a funding model and procurement method for infrastructure delivery in the South African construction industry with a view to boosting the funding capacity and demands for project delivery for increased economic growth.

2 LITERATURE REVIEW

According to Rashid et al. (2006), using PFI for construction project delivery has become increasingly common over the last three decades. Several nations of the world are using this in shoring the gap of financial inadequacies in anticipation of actualising the needed infrastructural demands. Moreover, this construction procurement route emanates from the need for governments with limited financial resources to seek alternative sources of funding public projects to meet the rising population and economic targets (Osei-Kyei and Chan 2015). Consequently, the participation of the private sector in delivering infrastructure provisions through PFI creates a viable platform that synergizes the strongholds of both the public and private sectors. This is achieved by leveraging the strengths of both sectors, thereby producing expected deliverables at an optimised cost, on schedule, with appropriate risk management, conformance to quality, and within optimum efficiency (Akintoye et al. 2003).

The PFI procurement approach is noted to be a viable option in driving the completion of construction projects on schedule. Oyieyo (2020) indicated that through public and private entity alliances in the delivery of construction projects, there is a significant likelihood of timely execution of projects. Hence, this serves as a propelling measure for using the funding model, as most construction projects are still prone to delays and time overruns for project delivery. Also, there is guaranteed delivery of healthy competitiveness with PFIs. This aids in bringing the best value for money. Buzzetto et al. (2020) affirmed that increasing procurement competition benefits all parties involved, including government agencies, taxpayers, and the private sector. Procuring goods and services in a competitive market encourages businesses to improve their productivity and creativity while discouraging anti-competitive practices (Grandia and Meehan 2017). Attracting private sector investment in construction projects, eliminating corruption (bid rigging, bribes, and misrepresentation), recognizing intellectual property rights, and making ethical decisions are all bolstered by an effective competition strategy (Sulser 2018).

The complementary synergy between public and private entities in the delivery of construction projects through PFI aids in resolving the impasse of public sector budget constraints. Due to low gross domestic savings in most emerging economies, alternative sources of financing infrastructural development are fast gaining attention (Ikuabe et al. 2022). Hence, seeking to shift the burden of infrastructure finance to private entities serves as a significant boost toward the exploration of PFI for most countries. Also, the prospect of improved service delivery is an instigator of using PFI for construction project delivery. During the course of the contract, the private entity is liable for ensuring that the delivered asset and service consistently meets agreed-
upon quality requirements. Harnessing the expertise of the private entity whose funding obligation would aid in the delivery of the project helps in attaining optimised service delivery (Grimsey and Lewis 2007). Furthermore, the encouragement of transparency in the construction project procurement process is a significant driver for its use. Fombad (2013) noted that an efficient procurement framework hinged on a transparent process that fosters openness and public scrutiny is hugely encouraged. PFI, as a procurement method and funding model is centered on the transfer of risk. To reduce its exposure to potential losses, the public sector partner is looking to outsource the provision and operation of the necessary public infrastructure and services. Several of these risks include meeting project deadlines, budgets, quality, etc. (Ameyaw and Chan 2013).

3 RESEARCH METHODOLOGY

The study employed a post-positivism philosophical stance aided by a quantitative method in eliciting data through a survey technique from construction professionals in Gauteng province, South Africa. This was aided by using a questionnaire as the research instrument that was electronically administered. According to Tan (2011), a questionnaire can acquire quantifiable data and reach out to a large population within a short time frame. The professionals that made up the population of the study included architects, quantity surveyors, construction managers, construction project managers, and engineers. The questionnaire was made of two sections, the former sought data on the background information of the target respondents, while the latter enquired about the drivers of the PFI for construction project delivery in South Africa. A total of seventy-three respondents partook in the survey, and all respondents adequately captured and gave answers to all questions. The method of data analysis used for the study was mean item score (MIS), Kruskal Wallis $h$-test ($K-W$), and Student Newman Kauls (SNK) post hoc test. MIS was used in ranking the identified drivers of PFI in the South African construction industry. At the same time, the Kruskal Wallis $h$-test was employed in ascertaining the likelihood of the statistical difference in the opinions given by the different groups of professionals. Also, the SNK post hoc test showed the difference in the mean responses of the classified respondents based on their professional classification. The reliability and validity of the research instrument used for the study were assessed with the aid of Cronbach’s alpha test, which gave an alpha value of 0.803. This affirms the excellent validity and reliability of the research instrument since the alpha value is closer to 1.00 and above the cut-off value of 0.7 (Tavakol and Dennick 2011).

4 FINDINGS

4.1 Background Information of Respondents

The first section of the research instrument reflected the respondents’ background information that partook in the survey. Findings show that 52.38% of the total respondents are male, while 47.62% are female. Based on the highest educational qualification obtained by the respondents, 36.51% possess an honour’s degree, 31.75% have a bachelor’s degree, 15.73% have a master’s degree, 14.76% have a diploma, and 1.25% have a doctorate. Also, based on the professional affiliation of the respondents, 32.36% of the total respondents are quantity surveyors, 24.5% are construction project managers, 19.66% are construction managers, 12.07% are civil engineers, 9.52% are architects, 1.89% are service engineers. Concerning the years of professional experience, 34.92% of the total respondents have 5-10 years, 26.98% have 5-10 years, 23.81% have 10-15 years, 11.25% have 15-20 years, and 3.04% have less than 12 months. Based on the employment designation of the respondents, 38.5% work for contracting organisations, 33.7% are affiliated with consulting firms, and 27.8% work in government establishments.
4.2 Propelling Measures for PFI

The review of extant literature identified ten drivers of PFI in the South African construction industry. These were presented to the target respondents of the study for rating based on their significance using a Likert scale. The data retrieved from the survey was subjected to analysis using MIS for ranking the drivers and the Kruskal Wallis $h$-test to ascertain the difference in the opinion given by the sampled professionals. Table 1 shows the result of the analysis conducted, which indicates the ranking of the identified drivers of PFI in the South African construction industry. A cursory view of the ranked drivers shows that they all have a mean score above 3.50, reinforcing the significance of the identified drivers. The most ranked driver is solving public sector budget constraints, with a mean score of 4.43. This is closely followed by timely project completion with a mean score of 4.11. The third-ranked driver is improved service delivery, with a mean score of 4.05. The least ranked drivers are performance measurement and contract flexibility having mean scores of 3.84 and 3.75, respectively. Also, the difference in the opinion the respondents gave based on their professional designation was ascertained using $K-W$. The result shows that from the ten identified drivers, there was no significant difference in the respondents’ opinion for nine drivers. These drivers have a $p$-value above 0.05, thus implying a convergence in the opinions of the professionals on these nine drivers. However, one of the drivers (long-term cost certainty) has a $p$-value less than 0.05, which indicates that there is a divergence in the opinions of the professionals for this driver.

Table 1. Drivers of PFI.

<table>
<thead>
<tr>
<th>Drivers</th>
<th>$\bar{X}$</th>
<th>R</th>
<th>$K-W$</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solving public sector budget constraints</td>
<td>4.43</td>
<td>1</td>
<td>3.227</td>
</tr>
<tr>
<td>Timely project completion</td>
<td>4.11</td>
<td>2</td>
<td>9.561</td>
</tr>
<tr>
<td>Improved service delivery</td>
<td>4.05</td>
<td>3</td>
<td>3.925</td>
</tr>
<tr>
<td>Risk transfer</td>
<td>4.03</td>
<td>4</td>
<td>8.739</td>
</tr>
<tr>
<td>Value for money</td>
<td>4.03</td>
<td>4</td>
<td>1.252</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>4.00</td>
<td>6</td>
<td>1.337</td>
</tr>
<tr>
<td>Transparency</td>
<td>3.98</td>
<td>7</td>
<td>2.378</td>
</tr>
<tr>
<td>Long-term cost certainty</td>
<td>3.95</td>
<td>8</td>
<td>4.278</td>
</tr>
<tr>
<td>Performance measurement</td>
<td>3.84</td>
<td>9</td>
<td>3.263</td>
</tr>
<tr>
<td>Contract flexibility</td>
<td>3.75</td>
<td>10</td>
<td>5.724</td>
</tr>
</tbody>
</table>

N.B: $\bar{X}$ = Mean Item Score; $K-W$ = Kruskal Wallis $h$-test

Table 2. SNK post hoc test.

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Subset for alpha=0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Quantity Surveyors</td>
<td>10</td>
<td>2.7297</td>
</tr>
<tr>
<td>Engineers</td>
<td>10</td>
<td>2.3373</td>
</tr>
<tr>
<td>Construction Managers</td>
<td>10</td>
<td>3.6281</td>
</tr>
<tr>
<td>Construction Project Managers</td>
<td>10</td>
<td>3.4548</td>
</tr>
<tr>
<td>Architects</td>
<td>10</td>
<td>3.2573</td>
</tr>
<tr>
<td>Sig.</td>
<td>1.000</td>
<td>.173</td>
</tr>
</tbody>
</table>

The result of the Student Newman Kauls (SNK) post hoc test is presented in Table 2. It shows the multiple comparisons of the opinions given by the professionals making up the survey’s target population. The outcome of the analysis shows that there is a difference in views of the drivers of PFI in the South African construction industry for two groups of professional designations. The first group includes quantity surveyors and engineers, having values of 2.7297 and 2.3373,
respectively. The second group entails construction managers, project managers, and architects with values of 3.6281, 3.4548, and 3.2573, respectively.

5 DISCUSSION

The study’s findings present the significant drivers of PFI in the South African construction industry. Notable among the drivers is the provision of funding for infrastructure development due to paucity or dwindling financial resources on the part of the government. This has led to low gross domestic savings, potentially hindering the government's funding capacity for infrastructural projects. Hence, embracing PFIs would aid in solving public sector budget constraints. This is corroborated by Ikuabe et al. (2021) as well as Ameyaw and Chan (2013), who affirmed that due to low gross domestic savings in most emerging economies, alternative sources of financing infrastructural development are fast gaining attention. Hence, seeking to shift the burden of infrastructure finance to private entities serves as a significant boost toward the exploration of PFI for most countries. Furthermore, the pursuit of timely completion of construction projects serves as a significant propelling measure toward using PFI as a procurement route for construction projects. The PFI procurement approach is noted to be a viable option in driving the completion of construction projects on schedule. Oyieyo (2020) indicated that through public and private entity alliances in the delivery of construction projects, there is a significant likelihood of timely execution of projects. Also, improving service delivery is a major factor in pushing for PFIs in the South African construction industry. This is affirmed by Grimsey and Lewis (2007), who stated that during the course of the contract, the private entity is liable for ensuring that the delivered asset and service consistently meets agreed-upon quality requirements. Harnessing the expertise of the private entity whose funding obligation would aid in the delivery of the project helps in attaining optimised service delivery.

6 CONCLUSION AND RECOMMENDATIONS

The study presents the findings of the prospects of PFIs as a bridging gap for the infrastructure deficit in South Africa. As most emerging economies struggle with dwindling gross domestic savings, exploring other viable funding models for infrastructural projects is gaining attention. Also, the bottlenecks associated with the conventional procurement route are fast giving credence to the need for using other procurement methods. The outcome of this study presents the significant drivers of PFI in the South African construction industry. The top-rated drivers are Solving public sector budget constraints, Timely project completion, and Improved service delivery. Also, it is revealed that there is no statistical difference in the opinions given by the respondents on nine of the ten identified drivers of PFI in the South African construction industry. While for one of the drivers, long-term cost certainty, there is a statistical difference in the opinions the respondents gave based on their professional designation. Based on the study's findings, it is recommended that legislation and laws be enacted to create a viable field for welcoming prospective private entities that would want to form collaborations with the public sector to deliver infrastructural projects. The creation of enabling grounds would aid in fostering the needed alliance for forming PFIs. Moreover, relevant stakeholders saddled with the responsibility of the administration of government functions should imbibe the concept of embracing procurement routes other than the conventional approach since methods such as PFI seeks to proffer solutions to some of the challenges.
References


