



REVIEW ARTICLE

Impact of project financiers' strategies on de-risking infrastructural projects: A conceptual review

Ashoke D. Maliki*, Taiwo A. Muritala, Saji George, Frank A. Ogedengbe

Abstract

Infrastructure projects encounter significant risks which often deter financiers from investing in them. To address these risks, financiers have developed and applied several strategies aimed at encouraging investment. Therefore, this study reviewed several literatures from the past ten years on the strategy used by both public and private financiers to reduce risks and encourage investment in infrastructure projects. From the literature reviewed, several strategies such as risk allocation & mitigation, blended finance, issuance of green bonds, and stakeholders' engagement in project selection were utilized by major project financiers in making investment decisions. Other factors such as political stability, economic indicators, insurance & guarantees, and legal & regulatory framework were also identified to positively impact investment decisions on infrastructure projects. From the findings, a conceptual framework linking the project financiers' proxies (risk allocation & mitigation, blended finance, issuance of green bond, and stakeholders' engagement in project selection) to that of the proxies of de-risking (political stability, economic indicators, insurance & guarantees, and legal & regulatory framework) was developed with the outcome showing the positive impact of both proxies on project financiers' investment decision. The magnitude of the impact of each proxy on investment decisions is a subject of future study.

Keywords: Project financiers, Strategy, De-risking, Infrastructure project.

Introduction

Infrastructure projects are essential for economic growth, job creation, connectivity, competitiveness, sustainability, social development, and technological advancement. They provide the foundation for societies and economies to prosper and improve the overall quality of life for people. Embarking on infrastructure projects can offer numerous benefits, such as improved transportation, enhanced economic development, and better quality of life. Infrastructure projects can be financed by various entities depending on the specific project and its location. Some key project financiers identified to finance infrastructure

projects include government, development banks, private investors, public-private partnerships, multilateral organizations, export credit agencies, sovereign wealth funds, and infrastructure bonds.

Therefore, access to long-term financing is a crucial enabler of economic expansion (Enoch, 2018). These project financiers play a crucial role in providing the finances and expertise required to create and implement infrastructure projects. However, their interest in investing in infrastructural projects is being slowed down by an associated number of growing risk factors. Using data from 23 nations between 1996 and 2016, (Phan *et al.*, 2021) identified economic policy uncertainty as a detrimental factor affecting financial stability. Similarly, (Canh *et al.*, 2020), investigation into the effects of domestic and global economic policy uncertainty on net inflows of foreign direct investment for 21 economies over the period 2003–2013 discovered that while domestic economic policy uncertainty has a negative impact on inflows, an increase in global economic policy uncertainty may increase inflows of foreign direct investment into the nation.

Similarly, in their study on the delivery of an urban megaproject in post-socialist central and Eastern Europe, Grubbauer & Čamprag, (2019) demonstrate how changes to national law were crucial for defining the public interest in investing, making certain contract types technically legal, and lowering the risks associated with private investor

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How to cite this article: Maliki, A.D., Muritala, T.A., George, S., Ogedengbe, F.A. (2023). Impact of project financiers' strategies on de-risking infrastructural projects: A conceptual review. *The Scientific Temper*, 14(4):1419-1425.

Doi: 10.58414/SCIENTIFICTEMPER.2023.14.4.53

Source of support: Nil

Conflict of interest: None.

involvement. Likewise, Cecere *et al.*, (2020) identified financial constraints for funding of internal and external infrastructure projects. Additionally, Enshassi *et al.*, (2020) identified a lack of investment in Infrastructure projects to excessive geometric variability risks and misleading risk profiles.

Similarly, (Li *et al.*, 2021) identified cost overruns linked to construction and installation, land acquisition and resettling, and information sharing with the public as being the most significant risk factor militating infrastructure development projects. Likewise, S. A. R. Khan *et al.*, (2019) identified environmental and social factors such as political instability, natural disaster, and terrorism as the primary causes of poor economic growth and environmental sustainability which by extension means poor investment in infrastructure projects. According to Campbell-Verduyn *et al.*, (2021), banks and other financial institutions have moved to withdraw financial services from many emerging economies as a de-risking strategy as a consequence of re-regulatory efforts following the 2007-2008 global financial crisis, and having perceived that the markets as posing greater risks. Abiru, (2022) stated that the lack of interest in private sector investors in infrastructure projects may be due to some negative perception of risk in certain regions. He asserted that regions like Asia, North America, Europe, and the Middle East, continue to attract the minimum volume of annual global foreign investment as compared to Africa.

Given the numerous challenges mitigating investing in Infrastructure projects for economic development, the overall aim of this study is to investigate the impact of the strategies used by project financiers to address risks that hinder investment in infrastructure projects. In summary, infrastructure projects' risk as well as the project financiers' strategies shall be identified and investigated. The researchers shall develop, based on the body of literature, a conceptual framework linking the identified project financiers' strategy to risks hindering investments in infrastructure projects.

Materials and Methods

The financing of infrastructure projects is confronted by significant risks that may deter financiers from investing in them. To address these risks, financiers have developed several strategies aimed at de-risking projects. World Bank in financing the implementation of the solar photovoltaic (PV) utility-scale program in Zambia recognizes risk identification as an important phase to project success before the commencement of the project (Chama, 2020). Likewise, Khan *et al.*, (2022) stated that government needs to adopt a targeted risk absorption strategy that negotiates marks up with interested firms to attract investors. Blending Support has been identified by Van Waeyenberge *et al.*, (2020) as a de-risking technique utilized as a success factor for expanding private sector finance involvement in project financing. Blending mechanisms share projects' longer-term

risks amongst the project financiers (development agencies), and the recipient governments. However, this approach is not without concerns. Schindler *et al.*, (2023) stated that the financialization of development enables global capital financiers of infrastructure by institutionalizing of risk distribution, reward, and responsibility between investors and countries.

According to Braga *et al.*, (2021), Governments and Multilateral organizations can de-risk green investments by supporting the issuance of green bonds in contrast to private green bonds - which show higher yields, volatility, and beta prices - and conventional energy bonds, which are more volatile due to oil price variations. Likewise, the World Bank states that strategies such as anti-collision is a useful tool for de-risking infrastructural projects (M. Khan *et al.*, 2020). Taghizadeh-Hesary *et al.*, (2022) recommend Green Financing such as the green credit guarantee as a recommended de-risking tool that is attractive to private sector investments in a hydrogen energy project. Richstein & Neuhoff, (2022) identified project-based carbon contracts-for-difference as a project financier's strategy to de-risking infrastructure projects from political and market uncertainty. Similarly, Kedward *et al.*, (2022) identified the strategy of utilizing public funds as against mobilizing private institutional investors to de-risk biodiversity infrastructure projects.

From the literature, it can be deduced that project financiers' strategies to reduce or eliminate risks before committing to infrastructure projects largely depend on the project type, the financier of the project, the location of the project, and the associated localized risks in the region of the project. The methodology section discussed in detail some selected strategies projects financiers used to de-risk infrastructure projects and infrastructure risks identified.

The main goal of this review writing is to highlight the strategies project financiers use to de-risk infrastructure projects. This study offers helpful knowledge about project financiers' strategies for ensuring the effective de-risking and successful completion of infrastructure projects. To evaluate the dimensions of project financiers' strategies, infrastructure projects all over the world were considered. An informed project financiers' strategies were listed and examined after reviewing several academic studies on project financiers' strategies. Infrastructure project risks were also investigated and linked to the de-risking strategies explored by project financiers.

This study analyses a significant amount of literature, mostly from a variety of publications that highlighted the numerous strategies project financiers used to de-risk infrastructure projects. Each strategic variable was applied as a keyword to explore the appropriate literature after being identified as one of the issues. Only research that has been published within the last ten (10) years was added to the study, with very recent studies receiving preference in the update.

Results

In the last ten (10) years, several published publications reviewed project financiers' financing strategies for infrastructure projects are shown in Table 1. Table 2 on the other hand shows the dimensions of project financiers' strategies and infrastructure risks in the last ten (10) years. Due to the limitation of this study, selected strategies and risks were analyzed and a conceptual framework was developed.

Proxies of Project Financiers strategies

Some selected strategies adopted by project financiers to reduce associated risks from the body of literature were reviewed and presented below.

Risk Allocation and Mitigation

Some project financiers are of the view that putting in place a risk allocation and mitigation mechanisms strategy is a very vital tool in making funds available for projects. These risk allocation and mitigation mechanisms de-risking strategies were adopted largely on public private partnership (PPP) infrastructure projects with mixed outcomes. Selim *et al.*, (2019) reported that the strategy resulted in high-quality service and low-cost advanced technology outcomes. Castelblanco *et al.*, (2020) and Nel, (2020), all acknowledged that strategies are essential to manage risks in solicited and

unsolicited road projects. On the contrary, Zhang *et al.*, (2020), argued that the strategy largely failed to deliver in a PPP water supply project in China due to other risks factors such as policy change, government default, and safety accidents which are largely overlooked by project financiers

Blended finance

Project financiers adopted 'blended finance' as strategies to de-risk infrastructure projects to make more funds available for many yielding infrastructure development projects. According to (*Blended Finance*, n.d.), blended finance means the practices of combining official development assistance with other private or public resources, to 'leverage' additional funds from other actors. This strategy was used by multinational development banks and development finance institutions to mobilize private finances for the sustainable development goals of developing countries (Attridge & Engen, 2019). Though the study calls for a better understanding of the approach. Likewise, (Küblböck & Grohs, 2019) and (Murray & Spronk, 2019) reported the usefulness of the strategy for the same sustainable development goals adopted by all United Nations Member States in 2015. Similarly, (Choi & Seiger, 2020) reported on the potential for blended finance to de-risk infrastructure projects shortage, especially for climate-resilient development.

Issuance of green bond

Another strategy project financiers adopt to de-risk infrastructure projects is through the issuance of green bonds especially in making funds available to developing countries' infrastructure projects (Banga, 2019). Unlike the developed and emerging countries, the full potential for green bonds seems to be underappreciated in developing countries due to the lack of appropriate institutional arrangements for green bond management, the issue of minimum size, and the high transaction costs associated with its issuance. Likewise, (Azhgaliyeva *et al.*, 2020) reported on the use of the strategy for mobilizing private finance for renewable energy and energy efficiency projects for the Association of South-East Asian Nations (ASEAN) for not only

Table 1: Articles or reviews published on Project Financiers' strategies for de-risking infrastructure projects.

Year	No. of articles or reviews published on project financiers' strategies for de-risking infrastructure projects	%increase in publications (%)
2018	2	3
2019	16	27
2020	16	27
2021	14	24
2022	8	14
2023	3	5
Total	59	100

Table 2: Proxies of project financiers' strategy and de-risking infrastructure projects

S. No.	Proxies	Authors	No. of citation
1	Risk allocation & mitigation	(Selim <i>et al.</i> , 2019), Zhang <i>et al.</i> , (2020), (Castelblanco <i>et al.</i> , 2020), (Nel, 2020)	4
2	Blended finance	(<i>Blended Finance</i> , n.d.), (Attridge & Engen, 2019), (Küblböck & Grohs, 2019), Murray & Spronk, (2019), Choi & Seiger, (2020)	5
3	Issuance of green bond	Banga, (2019), Azhgaliyeva <i>et al.</i> , (2020), Zhao <i>et al.</i> , (2022), Sartzetakis, (2021)	4
4	Stakeholder engagement in project selection	Kozokov, (2021), Arshad <i>et al.</i> , (2021), Jayasuriya <i>et al.</i> , (2020), Eyiah-Botwe <i>et al.</i> , (2019), Erkul <i>et al.</i> , (2019), Amadi <i>et al.</i> , (2019)	6
5	Political stability	Lyulyov <i>et al.</i> , (2021), Alam <i>et al.</i> , (2019), Muhammad & Johar, (2019)	3
6	Economic indicators	Agyekum <i>et al.</i> , (2021), Ernest <i>et al.</i> , (2019)	2
7	Legal and regulatory framework	Tiep <i>et al.</i> , (2021), (Contractor <i>et al.</i> , 2020), Jiang <i>et al.</i> , (2020),	3
8	Insurance and guarantees	Junxia, (2019), Chen <i>et al.</i> , (2022)	2

meeting reduction of global temperature rise but also for meeting fast-growing energy demand. Likewise, (Zhao *et al.*, 2022) also stated the advantage of green-bond financing on energy efficiency investment for green economic recovery. Similarly, (Sartzetakis, 2021) outlined the pertinent role of green bonds as an instrument for financing the transition to a low-carbon economy.

Stakeholder engagement in project selection

Project finances have also derived the strategy of detailed project scrutiny and stakeholders' engagement to de-risk infrastructure projects to satisfy stakeholders' objectives. According to (Kozokov, 2021), this strategy is to satisfy stakeholders' various project objectives and methodology for choosing infrastructure projects which are closely aligned with the project delivery of the organization. Likewise, Arshad *et al.*, (2021), acknowledged that stakeholder engagement in project selection should be holistic and effective to ensure the interests of individuals are properly captured to avoid project conflicting objectives. Similarly, (Jayasuriya *et al.*, 2020) stated that stakeholders' Management roles are decisive and essential for managing risks in infrastructure projects.

In the same vein, Eyiah-Botwe *et al.*, (2019), linked the strategy to de-risking public private partnership infrastructure failure, especially in developing nations. Similarly, Erkul *et al.*, (2019) considered the practices of stakeholder engagement in project selection as a social network dynamics for stakeholder satisfaction and project success. Likewise, Amadi *et al.*, (2019) considered the development of a vigorous identification of external stakeholders at every project phase and capturing their corresponding interests as a de-risking strategy especially in low- and middle-income countries

Proxies of De-risking Infrastructure Projects

Political stability

Infrastructure investments depend heavily on the political stability of a nation or region. It consists of elements such as the rule of law, the efficiency of the executive branch, the lack of corruption, and the regulatory environment. The likelihood of abrupt policy changes or disruptions is reduced under stable political conditions. According to (Lyulyov *et al.*, 2021), an increase in energy efficiency gaps in Ukraine was a result of the level of how politically stable the government was. Likewise, (Alam *et al.*, 2019) identified political instability as a determinant influencing investment in infrastructure development, amongst other factors such as corruption, regularity quality, government effectiveness, and rule of law. Similarly, (Muhammad & Johar, 2019), identified stable political systems as the panacea for project financier's investment in a public private partnership project in Malaysia.

Economic indicators

Economic variables including GDP growth, inflation rates, exchange rates, and fiscal stability are crucial determinants of a nation's economic well-being. A stable investment environment is facilitated by strong economic fundamentals, which also lowers the risks involved with infrastructure projects. According to (Agyekum *et al.*, 2021), economic factors are ranked the highest in long-term investment in Ghana's renewable energy sector posing a critical challenge for project financiers. Likewise, Ernest *et al.*, (2019) in their study of the influence of economic indicators in the building industry in Ghana observed the relative significance of different economic indicators regarding tender price indices prediction.

Legal and regulatory framework

A clear and open legal and regulatory environment offers security and protection for infrastructure investments. It comprises regulations on how to approve projects, enforce contracts, protect property rights, and use dispute resolution procedures. (Tiep *et al.*, 2021), identified policy framework as an essential tool to enhance consumer self-confidence in the local context which in turn enhances the electric utility sector's industrial growth in Pakistan. (Contractor *et al.*, 2020) identified and emphasized the role that regulatory factors play in luring and discouraging foreign direct investment (FDI). Project financiers are prepared to invest in nations with more effective entrance and exit regulations and tighter contract enforcement regulations. Likewise, (Jiang *et al.*, 2020), confirmed how weal legal and policy framework has brought about low participation rates of Chinese companies in carbon capture, utilization, and storage for climate change mitigation projects.

Insurance and guarantees

Additional protection from various risks can be achieved by using insurance products, guarantees, or other financial instruments. Infrastructure projects can be de-risked using a variety of tools, including political risk insurance, construction bonds, performance guarantees, and revenue insurance. Junxia, (2019), acknowledged that securing international investment in the energy market involves the strengthening investment guarantee system. Likewise, (Chen *et al.*, 2022) identified the role of green insurance in influencing corporate overseas investment decisions.

Figure 1 shows the schematic representation of variables and proxies of project financiers' strategy and de-risking infrastructural projects. It provides the flow on the strategies project financiers utilized to de-risk infrastructural projects for investment promotion. The flow chart in this case has identified risk management & mitigation, blended finance, issuance of bonds, and stakeholder engagement in project selection as the strategy used by project financiers to de-risk risks to provide funding for infrastructural projects.

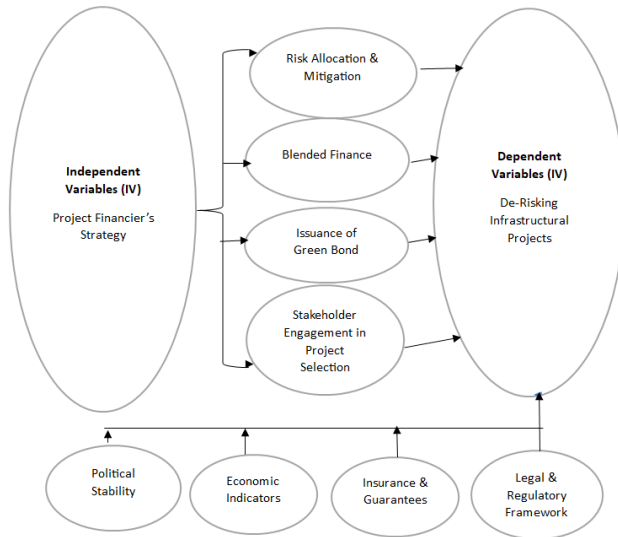


Figure 1: Schematic representation of variables and proxies of project financiers' strategy and de-risking infrastructural projects

Now, what are the proxies of de-risking infrastructural projects? The research has identified political stability, economic indicators, insurance and guarantees, and legal and regulatory framework de-risking measures to infrastructure development. The proxies for both variables are independent of each other. This is a clear indication that the proxies of both variables contribute to promoting project financiers to invest in infrastructure projects.

Discussion

To finance infrastructure projects, project financiers have adopted a variety of strategies to advance their developmental agenda. In this review work, the authors of this research unearthed the main strategies adopted by project financiers from the body of literature and linked these strategies to de-risk infrastructure projects. Risk allocation and mitigation, blended finance, issuance of green bonds, and stakeholder engagement in project selection are the techniques project financiers pay attention to when making investment decisions. These strategies have long been used to reduce the risks identified with infrastructure project failures. According to the literature, these strategies guide against project failure which will in turn boost investor confidence to invest.

Interestingly, the proxies of de-risking infrastructure projects identified in the body of literature are in themselves the concerns project financiers raised before making investment decisions. The literature identified political stability, economic indicators, insurance and guarantees, and legal and regulatory frameworks as having a significant impact on de-risking infrastructural projects. Therefore, this study drew on the emphasis placed by earlier studies to detail the methods used by project financiers to reduce the risk linked to infrastructure projects to successfully provide

funds, implement, and complete impactful projects. The conceptual framework developed as shown in the figure confirms the impact of the independent and dependent proxies on investor decision on whether to invest or not in infrastructure projects. In other words, risk allocation & mitigation, blended finance, issuance of the green bond, and stakeholders' engagement in project selection strategies of project financiers together with political stability, economic indicators, insurance and guarantees, and legal and regulatory framework, all have a positive impact on investment decisions on infrastructure projects. The level of impact of all these factors is a subject of future study.

This framework was created utilizing a thorough assessment of the literature, which means that this study's main weakness is that it has to be verified using quantitative data. Due to this framework's generic character, it is not used in specific sectors. Even though a lot of research has been reviewed and every aspect of project financiers' strategies to de-risk infrastructure projects has been examined, it cannot be ascertained that these aspects will be able to establish the baseline that will lead to successful project implementation. So, the question is whether the strategies used by these project financiers and the de-risking components of infrastructure projects are adequate to build a solid foundation that has an impact on the successful implementation of infrastructure projects.

Acknowledgement

It is my pleasure to thank those who helped me in various aspects of my academic journey and made this research possible.

First and foremost, my debt of gratitude is extended to the supervisor of my research, Dr. Taiwo Adewale MURITALA for his excellent guidance and continued patience at every stage of this research. I have really benefited from their inspiration, knowledge, experience, and persistence.

I would also like to thank Professor Dileep Kumar, Prof. Ifeoma May Nwoye, Dr. Frank Ogedengbe, and Dr. Saji GEORGE for their moral support, insightful comments, and guidance in this research endeavor.

Institutionally, I would also like to thank the Nile University of Nigeria for allowing me to carry out this research

Last but not most important, I profoundly thank my family especially my dear wife Alpha Anigyo Maliki for their love and prayers which enabled me to complete this research. I am grateful for the sacrifices each of them has made and to Almighty Allah/Lord/God for his tender guidance and faithfulness.

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