



# How Megaprojects Are Damaging Nigeria and How to Fix It

A Practical Guide to Mastering Very Large  
Government Projects

Jimoh Ibrahim · Christoph Loch  
Kishore Sengupta

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ISBN 978-3-030-96473-3      ISBN 978-3-030-96474-0 (eBook)  
<https://doi.org/10.1007/978-3-030-96474-0>

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# Preface

This book builds on the unpublished Business Doctorate Thesis by the first author at the University of Cambridge Judge Business School. It is the first thesis submitted for the award of the innovative new degree of the Doctor of Business at Cambridge Judge.

The investigation is motivated by the sincere wish to help the first author's country (Nigeria) improve its public investment efforts to benefit its population. The collaboration between the authors has been enjoyable and fruitful, and every participant has learned about the benefit of careful data analysis that distinguishes between superficial similarities and true causality, about the intractability of projects being embedded in dysfunctional power structures, and about the culture of a large and vibrant country. It has been a privilege to have the opportunity to work together on a project of such importance. The authors sincerely hope that the publication of this book will somehow trigger positive changes.

Unfortunately, the performance of very large projects in Nigeria is unsatisfactory (to say it politely). The very large scale of abandoned projects in Nigeria, recording well over 11,000 at the last count, is daunting. On the other hand, Nigeria *has* completed very large government projects since its independence in 1960. It is not that the capability of carrying out large projects does not exist. Our study implies that there is a failure of governance that needs to be addressed at the highest level of government.

This is the first book on government mega projects in Nigeria, which has collected a unique data set to examine the projects. We sincerely hope that policymakers will find this a helpful book on what to do. We hope that stakeholders of very large government projects might see in the book an exciting road map for engagement. We hope that students of large government

projects will have a book to learn from, the first one on the very large government project management profession in Nigeria (and maybe the wider Africa). We hope that scholars within and outside Nigeria will find the data discussed in this book helpful and will use it as comparative empirical evidence for additional projects. Finally, we trust that readers will have the most exciting time and value of engaging with the book. Thank you for reading. Good luck.

Cambridge, UK  
December 2021

Jimoh Ibrahim  
Christoph Loch  
Kishore Sengupta

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# 1

## Introduction: The Project Abandonment Problem

Nigeria, a former British colony, had no name until 1914; the Nigeria of today consisted of diverse ethnic groups scattered across what is the country's current geographical space. The ethnic groups were not united within a single country or empire in pre-colonial days. In July 1899 the British House of Commons officially approved the name after an article suggesting various names for the country was published in the *London Times*. Floral Louise, the British journalist who wrote the report, suggested the name Nigeria. In 1914 Nigeria's name was officially adopted for an amalgamation of northern and southern protectorates.

The British colonial master attempted to foster civilization and development to ensure the success of the colonial period and a sustainable post-colonial period. It initiated several large government projects, none of which was abandoned during the colonial period until Nigeria's independence in 1960.

Large government projects constructed at this time positively remind us of the colonial period when we see or use their outcomes almost 60 years later. One example (of many) is the Carter Bridge in Lagos, enabling economic activities since the end of the colonial period.

On 1 October 1960 Nigeria achieved independence, and the British handed the country over to democratically elected civilians. There has been concern about stability and economic development ever since, for political, financial and sociocultural reasons. One example is the currency, the Nigerian naira, which was powerful at independence, at an exchange rate of 1 British pound to 0.8 Nigerian naira. At the time of writing this book, the exchange rate of 1 British pound to the Nigerian naira is 600 times higher than it was in 1960.

The current investigation is not aimed at the broad issues of Nigerian economic development. This investigation focuses on the needs of the growing population for infrastructure to achieve economic development: roads, bridges, airports, power generation and transmission, hospitals, telecommunications networks and so on. Governments in countries like Nigeria are responsible for providing (or enabling the provision of) such infrastructure. Governments that do not provide these infrastructures limit economic and social development. The ability of successive Nigerian governments to successfully deliver infrastructure development projects has been poor. This investigation asks why this is the case and seeks to offer recommendations to improve this situation.

The problem is not even that some of these large projects (with budgets of hundreds of millions, or even billions, of US\$) were not commercially successful. It is that many of these projects were abandoned before completion, leaving husks of half-finished building structures dotted around the cities and countryside. In 2011 President Goodluck Jonathan set up the Presidential Abandoned Projects Audit Commission. The commission visited all 36 states of the Nigerian Federation (including the federal capital territory) and identified the number of contracts/projects owned by the Federal Government of Nigeria that had been abandoned. The committee report identified a shocking figure of 11,886 federal out of (an estimated) 19,000 government-owned projects that had been abandoned across the majority of the 36 states of the federation since 1970. This represents an abandonment rate of 63%—or almost two-thirds (Abimbola, 2015).

It is challenging anywhere to ensure that very large (or “mega”) projects are successful. For example, a study by Flyvbjerg and Sunstein (2016) concluded that very large projects suffer from average cost overruns of 40% (an average that has been roughly confirmed in other studies, for example, by Endut et al. [2005] in Thailand) and a benefit underperformance of 10% on average, caused by the “malevolent hiding hand” of complexity and interest conflicts, which greatly hinder transparent management. However, a ratio of 63% of abandoned projects in Nigeria is much worse than the general project management challenges reported elsewhere.

The issue is related not just to benefits (or lack thereof) delivered to the economy but also to costs. Large government projects account for a significant part of the world’s GDP. Public sector investment amounts to an estimated \$9T per year, or approximately 8% of the global gross domestic product (GDP) (Flyvbjerg, 2014). For example, in the UK spending on programmes was recorded at £420 billion in 2013. In contrast, Nigeria has no data on what has been spent on successful or unsuccessful large government projects

between independence in 1960 and today. However, the sums are huge—the 38 projects alone that this investigation considers in detail represent a total budget of over \$25B, almost equalling Nigeria's total foreign debt (\$27B) in 2017.

The cost overruns and benefit shortfalls of major projects really do matter in Nigeria. For instance, foreign direct investment declined from \$8.8B in 2011 to \$3.3B in 2019, the current account balance deteriorated from \$10.6B in 2011 to -17B in 2019 (related to falling oil prices) and inflation stayed at around 11% in both years, while unemployment deteriorated drastically from 4% to over 8% between 2015 and 2017. Over 40% of the 186 million citizens live on less than \$1 a day, and while the population grew by 2.6%, the economy only grew by 2.2% in 2019 (Jimoh, 2017).

Public debt increased from 17% of GDP in 2011 to 29% in 2019; foreign debt increased from \$21B to \$55B in the same period. While this level of indebtedness looks reasonable, the debts consume a large part of the Nigerian annual budget that is highly dependent on oil: the external loan serving ratio is already over 30% of the annual budget, which ran at \$23.4B in 2019. With recurrent expenditure consuming more than 50% of this budget, less than 20% of the budget remains for investments and capital expenditure. In this context abandoning 63% of large projects with budgets of hundreds of millions of dollars matters a great deal—it essentially negates the government's ability to improve infrastructure, and thus, it destroys the ability of the country to make its economy more productive and increase its citizens' wealth.

The central question of this book is: Why does Nigeria have such an abysmal performance in delivering large government projects? And what could be done to improve this performance? Of course, there already exist several studies on government management of large projects (albeit centred mostly on empirical evidence from developed countries). Very large projects are complex dynamic systems, where several causal factors interact in non-trivial ways; moreover, these factors change over time, for example, with the surrounding economic situation and stakeholder needs, but also as the project itself matures and the causal factors wax, wane and morph. The professional project management community has examined the success factors of mega projects for 50 years and “knows” what should be done. The challenge is that what should be done is complicated, involves many interacting variables (the framework later in this book includes around a hundred), changes over time, and requires the discipline and alignment of many actors (with frequently diverging interests) behind common goals.

What constitutes the most important success drivers is not the same across countries and economic environments. In Germany or the UK the challenge

might be not underestimating the uncertainty introduced into the complex project by ambitious new technologies (e.g. a key problem in London's Crossrail project turned out to be the combination of trains and a new signalling technology) or the conflict between competing stakeholders (e.g. one reason for catastrophic delays in the new Berlin airport was the division of the project into pieces given to different contractors driven by differing political interests, which caused incompatibilities). But what are the most important reasons for the failures in Nigeria? The answer cannot be found in studies from other countries, because the political ecosystems in which Nigerian projects must succeed are unique to Nigeria. Previous project management knowledge has identified a "universe" of possible success drivers (and failure reasons), but the question of which failure drivers truly matter in Nigeria has to be answered with Nigerian data.

Unfortunately, the Nigerian data is not available. When we began the research for this study, our colleagues suggested, "If the Presidential Abandoned Projects Audit Commission identified 19,000 projects, of which 63% failed, why don't you get the database and systematically analyse what differed between the abandoned projects and the completed ones?" The answer is that the commission did not put the data together; it did not even name all the 19,000 projects. There is no database or reliable data from other electronic sources (such as newspapers and magazines)—just a handful of individual and unconnected case studies.

Therefore, this book collects quantitative, as well as qualitative, data, in order to understand the Nigerian context, and it develops recommendations for the government that are applicable and actionable. The study proceeds as follows.

Chapter 2 reviews the existing professional knowledge of the last 50 years. This body of work has identified hundreds of variables (mega projects are complicated beasts!) and has pointed out that large projects are complex systems, where many of these variables interact in terms of their effects on success. Our analysis of this work culminates in a 50-construct framework (each of which may need multiple measures to be quantified), on which we base the construction of the customized questionnaire described in the next chapter.

Chapter 3 describes our research methodology: in order to approach the question from several angles, we pursued a dual method. First, we constructed a detailed questionnaire from a systematic review of what had been learned in the professional literature. This questionnaire was paired down to 42 core variables in order to keep it manageable for respondents. Each project questionnaire was answered by three respondents: one respondent might have

given a “biased” answer from the viewpoint of the organization that he or she represents. Therefore, the project owner (a senior civil servant familiar with the governance context) and the project supervisor (the “in the field” civil servant), as well as the project manager of the main contractor, all filled out the questionnaire, representing the views of three different players in the project. (All respondents were guaranteed anonymity to protect them—many were worried about possible repercussions. We checked the response data for “self-censoring” but found evidence that the different perspectives of the respondents were preserved in their answers.) With the questionnaire, we collected primary quantitative data on 38 abandoned and completed projects, which we analysed econometrically. The quantitative data provided a “skeleton”, establishing that the data contains statistically robust findings. Second, we enriched this skeleton with detailed case studies on 11 of the 38 projects. The resulting causal stories explain what the statistical results “look like” in practice.

Chapter 4 presents the list of the projects examined, with short descriptions. The projects do not simply constitute an arbitrary list; indeed, the list matches completed and abandoned projects with respect to budget size and sectors so that they can be compared.

Chapter 5 presents the econometric analysis of the questionnaire data, which identifies the statistically significant drivers of completion versus abandonment. The analysis statistically condenses the 42 variables (some of which overlap, measuring similar and related things) into 5 more conceptual constructs, which measure common success forces. The five drivers are project goals, supervision and stakeholders, contractor selection, resources and planning, and corruption. The econometrics confirm that these five drivers make a real difference to a project’s chances of reaching successful completion.

Chapters 6, 7, 8, 9, 10 and 11 present 11 detailed case studies, matched by sector, of abandoned versus completed projects. These detailed examples tell the stories of these projects, bringing to life what the identified statistical success drivers “look like” when we see them in real projects. The common themes of problems become clearly visible across the projects. The combined insights from the econometric analysis and the case studies form the basis of recommending what changes the government might make in order to render very large government projects more productive for Nigeria.

Chapter 12 collects the common themes from the case studies and presents them in a pattern. We then obtain some inspiration from other developing countries who have achieved significant improvements in their performance of large government projects. In the comparison of the patterns from our Nigerian data and the observations from other countries, we derive sharp and

actionable recommendations for the government. Our evidence strongly suggests that if the Nigerian government submits to the discipline of these recommendations, the completion performance of large government projects will improve.

Finally, Chap. 13 concludes the study. No book on large government projects is available for the case of Nigeria, and we therefore hope that this study will help to create value. The senior government in Nigeria has both ample power and the means to make its large projects more successful—the requisite changes are not so complicated that they cannot be implemented. What is required is the political will to pursue overarching success for the country, a will that various presidents of the country have clearly shown (albeit not consistently enough). The lessons from Nigeria might well be relevant for other African nations who face some of the same challenges.

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# 2

## What We Know About the Management of Very Large Projects

Very large projects (or “major programmes”, in the terminology of Morris and Hough [1987], or “megaprojects”, in the terminology of Flyvbjerg [2014]) are defined as complex undertakings involving thousands of people, with budgets of several hundred million dollars over multiple years. In our study we focus on very large *government* projects, which is the category of projects that promise to significantly improve Nigeria’s economy but which have hurt the country because so many of them have wasted money and opportunities.

The starting point for the need to build specific professional knowledge on very large government projects is that the classic project management approaches represented in the *Project Management Body of Knowledge* by the Project Management Institute (PMI, 2017) are insufficient. The “stage gate process” approach of setting goals, identifying activities through a work breakdown structure, planning the activities (in ways that are mutually compatible), adding risk management and buffers, and monitoring budget compliance and milestones (intermediate deliverables) simply does not address the key difficulties inherent in very large projects: not only are the activities interdependent and therefore pose complex interactions, most critically, goals do not “fall from the sky” but are carefully negotiated constructs that demand both general buy-in and tangibility and feasibility in order to provide a solid basis for a project. This nature of project goals being “socially constructed” is particularly critical for large government projects, which touch upon multiple sub-groups of the population of a country.

This book is the first on large government project management in Nigeria, but it is by no means the first book on the subject globally. Famous examples abound across the globe of large (public) projects that ran into trouble, for

instance, the Eurotunnel in France/the UK, the Hinkley Point nuclear power plant and the Crossrail project in the UK, the Berlin Airport in Germany and the collapsed terminal of Charles de Gaulle Airport in Paris, or the Denver Airport baggage transport system in the USA. Therefore, the management challenge of very large projects has been the focus of attention for practising managers and scholars, with textbooks and articles being produced on the subject over the last 60 years. The purpose of this book is not to reinvent the knowledge that has been accumulated but to examine its adaptation (if any) to the Nigerian context. This chapter summarizes some important elements of professional knowledge about very large project management; building on this knowledge, it then constructs a framework of variables that provides the basis for our study.

## 2.1 Project Success Factors as Lists

Very large projects are characterized by two challenges that make them hard to manage:

1. **Complexity.** There are thousands of people working on hundreds of different activities, and these activities are not isolated in silos but affect one another, for example, through physical interactions (such as competition for scarce space or material or energy flows), through resource interactions (competing for funds or personnel), through trade-offs among multiple competing desired outcomes, as expressed by owners and stakeholders, and through information flows (“Is the right hand aware of what the left hand is doing?”). Moreover, there are interactions over time—disillusioning a stakeholder group early on may make them ready to protest or resist against even minor glitches later or getting the governance decision structure wrong at the outset may lead to bad decision-making during the execution phase.
2. **Uncertainty.** Very large projects can take up to a decade to complete. This means that even if “proven technologies” are used (and thus the bare technology uncertainty is kept to a minimum), the world around the project inevitably changes during its execution: demographics and stakeholder needs change; the “benchmarks” change in the form of role model examples happening elsewhere; available technologies (and thus performance expectations) change; and so on. Therefore, very large projects often end up with (at least slightly) different outcomes than were foreseen at the outset. Change flexibility must be built in and thus requires

collaboration between owners and stakeholders in renegotiating these outcomes.

Therefore, projects have been characterized as “evolving complex systems”—very large projects are complex beasts, and it is possible to get them wrong in a hundred different ways. Multiple studies have explored which characteristics of the environment, the task, and its complexity and uncertainty, the team, the surrounding organization and the management processes are important. As academic studies tend to focus on a narrow set of phenomena in order to be able to accomplish a “clean” investigation with reliable results, each study has tended to focus on a few variables at a time.

Table 2.1 provides a summary of 14 studies that produced “lists” of success drivers, with overlaps but also differences. As each study looks at its own set of circumstances, each observes a different set of success drivers as particularly relevant. To use an old Indian metaphor, seven blind men touching an elephant will each report different experiences because they each touch different parts of the animal.

The success factors that have been emphasized shifted over time as knowledge progressed. Early studies such as Sayles and Chandler (1971) and Martin (1976) emphasized planning and resource management, team management, and supervision and control. In the early 1980s Baker, Murphy and Fisher (1988) turned their attention to factors related to the surrounding organizations and environments. The next decade of work added attitude and intent, project goals and social orientation (Baker et al., 1988).

However, a “super list” of success drivers that is simply the combination of the partial lists is of limited use because it does not enable an understanding of causality and therefore does not support a problem diagnosis of a specific project at hand. Therefore, “frameworks”, or groupings/classifications, of success drivers have been proposed. In this way, Belassi and Tukel (1996) proposed a framework in which the characteristics of the project manager and the team (such as ability, coordination and communication), of the project itself (such as size or uniqueness), of the organization (such as support and structure) and of the environment (such as politics and social) influence intermediate outcomes (such as client acceptance, the project manager’s performance and resource availability), which in turn influence project success. Misic and Radujkovic (2015) conducted a meta-analysis of previous studies and proposed a framework with success drivers falling into the groups of legal, risk, political and project manager and failure factors falling into the groups of strategy, ineffectiveness of risk analysis and closed communication.

**Table 2.1** Lists of project success factors

Sayles and Chandler (1971)	Martin (1976)	Baker et al. (1988)	Cleland and King (1983)	Locke 1984	Misic and Radujkovic (1985)	Pinto and Slevin (1988)	Fortune and White (2006)	Okereke (2017)	Flyvbjerg (2011)	Al-Khalili and Al-Ghafly (1999)	Joslin and Müller (2015)
Project manager's competence	Select project organizational philosophy	Task versus social orientation	Project summary, market intelligence (who is the client)	Make project commitment known	Political aspect and information, community leadership	Client consultation and acceptance	Decision-makers	Mismanagement, leadership, poor supervision	Optimum bias	Project efficiency	Project management methodologies
Monitoring and feedback; continuing involvement in the Project	Define goals	Clear goals, goal commitment of project team,	Operational concept, financial, logistics and facility support	Project authority from the top	Clear objectives, pre-project planning. Project manager skills and charisma	Personnel recruitment. Technical Task	Environment	Capacity building at local level, resources control and lack of maintenance	Cost overrun, benefit shortfall, and schedule delay	Fortune potential	Customization
Control system and responsiveness	Allocate sufficient resources, planning and review	Adequate funding to completion, accurate initial cost estimates	Top management support	Appoint competent project manager	Stakeholder satisfaction	Top management support	Boundaries continuity	Expertise and experience, support for long term	Organization benefits and stake-holders' satisfaction	Standardization	Combination of standardization and customization
Scheduling	General management support, select project team C and information mechanisms	On-site project manager, project team capability Planning and control techniques	Communication	Procedures, and control mechanism	Risk (risk allocation front end review plan benefit) Top management support	Trans-formational					

Fortune and White (2006) developed, based on cases of IT projects, an explicit “system model” that features interdependent factors. Within the project, there is a decision-making system that allocates attention and resources, monitors performance and guides decisions. The wider system (corresponding to the organization) decides on the project design, provides resources and defines the performance expectations, as well as monitoring performance. This system as a whole is, in turn, affected by its external environment (such as stakeholders or political influence).

We want to focus attention on two frameworks that have been very influential and which are still, despite being 30 years old, insightful for a study such as ours. These two frameworks are proposed in the seminal studies of Morris and Hough (1987) and Miller and Lessard (2000).

## 2.2 The Project Success Frameworks of Miller and Lessard and Morris and Hough

### 2.2.1 Miller and Lessard (2000)

Miller and Lessard (2000) analysed large engineering projects (not necessarily government-run) and developed an understanding of the critical phase of “project shaping”. Projects are not “planned” but “shaped”. They do not “fall from the sky” as clearly articulated visions of great outcomes, but they slowly arise as rough ideas that need to be wrestled over and developed. This process is fundamentally messy, chaotic and untidy, and the outcomes are not pre-ordained but the results of decisions and moves (explicit and conscious or unconscious) made by managers—managers of the project owner, of various stakeholders and of customers and contractors.

The final “design” of a project is not visible until much later, when several decisions have already been taken. A useful metaphor is imagining that one is flying into thick clouds (there is *something* attractive in the clouds, one needs to be convinced), which prevent managers from choosing take-off or landing approaches beforehand. If prepared with flexibility and resilience, managers can achieve success against all the odds. No one has time to wait for a perfect quantification of the probability of success or failure before approaching large projects. Managers engage in various strategies to confront complex adaptive risk, including shaping and mitigating, shifting and allocating, influencing and transforming institutions, and diversifying through portfolios. Risks are not externally given odds but shaped outcomes of decisions taken. Miller and

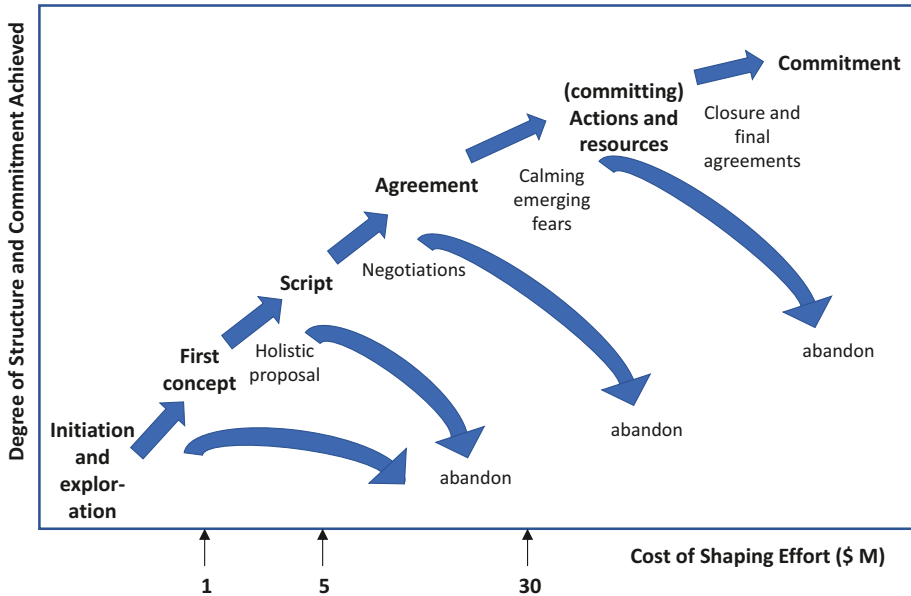


Fig. 2.1 Miller and Lessard's shaping episodes and commitment achieved. (Adapted from Miller & Lessard, 2000: 106)

Lessard's navigating strategy for crossing hurdles over many shaping episodes (before implementation begins) is summarized in Fig. 2.1.

The framework proposes that there are five stages before the performance: concept (initiation and exploration of a *hypothesis* of a project that might be possible), script (holistic proposal that allows commencement of tangible negotiations), agreement (with a coalition of stakeholders after extended negotiation), moves and commitments (confronting emerging fears and offering solutions and assurances until parties are willing to make irreversible commitments), and, finally, the committable package (the project design and outcome distribution on which parties can achieve closure and final agreement—this is when contracts can be signed).

These phases must be traversed and their issues addressed as preconditions for the success of a very large project. If the shaping phases are glossed over, or trust and commitment are not achieved, the unaddressed issues will return later to haunt the project when it runs into inevitable problems over the course of execution. The shaping process ensures two key preconditions for success: (a) shaping (modification) of the original idea to offer value to all parties that contribute to, and can influence, the project (the original idea is

never sufficiently balanced!); and (b) the building of a committed coalition that has at least a chance of withstanding the problems and changes that a very large project will have to go through.

### 2.2.2 Morris and Hough (1987)

Miller and Lessard's framework directs our attention to the critical early phase of a project, long before any procurement has commenced—this turns out to be very relevant for the abandoned large government projects that we encounter in this study. The strength of Morris and Hough's framework, by contrast, lies in providing an overarching view of the issues that a very large project must address. This framework was articulated based on eight detailed case studies of very large projects. It is summarized in Fig. 2.2.

The shaping process explained by Miller and Lessard is represented within the box “project definition”, including the relatedness of the goals to the participants and an absence of forcing decisions on them—the shaping process is not included in-depth (for this reason, the Miller and Lessard framework is worth taking into account in parallel), but the strength of Morris and Hough is the overarching view.

The framework includes the conceptual areas of client and owner attitudes (constructive or political?), the external environment (e.g. politics, communities and stakeholders), a sound financial plan and realistic and trackable schedule, and implementation driven by the organizational contract, resource availability and the quality, commitment and communication with the “team” (the people who work on the project).

The fact that arrows in the framework point in different directions (forwards and backwards) reminds us of the complexity of the project “beast”—there is no one-directional causal flow, but while project shaping influences later commitment, the scheduling and resource abilities from later also influence the shaping processes at the outset, and parallel activities influence one another.

We will now check whether previous studies from Nigeria are roughly consistent with the knowledge embodied in the success drive lists and the two frameworks (Table 2.1 and Figs. 2.1 and 2.2), or whether there is evidence that what is happening in Nigeria has fundamentally different characteristics. We will then build a combined framework that attempts to take into account all the aspects of previous knowledge that we have described, in a form that is suitable for measurement via a questionnaire.



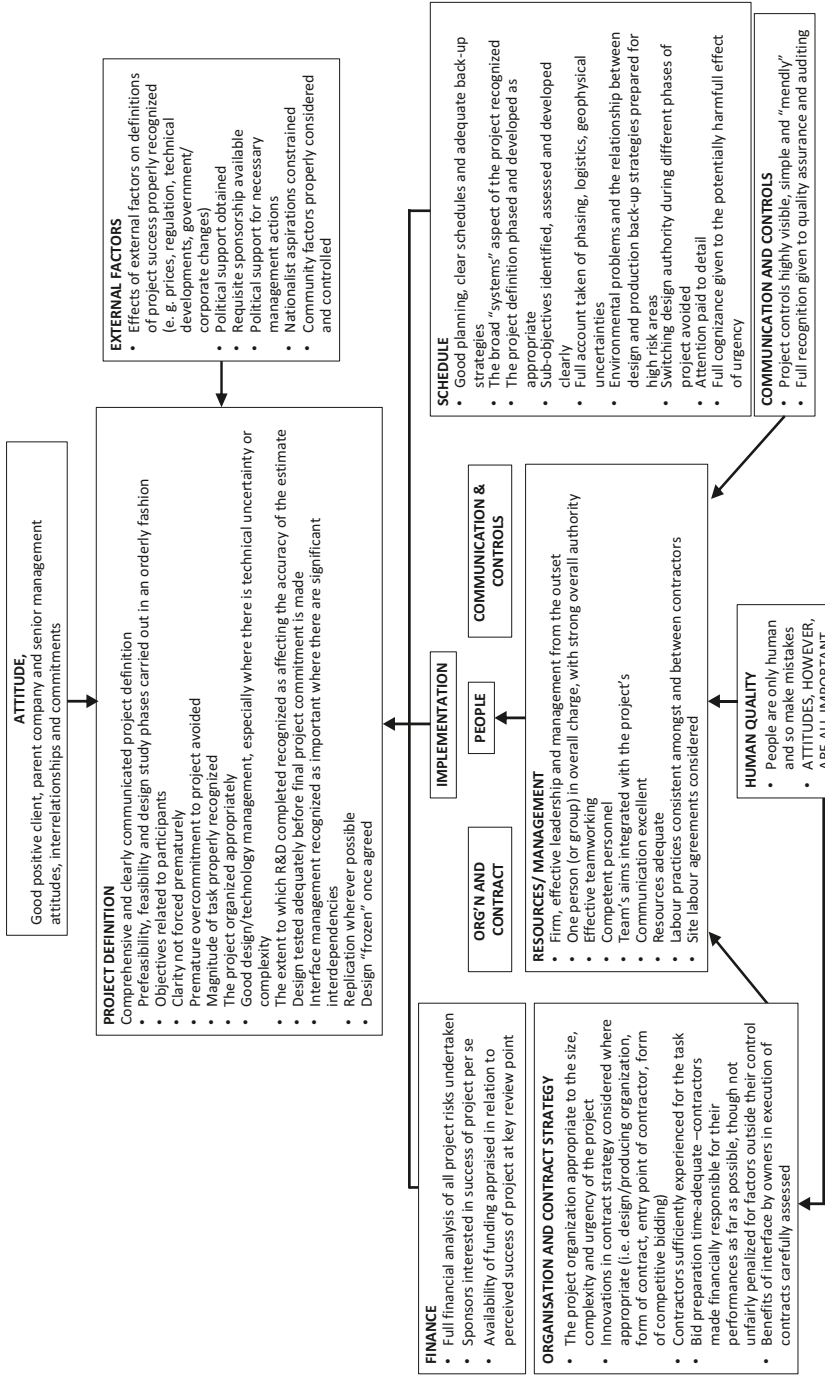


Fig. 2.2 Morris and Hough's framework. (Adapted from Morris & Hough, 1987, Figure 12.1)

## 2.3 The Nigerian Context

We pointed out in Chap. 1 that Nigeria suffers from poor performance (even widespread abandonment) of large government projects. The consequences are “a junk-yard of abandoned and failed projects worth billions” (Abimbola, 2012; Osemenan, 1987). Anigbogu and Shwarka (2011) observed that 50% of projects failed before they even commenced. Ayangade et al. (2009) also proposed that if a project is awarded in defiance of proper intent and contract definition, this will lead to flawed contract structures, poor job performance, job abandonment and improper contractor selection, thereby increasing the probability of project failure. All this is consistent with the hypothesis that Miller and Lessard’s shaping process is neglected or forgotten, resulting in poor set-up and intent.

Even among completed projects, Omoregie and Radford (2006) found average cost escalations of 114% and cost overrun and time delays of 188% across transport infrastructure projects. Ameh et al. (2010) found similar cost overruns in the telecommunications sector, driven by construction-related factors. These overruns among *completed* projects, for now disregarding the abandoned projects, are consistent with observations from other countries (see Flyvbjerg, 2007, 2014; Toor & Ogunlana, 2008; Roxas & Fillone, 2015). To give some examples, the Akashi Kaikyo Bridge project in Japan (1998) overran its budget by 263%, the Sydney Opera House by 1400%, the Denver International Airport by 200% and the Elbe Tunnel in Germany by 50%. The element of Nigerian large project performance that seems to be worse than in other countries is the extent of project abandonment.

Okereke (2017) examined eight case studies of troubled large projects across Africa, including a renewable energy project in Nigeria. He found that the Nigerian project suffered from poor planning and a lack of both government support and management of maintenance once the facility had been completed. More generally across Africa, he concluded that the main reasons for failures lay in a lack of skills, resources and stakeholder considerations. This study thus sees key success drivers in the implementation and stakeholder phases of projects.

Olatunji (2018) examined in detail one especially large stalled project, the Ajaokuta steel plant project in Nigeria, which we will also revisit in detail in Chap. 11. Although the project had been discussed at length, when work began in earnest its gestation period was very short and decisions were made for political rather than performance reasons (such as being located in a politically desirable region but far from ore and coal), neglecting technological

constraints (such as the low iron content of the local ore) and exacerbated by numerous changes in the political leadership of the country. The resulting cost increases made the available financing insufficient, and therefore, the plant is still not operational 30 years on. Olatunji calls it “neither a complete failure nor a considerable success. Rather, it is more of a story of philosophical symbolism” (p. 339), an assessment that we disagree with (see Chap. 11). However, the case study is again roughly consistent with the importance of Miller and Lessard’s shaping process, as well as with continuity of execution.

In sum, the available evidence from Nigeria presents nothing to suggest that the success drivers that are at play are fundamentally different from what the global professional literature has identified to date. This supports our expectation that the question is not “What unique reasons exist in Nigeria that have led to the abandonment of 63% of large public projects?” but “Which success drivers (of the many that have been identified) are particularly important in the Nigerian context, explaining the high rate of large project abandonment?” We therefore proceed with the construction of a combined framework that includes the work reviewed so far (Table 2.1 and Figs. 2.1 and 2.2). The combined framework will serve as the basis for the empirical study.

## 2.4 The Extended Theoretical Framework

We now combine the most important success factors from Table 2.1 and from Morris and Hough (1987) and Miller and Lessard (2000) into one combined framework, as shown in Fig. 2.3. The framework has a similar structure to, and the same presentation as, Hough and Morris, as this representation of grouped success factors is well suited for capture in a set of measures that can be tested in a questionnaire. It is a conceptual framework that explains the concepts (success factors) that we have identified from the accumulated knowledge (as opposed to a theoretical framework that explains causal relationships [see Grant & Osanloo, 2014]) and which we want to examine further.

The combined framework starts with attitude and intent (as in Fig. 2.2) but divides “project definition” into two parts: the definition itself (how clear, valuable, visionary and feasible/pragmatic—clear and accepted goals are valuable as maps during the complexities of execution; and the shaping process that we have incorporated in order to represent Miller and Lessard’s insights.

The shaping process produces a shared vision, combined with preparedness for the necessary problem-solving in the face of inevitable changes: (i) the need to test the vision with stakeholders and pre-work to prove the concept

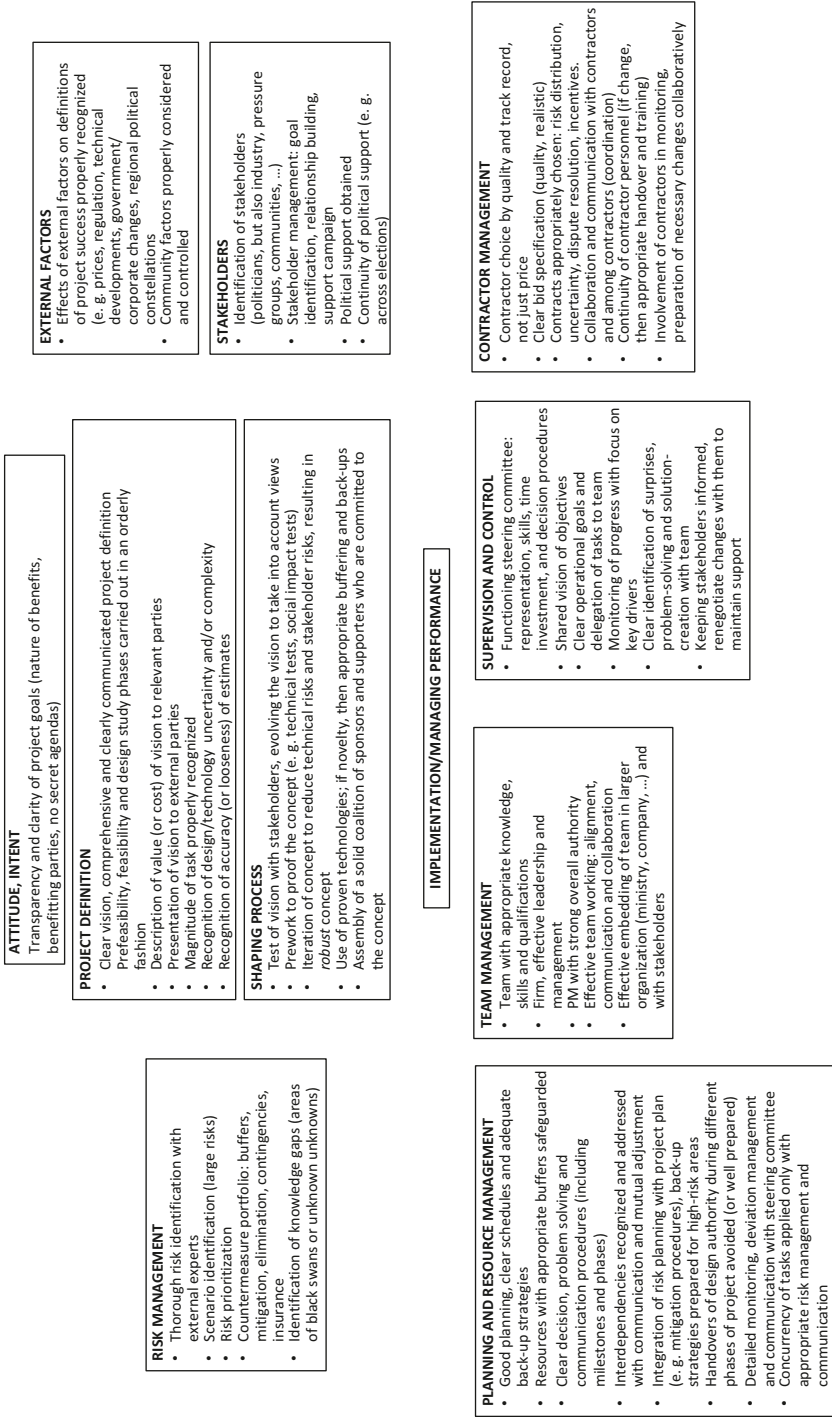


Fig. 2.3 An extended framework of success factors in mega projects

(e.g. technical tests and social impact tests), (ii) iteration of thought to reduce technical and stakeholder risks, (iii) the use of proven technologies (if novelty, then appropriate buffering and back-ups) and (iv) the assembly of a stable coalition of sponsors and supporters committed to the project. A successful project is not selected (i.e. chosen at the outset in all its features from a field of project candidates) but “shaped”, in the sense that an initial idea evolves and morphs to incorporate more and more essential elements and robustness. When plans are shaped and reshaped, it becomes possible to conclude that the project is not viable, and sponsors can cut their losses on time. The shaping process is essential to project success because of the robustness (in terms of technical and operational concepts and stakeholder support) that it creates.

We have added a box on risk management (which should proactively commence in parallel to the shaping process). There is a need to prepare the project for the landscape of risks; some risks can be anticipated, while others are unknown until they occur. Mapping project risk requires (i) accurate risk identification (external experts and scenario identification); (ii) risk prioritization (e.g. by impact or likelihood); (iii) risk management, for example, via a countermeasure portfolio (buffers, mitigation, elimination, contingencies and insurance); and (iv) the knowledge that mega projects always have some unknowns, so some “pre-warning” can be produced by identifying knowledge gaps (the areas of black swans or unknown unknowns).

We have divided Morris and Hough’s “environment” box into two parts: one for the external general environment and one for the stakeholders that are specific to the project. External factors are outside the influence of the project organization. An external factor might even be the government of another country. For instance, the Kariba Dam in Zambia owed some of its success to external influence. The sudden discovery of a design flaw required a foreign power’s support for the dam to be repaired (at a cost of \$298M). The money needed for reconstruction was beyond the reach of the domestic government. External factors include prices, regulation, corporate changes, regional and political constellations, individual and government commitment, and community factors. The ability of a project to achieve its goals also depends on the attitude or communication quality with the exogenous environment. The term “stakeholder” refers to a person or an organization (interest group) with an interest in, or concern about, the project. Hensiz (2016) identified various ways of mapping and involving stakeholders such as politicians, industries, pressure groups, communities or the public.

The planning and resource management box addresses the “homework” that each project team needs to do, putting well-considered plans and schedules in place, with contingencies and interdependencies well understood,

and monitoring procedures well established and integrated with risk management (as in Morris and Hough). A key element of this is that the resources for the project must be planned and safeguarded (so they do not unexpectedly disappear or need to be “re-won”). This may sound evident, but it turns out that this very point is often not fulfilled in the Nigerian context.

Team management refers to leadership at the project level, skill availability, sponsorship in the wider organization (including the government agencies that supervise) and effective problem-solving, monitoring and communication procedures.

Supervision and control refer to the presence of a functioning “governance structure” (or steering committee) that has the competence and time to understand the project’s status and to make decisions when changes or conflicts occur (Loch et al., 2017). When this governance structure does not perform, projects succumb to the problems that inevitably arise but are mastered by well-governed projects. This governance must be led by the owning government agency, using resources and skills, but unfortunately, this is often not guaranteed.

As most large government projects are carried out by contracting firms, contractor management is central. This includes both legal provisions and maintaining trust and relationships that reduce a contractor’s temptation to behave opportunistically. The project manager must ensure that the contract and contractors are managed. Contract management in large government projects requires: (i) contractor selection by quality and track record, not just price; (ii) explicit bid specification (quality and realism); (iii) risk and uncertainty distribution, dispute resolution and incentives; (iv) collaboration and communication both with and among contractors (coordination); (v) continuity of contractor personnel (if a change cannot be avoided, there must be proper handover and training); and (vi) involvement of contractors in monitoring and preparing the necessary changes to encourage sharing in the spirit (not just the letter) of collaboration.

This framework summarizes the relevant professional knowledge on very large (government) projects in a form that can serve as the basis for our empirical investigation of why so many government projects are abandoned in Nigeria. As we said earlier, we do not expect phenomena to arise that have never been observed elsewhere (although if this were the case, our case studies would have a chance to detect these “new” success drivers). Our study will translate this framework into a questionnaire to collect analysable data and complement the data analysis with qualitative case studies that provide causal narratives on how events have unfolded.

## 2.5 What About Corruption?

Finally, a word on corruption. Corruption is pervasive, not only in developing countries but also to some degree in developed countries. It has not appeared in our overview of professional knowledge—this is not because it is not important but because it is uncomfortable to discuss. Corruption clearly does exist in Nigeria. Studies have examined the effects of corruption in other countries: a classic theoretical analysis (Shleifer & Vishny, 1993) analysed corruption in comparison to a “tax”. This study concluded that corruption, because it is illegal and secretive (as its proceeds benefit a special interest group rather than the public), is much more costly and damaging than taxes; moreover, weak governments that do not control their agencies tend to suffer more from corruption than strong governments with transparency and processes in place. In an empirical study Locatelli et al. (2017) examined corruption in large rail projects in Italy, and while they found it hard to quantify the effect of corruption, they found strong evidence that it causes additional budget and schedule overruns.

It is very difficult to get people to speak about corruption because of their concerns about the repercussions. We conducted one interview with a senior project manager of a major contractor (who spoke on the condition of guaranteed anonymity). This person estimated that corruption adds, on average, 30% to the budget of a large government project.

This would be bad enough, but if this were all it would perhaps be a small price to pay if one could prevent the abandonment of large government projects by paying some people off. However, corruption is even more corrosive because it also distorts decisions. For instance, some project goals are downplayed, which benefits the goals of the briber; some stakeholders may be frozen out because others have bribed; and the project design may favour some performance dimensions, which are in the interest of the bribers, over other dimensions. As a result, projects affected by corruption will *drift* away from the public benefit purposes that they are supposed to serve; as a result, their value will diminish, resistance from left-out stakeholders may increase, projects may become more likely to fail, and, if they do succeed, they will provide fundamentally diminished value to the public.

In order to test this corrosiveness of corruption, this success drive will be explicitly added to our questionnaire, as we describe in the next chapter. The effect of corruption on project decisions will be visible in the econometric analysis and be illustrated in detail in several of the case chapters (in particular Chap. 10).

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# 3

## Structure of the Investigation

### 3.1 Overview of the Approach Taken in This Study

Chapter 2 demonstrated that we are not looking at a completely unknown phenomenon—much knowledge exists about the challenges of very large public projects. We do not need to go out in the field and document phenomena that have never been seen before, proving that they have systemic causes and are not just idiosyncratic anecdotes. The existing work suggests that very large projects are complex social systems, the success drivers and challenges of which are roughly known but which are very difficult to manage because their specific instances interact and change over time. Moreover, not all the drivers are always relevant, but it is important to understand which are critical in specific situations. In other words, we are trying to identify the most important issues that go wrong in the specific Nigerian public sector context and how one might correct these issues.

A good method to test existing theoretical (causal) knowledge would be the careful statistical comparison of project characteristics from archival databases. If we compare thousands of projects with respect to success and the absence or presence of challenges and success drivers, we can use statistical methods to finely distinguish which success drivers make a difference and which do not. However, we have already pointed out that large-scale project data is simply not available in Nigeria, neither from government sources nor from accessible journalistic sources.

Therefore, we need to create our own database of projects. One good way of doing this is a survey—asking people who are involved in large projects to answer questions about the known success drivers (Creswell, 2009). Comparing the responses across projects enables us to test whether the identified success drivers actually make a difference. Indeed, this is one method that we have used: we asked 3 different respondents from each of 20 completed projects and 20 abandoned projects to respond to a questionnaire (and we obtained answers from all 3 respondents of 38 of the 40 targeted projects). We describe the way in which we carried this out in the next section of this chapter.

Questionnaires have limitations—even if each respondent fills out the questions with someone sitting across the table helping them (thereby reducing problems of sufficient effort and common interpretation), predefined questions only capture certain types of information, possibly missing additional issues that did not fit the assumed structure of the problem. Therefore, we added a second method by writing detailed case studies, “telling the causal stories” of what actually happened for 11 of the 38 surveyed projects. Ten cases comprise paired stories of a completed and an abandoned project in the same sector, and the eleventh case is the only steel plant in the sample, Ajaokuta, which has cost the country a phenomenal amount of money (\$5B and counting) without ever having produced a single ton of steel, and on which a previous case study already exists, which we shall revisit. We describe the way that we conducted the case studies, using a combination of interviews complemented by independent desk research from public sources, in the last section of this chapter.

## 3.2 Construction and Execution of the Survey

Questionnaires represent a useful method to test existing knowledge (or theories). They offer a number of advantages. We discuss these advantages, as well as their disadvantages, and how we used our design to limit these disadvantages (Popper, 1959; Rattray & Jones, 2007; Taylor & Bogdan, 1998; Grant & Wall, 2009). The strengths of the questionnaire method are as follows:

- The quantitative data generated can be used to test existing knowledge and theories and their hypotheses (this is called the “positivist view”, which holds that data can be “objectively” described and quantified).

- Questionnaires are practical; they can collect large amounts of information from a large number of people in a short period of time and in a relatively cost-effective way.
- Once the questionnaire is done, the research can be carried out by a group of people without compromising its validity and reliability, provided the questionnaire is well designed in a way that is not “subjective” but well-grounded in existing knowledge or theory.
- The results of the questionnaires can be quickly and easily quantified (“coded”) by the researchers with the help of software packages.
- The resulting quantified data can be analysed more “scientifically” and objectively than qualitative research, and it can be used to compare and contrast results with results from other research (here, the qualitative case studies).
- Questionnaires can assure anonymity and thus allow respondents to be open. This was particularly important in this context, where people felt exposed by the size and visibility of the projects and were willing to speak only if it was guaranteed that their identities would be protected.

The disadvantages of questionnaires are as follows (we outline how our design attempts to limit the disadvantages):

- *Phenomenologists assert that questionnaires (and quantitative research more generally) are artificial creations by the researcher, asking for limited information without explanation* (as opposed to qualitative research, which asks for the “full richness” of participants’ experiences—this is the opposite of the positivist view). Thus, questionnaires lack validity. Our response is that asking for the “full richness” of experience naturally carries its own biases (Where are the interviewees “led?”), and if existing explanatory theory is available, the “full richness” is wasteful because it will contain so many irrelevant details that the relevant core issues may be lost in the noise. If the questionnaire is carefully designed based on the existing professional knowledge (as described below), it is not artificial, and it has validity.
- *There is no way to tell how truthful a respondent is being or how much thought a respondent has put in.* We addressed these dangers by (a) asking three respondents from each project to fill out the questionnaire, that is, three people representing different parties in the project; this goes at least part of the way to preventing partial views and partisan information distortion and moving towards objectivity; (b) having an associate sit down with each respondent and leading them through the questionnaire, answering

questions about interpretation and making sure that nothing was glossed over.

- *The respondent may be forgetful or not thinking* within the full context of the situation. This is true, but this holds for all personal (non-archival) forms of data collection, and it is again at least partially addressed by the multi-respondent strategy.
- *When developing the questionnaire, the researcher is making his/her own decisions and assumptions about what is, and is not, important. Therefore, they may be missing something that is important;* also, some forms of information may not fit the theoretical lens of the questionnaire (such as emotions or tribal customs) and thus be overlooked by the pre-specified questions. This is again true, and this is the reason why we chose a mixed method combining the questionnaire with detailed case studies.

Here, we describe how the questionnaire was designed and executed. We started with the extended project management framework that concludes Chap. 2. These are the success drivers that 40 years of previous work have identified as professional knowledge about very large projects. We went through the following steps:

1. We decided to forego quasi-“archival” numerical measures, for instance, “the number of stakeholder complaints successfully negotiated”. Such measures, when not routinely available as standard content from IT systems, take inordinate amounts of effort to obtain or estimate (if they can be obtained at all). In order to keep the effort for the respondents within acceptable limits, we decided to use “Likert scale” questions of the type “To what extent do you agree with the following statement (1 = not at all, 4 = neutral, 7 = strongly)?” Likert scale answers are quantifiable and can be (and routinely are) used as quantitative answers, and they can be answered by respondents on the spot, using their knowledge of the context. They are less precise than IT-based archival numbers, and they may invite respondents to give biased answers. However, we addressed this worry by asking three respondents from each project.
2. We translated each of the 48 constructs in the project management framework into possible “measures” that one would be able to request in a questionnaire (Hinkin, 1998; Ghiselli et al. 1981); for example, the “clear vision” construct was expressed with measures such as the extent to which “the goals of the project were clearly understood, the goals were clearly measurable, the prioritization among the top three goals was clear” (this shows how several constructs required multiple measures). In doing so, the

authors did not simply invent measures but looked in previous literature across several disciplines (such as IT and engineering) to see how such constructs had been translated into measures before (Benaroch & Chernobai, 2017; Chua et al., 2012; Constantinides & Barrett, 2015; Dawson et al. 2016; Gopal & Gosain, 2010; Huber et al., 2017; Langer et al., 2014; Mani et al., 2014; Moeini & Rivard, 2019; Oliveira & Lumineau, 2017; Sabherwal et al., 2019; Tallon et al., 2013; Tian et al., 2015; Tiwana & Kim, 2015; Tiwana & Konsynski, 2010; Wu et al., 2015; Young Bong et al., 2017). As a result, the measures that we identified were not arbitrary inventions but had been tested and validated previously. This step resulted in 90 validated measures (including outcome measures).

3. It is still not feasible for senior participants to respond to 90 measures (and thus 90 questions) in a questionnaire within an acceptable time frame. Therefore, we condensed the questions by identifying measures with significant overlap and reduced them to 41, corresponding to 7 pages, which was judged acceptable through a prototype test with volunteer respondents. In addition, the questionnaire included some information about the role of the respondent in the respective project and about the size and outcomes of the project. The complete questionnaire is shown in Appendix.
4. Each questionnaire was sent to three respondents from each project: a project owner (a senior civil servant from the agency that owned the project and who was responsible for its goals), a project supervisor (a mid-level civil servant who was part of the organization that supervised and worked with the contractors that executed the project) and a project manager (an employee of the main contractor). Thus, three different perspectives of the project were represented: the strategic perspective of the owner, the execution perspective from the government side and the execution perspective from the contractor side.
5. Each respondent was approached by means of a personal letter from the lead author, in many cases followed up by a phone call. All respondents were guaranteed anonymity. For 38 of the targeted 40 projects, all 3 respondents agreed to participate. Each respondent was visited by a research assistant, who sat down with the respondent, who explained the questionnaire and was immediately available to clarify questions and interpretations and who ensured that the questionnaire was completed in full.
6. The completed questionnaires were coded in Cambridge by a separate research assistant and then analysed by the authors.

The result of this process was a data set of 114 questionnaires (3 from each project), with project outcome information and 41 measures of success drivers that had been validated by theory and by previously used measures in wider project management research. This data set formed the basis of the analyses reported in Chap. 5.

### 3.3 Construction of the Sample of Projects

Constructing a database of large government projects that enables a systematic comparison of successes and failures is difficult. In the absence of systematic data (the reader may remember that the commission that found a 63% abandonment rate of large government projects did not publish a list!), the projects had to be identified and paired for comparison, and the representatives of the abandoned projects had to be convinced to provide responses.

This took significant effort, time and investment of social capital. Business schools all over the world (including in Nigeria) are drowning in case studies of companies that have succeeded. Companies (and government agencies) love to talk about successes, and they use case studies as marketing tools to showcase to students how great they are. But take a look at how many failures are discussed in public, and you will find that there are very few. Organizations (even more than individuals) loathe speaking about their failures because they fear damaging their external image. Add to this the pressure on large government projects in Nigeria from the press and the public, and the reader may understand why no one has yet constructed this kind of data—not because no one cared but because it is difficult to do.

Table 3.1 presents the sample that the authors were able to construct. It contains 19 completed and 19 abandoned projects (of the targeted 40). Because of the abovementioned challenges, this sample is, to some degree, “opportunistic”: Which projects could we find that were completed versus abandoned, and which ones had senior managers who were willing to respond to a questionnaire? The sample is not arbitrary but consists of *matched pairs*—a pair of projects belongs to the same sector, has a similar budget size and, if possible, was carried out by the same contractor (the latter was possible only in around a third of the cases).

The matching reassures us that the outcome differences were not caused by large differences in context, complexity (the sector) or budget size, or by the abandoned projects somehow having worked with less competent contractors. The matching increases our confidence that the variables measured in the questionnaire indeed captured the differences between the paired projects.



Table 3.1 The sample of projects in this study

Pair	Completed projects			Abandoned projects			
	Project	Budget \$M	Contractor	Project	Budget	Contractor	
1	Roads	Lagos-Ibadan Express Road	500	Julius Berger, Reynolds	Lagos-Badagry Express Road	500	China Civil Engg & Constr. Co (CCECC)
2	Bridges	Third Mainland Bridge, Lagos	1000	Julius Berger, Reynolds	Second Niger Bridge	1000	Julius Berger, Reynolds
3	Energy/power	Egbin Power Station	690	Marubeni West Africa	Calabar Power Station	660	Marubeni West Africa
4		Zungeru Hydropower Plant	1000	CNEEC-Sinohydro	Delta State Power Plant	1000	General Electric
5		Shiroro Hydroelectric Power Station	100	Rockson Engineering Nigeria	Omoku Power Plant Station	100	Rockson Engineering Nigeria
6		Mambilla Hydroelectric Power	5000	Sinohydro Corporation, China			
6	Steel				Ajaokuta Steel Project, Kogi	5000	Tyajz Prom Export (TPE)
7	Water (dam)	Kanji Dam	250	Balfour Beatty; Nedeco Ita	Otukpo Dam	200	SCC Nigeria
8	ICT (satellite)	Nigeria Satellite 2	300	Surrey Satellite Technology (UK)	Nigeria Satellite 1	300	China Great Wall Industry Corporation
9	ICT (telecoms)	Airtel Nigeria	1000	Bharti Airtel (India)	Nigerian Telecom. Ltd (NITEL)	1000	Ministry of Communications
10	Sports stadium	Godswill Akpabio International Stadium	100	Julius Berger Nigeria	(Samuel) Ogebmudia Stadium	100	Peculiar Ultimate Concerns Ltd

(continued)

Table 3.1 (continued)

Pair	Completed projects			Abandoned projects		
	Project	Budget \$M	Contractor	Project	Budget	Contractor
11	Airport					
	Abuja International Airport	500	CCEC (China)	Lagos MMAZ	500	Bi-Courtney Aviation
12	Sea port					
	Yenagoa International Cargo Airport	200	CCEC (China)	Jigawa Airport Project	200	State Ministry of Works
13	Housing					
	Tin Can Island Port, Lagos	250	Port and Term. Multi Serv.	Calabar Seaport	250	Julius Berger Nigeria
14	Libraries					
	Victoria Garden City (VGC) Housing Estate	1000	HFP Engineering Ltd	Festac Town Federal Housing Estate	1000	Federal Ministry of Housing
15	Social project					
	1004 Housing Estate	200	Zvecan Engineering Nigeria	Abuja Mass Fed. Housing	200	Wengfu (China)
16	Waste management					
	Olusegun Obasanjo Presidential Library	500	Gitto	Abuja National Library	500	Reynolds Construction
17	Health care/hospitals					
	Nigerian Youth Empowerment Scheme (N-Power)	500	Federal Government of Nigeria	Subsidy Reinvestment and Empowerment Program (SURE-P)	500	Federal Government of Nigeria
18	Health care/hospitals					
	Lagos State Waste Management Authority	200	Government of Lagos State	Cleaner Lagos Initiative (Visionscape)	200	Government of Lagos State
19	Health care/hospitals					
	University College Teaching Hospital (UCH) Ibadan	500	Alexander Gray (UK)	University of Abuja Teaching Hospital (UATH)	500	Mssrs Cochair Technology

Collectively, this sample covers key sectors of government investment—roads, airports, power stations, ports, housing, ICT systems, waste management, hospitals, education and social projects. This increases our confidence that our findings do not just describe one specific sector but really do capture systematic elements of how the Nigerian government manages its large investment projects. Each project is presented in more detail in Chap. 4.

### 3.4 Construction of the Case Studies

Earlier, we discussed the limitations of surveys: although the quantitative analysis can demonstrate that there are systematic differences between the management practices of completed and abandoned projects, the variables are stylized. Therefore, the econometric analysis in Chap. 5 remains conceptual; it does not bring to life what the project problems looked like; it does not illustrate the causality of *how* the success drivers “drive” success; and because the questions represent the theoretical lens of our framework from previous professional knowledge, they may overlook “other” things that happened, which may offer “other” explanations. Therefore, we have chosen 11 of the projects in the sample for more detailed case studies that “bring the story to life”.

The 11 projects are again matched pairs, comprising 1 completed and 1 abandoned: 2 education projects (Abuja National Library and Obasanjo Presidential Library), 2 bridges (Third Mainland Bridge and Second Niger Bridge), 2 roads (Lagos-Ibadan Express Road and Lagos-Badagry Express Road), 4 power plants (Egbin versus Calabar Power Stations, and Zungeru Hydropower Plant versus Delta State Power Plant) and the 1 steel project in the sample, the Ajaokuta Steel Project, chosen for its size and prominence.

To write these case studies, the authors visited the sites and interviewed people on location, as well as in the ministries where decisions had been made. The interviews lasted 1–2 hours (some of which covered more than one case), and site visits lasted at least half a day each. The interviews are listed in Table 3.2. As is recommended by case study method experts (Yin, 2014), interview and site visit notes were written on the same day that the interviews took place. Later, the accounts from the interviews were complemented by desk research that cross-checked the accounts and filled in the gaps that the interviewees had not covered.

It turned out that the case studies did *not* reveal additional phenomena that had not been included, in principle, in the identified professional knowledge on very large projects. However, the case studies did show how the success

**Table 3.2** List of respondents interviewed across organizations

Interviewee	Position
1. Olusegun Obasanjo	President, Federal Republic of Nigeria, 1976–1979 and 1999–2007
2. Ibrahim Babangida	President, Federal Republic of Nigeria, 1985–1993
3. Goodluck Jonathan	President, Federal Republic of Nigeria, 2010–2015
4. Muhammadu Buhari	President, Federal Republic of Nigeria, 2015–current
5. Mr Alex Okoh and his team	Director Bureau of Public Enterprise
6. Mr Sonny Echono	Acting Minister, Ministry of Education
7. Dr Abdulkadir Muazu	Permanent Secretary, Federal Ministry of Mines
8. Engr Sumaila Abdul-Akaba and his team	Sole Administrator, Ajaokuta Steel Company
9. Jack Robinson	Head engineer, project supervising company Tractebel
10. Mr Edozien	Acting Permanent Secretary, Ministry of Power
11. Jack (name disguised)	Project manager at a major contractor
12. Mr Abubakar Ganiyu	Receiver, VGC Estates
13. Management team	VGC Estates Company
14. Mr Babatunde Fashola	Minister of Power, 2015–2019
15. Dr Yemi Kale	Statistician-General of the Federal Government
16. Mr Igwe Onuoha	Technical manager, Egbin power plant, from 1984
17. Name withheld	Representative of the contractor Bi-Courtney
18. Name withheld	Official in the Economic and Financial Crime Agency
19. Name withheld	Former high-ranking civil servant, India
20. Name withheld	Former high-ranking civil servant, Thailand
21. Name withheld	Former high-ranking civil servant, Indonesia

drivers worked and how the success drivers interacted with one another (e.g. if the project does not have stable funding, then contractors are tempted to play games in order to secure getting paid), as our narratives demonstrate in Chaps. 6, 7, 8, 9, 10, and 11. Moreover, the case studies reinforced the observation from the econometric analysis (Chap. 5) that there were consistent themes, across projects and sectors, regarding how the Nigerian government managed its large infrastructure projects in ways that turned out to be self-damaging.

## Appendix: Full Questionnaire as It Was Administered

The University of Cambridge Judge Business School offers a Business Doctorate Degree for very experienced and senior business people. The goal of this programme is to combine the student's vast experience with rigorous methodology to produce knowledge of high relevance and impact.

The thesis of which this questionnaire forms a part has the theme "The Major Leadership Challenge of Government Major Project Delivery in Nigeria". The project attempts to understand and improve management practices in the set-up and execution of very large infrastructure projects in Nigeria. Such projects have budgets of approximately \$1 billion, have thousands of people working on them and take a decade or more to complete. Unfortunately, many such projects do not succeed, which represents a significant drain on the scarce resources of the entire country. The experienced student undertaking this research is a senior Nigerian executive, Dr Jimoh Ibrahim Folorunsho.

### Our Request

The University of Cambridge solicits your support and assistance in the completion of this survey questionnaire. This will take approximately one hour, and we will make a guide available to help you articulate the answers. The purpose of the questionnaire is to examine management practices in large infrastructure projects in Nigeria.

The University will appreciate your sincere and honest views. The doctrine of exclusion and limiting clause shall be applicable, and neither you nor the University can be held responsible for any liabilities arising directly, or otherwise, in the course of the investigation relating to the opinion expressed. *All your answers will remain confidential and will not be shared with outside parties. Only aggregate results will be published—no individual responses.* The findings of this study will be publicly available in such an aggregated form. If you have any further questions, please contact any of the following by email: [c.loch@jbs.cam.ac.uk](mailto:c.loch@jbs.cam.ac.uk) [k.sengupta@jbs.cam.ac.uk](mailto:k.sengupta@jbs.cam.ac.uk) or [ifj21@cam.ac.uk](mailto:ifj21@cam.ac.uk)

On behalf of the Cambridge Judge Business School, we express our appreciation for your time spent completing this questionnaire.

## Project Variables

### Section A: Background Information

(i) Name	(ii) Telephone number
(iii) Occupation/role	(iv) Position/role you had in this project
(v) Email address	(vi) Name of organization
(vii) Official address	(viii) How long have you been in the organization?
(ix) How many people report to you?	(x) Who do you report to?
(xi) Project commencement date	(xii) Originally estimated delivery date
(xiii) Final/currently estimated delivery date	(xiv) Original budget size
(xv) Final/currently estimated total cost	(xvi) Success/effectiveness of operation: (1 = low success, 7 = high success) Measure of success (e.g. \$ of public benefit):

**Section B: We are asking 40 questions that relate to the methods and structures with which the project was managed. (Circle the number that corresponds to your reaction/estimation or fill out the text.)**

#### A. Governance

1. The project had a well-defined supervision structure (e.g. a combination of clear oversight by a government body with an external execution supervisor).

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

2. Outline the decision hierarchy structure (e.g. “minister – project officer – professional project supervising consultant – main contractor”).

---



---

3. The composition of the supervision structure remained stable throughout.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

4. The supervision structure provided oversight on a regular basis throughout the project.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

5. The supervision structure provided clear guidance when it came to grey areas.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

6. All key decisions were approved by the supervision structure.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

7. The supervision structure was regularly kept informed of key aspects of the project.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

8. The supervision structure met regularly.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

9. The credentials of the members were subject to due diligence prior to membership.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

10. The supervision structure regularly uncovered difficulties in the project.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

11. The supervision structure regularly uncovered irregularities in the project.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

12. The supervision structure provided adequate guidance for resolving problematic aspects of the project.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>



13. Significant gratification in any form was present in this project.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			Neither agree nor disagree			<b>Strongly agree</b>

---

14. The primary contractor was selected through a selection process appropriate for projects of this scale.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			Neither agree nor disagree			<b>Strongly agree</b>

---

15. The selection process was rigorous and open.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			Neither agree nor disagree			<b>Strongly agree</b>

---

16. The selection process considered contractors' demonstrated experience in similar projects elsewhere.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			Neither agree nor disagree			<b>Strongly agree</b>

---

*B. Project Initiation*

17. Details regarding planning for the project received wide visibility, for example, through a website.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			Neither agree nor disagree			<b>Strongly agree</b>

---

18. The public were able to ask questions regarding the project.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

19. Key stakeholders outside the narrow decision circle had visibility and input before the approval processes of the project.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

20. The goals of the project were clearly understood by all parties.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

21. The goals were clearly measurable.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

22. The prioritization among the most important goals was clear.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

23. The project was created with a demonstrated business case defining the goals and public benefits.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

24. The benefits of the project to the economy or society were clear and measurable at the start of the project.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

25. The project goals and business case were subject to risk scenarios to capture the risks of outcomes.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

*C. Project Execution*

26. The primary contractor had strong *capability* to deliver a project of similar characteristics and scale.

---

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

27. The primary contractor had strong prior *experience* in similar projects with a *track record* of successful delivery of similar projects.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

28. The primary contractor and the supervising party had clearly defined roles.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

29. The primary contractor and the government’s assigned project supervisor (see Question 2) worked together constructively when problems occurred in the execution.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

30. *Sub-contractors*: Taken together, the sub-contractors had strong *capability* to deliver a project of similar characteristics and scale.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

31. The project had formal plans for managing stakeholders outside the project.

---

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

---

32. The plans were actively used to positively influence stakeholders.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

33. Stakeholder views were used to make changes that improved the viability of the project.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

34. The project was adequately resourced (in terms of funds) for its initial size.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

35. The project funding was renewed/maintained when the project needed the funds to proceed.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

36. The project had an adequate supply of skilled staff on the government side.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

37. The project had adequate logistical support, for example, for delivery of materials or personnel.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

38. The timeline of the project plan was realistic.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

39. The project had a well-defined risk plan.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

40. The risk plan was comprehensive in the management of risks that did occur.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

41. The quality of the risk plan was consistent with similar plans used in projects of this magnitude worldwide.

1	2	3	4	5	6	7
<b>Strongly disagree</b>			<b>Neither agree nor disagree</b>			<b>Strongly agree</b>

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# 4

## A Description of the 38 Matched Projects

Table 3.1, in Chap. 3, lists the project sample. It consists of 38 projects divided into 19 pairs, with 1 completed and 1 abandoned project each, matched by size, sector and (when possible) contractor. This chapter gives more detailed descriptions of the projects, offering an impression of each one. Detailed case studies are provided for 11 projects in Chaps. 6, 7, 8, 9, 10 and 11. The numbering of the projects corresponds to the numbering in Table 3.1.

### 4.1 Lagos-Ibadan Express Road

<b>Sector:</b> Road infrastructure	<b>Project value:</b> \$500M+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Works Abuja	<b>Location:</b> Lagos/Ibadan, Oyo State	<b>Contractor:</b> Julius Berger Nigeria and Reynolds Construction Company

The Lagos-Ibadan Express Road is a 127.6 km expressway from Lagos, Nigeria's largest city, to Ibadan, the capital of Oyo State. The expressway is the oldest in Nigeria built at the end of the 1970s and, as a primary connection to the north, south and east of the country, the busiest in Nigeria (more than 250,000 cars daily). The reconstruction contract to widen the road and increase its capacity was awarded by President Goodluck Jonathan's Administration in 2013 at a value of more than \$500 million (Wikipedia, 2021a). Work is ongoing, with significant success in terms of completion achieved during the last visit to the project site (Fig. 4.1).



**Fig. 4.1** Lagos-Ibadan Express Road

### **Rationale Behind Inclusion**

The project was included for investigation because of its economic significance to the Federal Republic of Nigeria (particularly the two interchange sections of the Lagos-Sagamu Road of Ogun State and Sagamu to Ore and Benin of Edo State). Reconstruction of the expressway has helped to reduce the travel time of hundreds of thousands of commuters. An average of 250,000 vehicles use the road daily. The contract was awarded to Julius Berger Nigeria and Reynolds Construction Company Limited (a Nigerian company) for the sum of \$800,986,290.

## **4.2 Lagos-Badagry Express Road**

<b>Sector:</b> Road infrastructure	<b>Project value:</b> \$500M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Works Abuja	<b>Location:</b> Lagos/Badagry, Lagos State	<b>Contractor:</b> China Civil Engineering and Construction Company (CCECC) Abuja

The Lagos-Badagry Express Road is a 60 km section of the Trans-West African Coastal Highway Expressway Road, and it provides connection across the Nigeria Boundary from Lagos through Benin to Dakar. Similar to the Lagos-Ibadan Express Road, this project is a reconstruction work to increase capacity. The reconstruction contract was awarded in 2010 to the China Civil

Engineering and Construction Company (CCECC). The Lagos portion of the expressway should be widened from four lanes to ten lanes for road vehicles, and a light rail line should operate in the centre. Two of the expressway's lanes are intended for exclusive use by the Lagos State Government Bus Rapid Transit System (Fig. 4.2).

### Rationale Behind Inclusion

The Lagos-Badagry Express Road was included in the list of projects to be considered for investigation based on its economic significance and because it is a transnational road.

Although the contract for rehabilitation of the Lagos-Badagry Express Road was awarded in 2009 by the Lagos State Government (LSG) to the contractor CCECC, the road had been in a dilapidated state for a long time, as the LSG failed to carry out complete work on the expressway after it promised to convert it to a ten-lane expressway. Residents and motorists lament the poor condition of the road, which results in accidents, damage to vehicles, a slowdown of economic activity and traffic congestion.



Fig. 4.2 Lagos-Badagry Express Road

### 4.3 Third Mainland Bridge

<b>Sector:</b> Road/bridge	<b>Project value:</b> \$1B+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Works Abuja	<b>Location:</b> Lagos State	<b>Contractor:</b> Julius Berger Nigeria and Reynolds Construction Company

The Third Mainland Bridge with 11.8 km is the longest of three bridges connecting Lagos Island to the mainland. It was the longest bridge in Africa until 1996 (when a longer bridge was opened in Cairo). The bridge connects the mainland at Oworonshoki to the Adeniji Adele Interchange on Lagos Island. Its construction was restarted (after an earlier aborted attempt) and overseen by President Ibrahim Babangida's Administration in 1990 (Fig. 4.3).

#### Rationale Behind Inclusion

This iconic project made the list for investigation considering its peculiar circumstances. The Third Mainland Bridge is an essential part of Lagos' daily commuting activity, and as such it requires continuous renovation. As a result of its high economic importance, and in order to reduce traffic congestion in the state, successive governments have continued to spend money on maintenance of the bridge.



Fig. 4.3 Third Mainland Bridge Eobal End

## 4.4 Second Niger Bridge

<b>Sector:</b> Road/bridge	<b>Project value:</b> \$1B+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Works Abuja	<b>Location:</b> Rivers/ Niger States	<b>Contractor:</b> Julius Berger Nigeria and Reynolds Construction Company

The Second Niger Bridge connects Delta State with Anambra State. It was conceived to ease the pressure on the River Niger Bridge (built over 50 years ago) which became structurally overloaded by traffic. The Second Niger Bridge project, itself 1.8 km long, is divided into three phases of construction—bypassing Onitsha and Asaba Roads, connecting the Owerri-Onitsha Express Way at Nkwerre-Ezunaka and then crossing Atani to the Asaba-Benin Expressway at Okpanam—with a total length of 44 km (Fig. 4.4).

### Rationale Behind Inclusion

One relevant feature of this all-important project is that it was constructed by the same company (Julius Berger) that built the successful Third Mainland



Fig. 4.4 Second Niger Bridge

Bridge. We included both projects so that we could gain insights into the data collection on the phenomenon under investigation. Again, the project consists of four sections: the Asaba Road, the Toll Plaza, the Bridge and the Onitsha Road sections. Although designed over 30 years ago, the project should have been completed in 2017, but it is still not in use despite a large amount of funding.

## 4.5 Egbin Power Station

<b>Sector:</b> Power/electricity	<b>Project value:</b> \$500M+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Power Abuja	<b>Location:</b> Ikorodu	<b>Contractor:</b> Marubeni Consortium Hitachi Company/ Bouygues

Egbin Power Station was carried out under the Babangida administration beginning works in 1982; its start-up was commissioned in six subsequent units between May 1985 and 1988. It is the largest power-generating station in Nigeria, with an installed capacity of 1320 MW. The station is located at Ijede/Egbin, approximately 40 km north-east of Lagos. The contractor was the Marubeni Consortium, which used the Hitachi Company of Japan for the electric/mechanical works and Bouygues of France for the civil works (Fig. 4.5).



Fig. 4.5 Egbin Power Station

### Rationale Behind Inclusion

The Egbin Power Station is a gas-fired plant with six 220 MW independent boiler turbine units. It can also run on high-power fuel oil (HPFO). The thermal plant represents one of the most significant projects in the power sector. Egbin Power Station is now privatized as a joint venture between Sahara Power Group and KEPCO, which acquired a 70% holding at a cost of \$407.3 million.

## 4.6 Calabar Power Station

<b>Sector:</b> Power/ electricity	<b>Project value:</b> \$500M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Power Abuja	<b>Location:</b> Calabar, Cross River State	<b>Contractor:</b> Marubeni Corporation (Japan) and Gitto Group (Nigeria)

This power station was built as part of the National Integrated Power Project (NIPP), which was supposed to create 11 power stations across Nigeria. A simple cycle gas turbine built with the capacity to supply 561 MW of electricity to the national grid, it was completed in 2014 without delivering power as planned.

In September 2017 the Nigerian government signed an agreement with Seven Energy for the supply of gas to the power station to enable it to deliver 561 MW of power in order to bring the power plant to full functional capacity. These objectives have not been realized (Fig. 4.6).

### Rationale Behind Inclusion

Naturally, it is important to investigate what went wrong with a power station that took over \$500 million in spending from the Nigerian national income without supplying a single megawatt of electricity. The Calabar Power Station is currently non-operational after an investment of over a billion dollars. Nigeria is now one of ten countries in the world with an irregular supply of electricity.



Fig. 4.6 Calabar Power Station

## 4.7 Zungeru Hydropower Plant

<b>Sector:</b> Energy	<b>Project value:</b> \$1B+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Power Works and Housing	<b>Location:</b> Niger State	<b>Contractor:</b> EEC/Sino Hydro (China)

Zungeru Hydropower Plant is located on the Kaduna River in Niger State, 150 km from Abuja. It entails an engineering, procurement and construction (EPC) contract consisting of a 700 MW hydropower station, a river dam, a 2400 m RCC roller concrete gravity dam and a clay core rock fill dam, a powerhouse behind the dam, and a tailrace channel, at an estimated cost of \$1.3 billion. The duration of the work was planned to span 2013–2018 (57 months). The first phase was set to be released by December 2019. The project has not quite been released, but completion is imminent at the time of writing (Fig. 4.7).

### Rationale Behind Inclusion

The host governor on the project recently remarked: “We are conscious of the importance of this project, not only as it affects our people, but for the nation too. That is why we put in place a committee to interface with the communities and the contractors. We don’t want anything to delay the delivery of this project. All hands must be on deck to ensure that we have a hitch-free operation on-site and for the project to be delivered on schedule.”





Fig. 4.7 Zungeru Dam

## 4.8 Delta State (Oghareki) Power Plant

<b>Sector:</b> Energy	<b>Project value:</b> \$1B+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Power Works and Housing	<b>Location:</b> Oghara, Delta State	<b>Contractor:</b> Delta State Government

The Delta State Government conceived the idea of an independent power plant (IPP) project in order to boost the electricity power supply in the state. The state hosts the majority of the oil production in Nigeria. Federal electric supply was 100 MW versus the 1000 MW of electricity needed. The project is under financial investigation by a different government agency (Fig. 4.8).

### Rationale Behind Inclusion

The host governor said the following at the project's foundation ceremony: "We are glad as a state that we will be a hub for generations because of the peaceful nature of our state and the contribution to power in Nigeria." Despite having the right intentions, the project site experienced inactivity after spending over \$1 billion, very likely due to corruption, although no one has been



**Fig. 4.8** Delta State Oghareki Power Plant

convicted. Investigating the project will assist our understanding of the dynamics of the phenomenon.

## 4.9 Shiroro Hydroelectric Power Station

<b>Sector:</b> Energy	<b>Project value:</b> \$100M+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Power Works and Housing	<b>Location:</b> Niger State	<b>Contractor:</b> Bureau of Public Enterprise (BPE) Concession/ Shiroro Hydro Electric

This is a power plant with a 600 MW capacity, with a rock-filled concrete-faced dam that is 115 m high and 700 m long. The dam site has a reservoir of 7Bm<sup>3</sup>. The project has residential quarters, a hospital and a school. Shiroro has an electrical distribution network comprising an 11/0.41 kV distribution network and 11/0.415 kV sub-stations (110–200kVA). Assets consist of civil structures, the primary electro-mechanical plant and non-core assets. There



**Fig. 4.9** Shiroro Dam

are four hydraulic turbines, four generators, gates and hoists and plant auxiliaries, including a powerhouse portable water treatment plant, sewage treatment plant, lubricating oil treatment plant, one chlorination plant, two flood control pumps and reservoir management equipment. The project was privatized by the federal government on a private concession of 30 years (Fig. 4.9).

### **Rationale Behind Inclusion**

Shiroro Hydroelectric Power Station assists our investigation in explaining project success in the much-needed electricity sector of Nigeria.

## **4.10 Omoku Power Plant Station**

<b>Sector:</b> Energy	<b>Project value:</b> \$100M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Power Works and Housing	<b>Location:</b> Rivers State	<b>Contractor:</b> Rockson Engineering Nigeria

Similar to Calabar Power Station, this power plant was meant to be part of the National Integrated Power Project (NIPP), via the Niger Delta Power Holding Company (NDPHC). It was to be a 252 MW gas turbine power station with 2x126 MW GE 9EA gas turbines. The project was supposed to



**Fig. 4.10** Omoku Power Plant

complement the capacity of a previous project commissioned in 2006 by President Olusegun Obasanjo.

The Omoku plant was inaugurated in 2006, but it did not improve the power situation in the state. The project was under the investigation of the crime agency (Economic and Financial Crimes Commission, EFCC) based on petitions by indigenes who alleged that the project was overpriced (Fig. 4.10).

### **Rationale Behind Inclusion**

This project offers insights into project failures and why it was challenging to replicate the success factors in comparable projects such as the Shiroro Hydroelectric Power Station.

## **4.11 Mambilla Hydroelectric Power**

<b>Sector:</b> Power/electricity	<b>Project value:</b> \$5B+	<b>Status:</b> Stalled and restarted
<b>Owner:</b> Federal Ministry of Power Abuja	<b>Location:</b> Donga, Taraba State	<b>Contractor:</b> Consortium led by Sinohydro Corporation (China)

Mambilla Hydroelectric Power aims to construct a dam and reservoir at 1300 metres above sea level in order to generate electrical capacity of 3050 MW. Three tunnels will lead into a 1000 m (3300 ft) drop shaft tunnelled down through the rock to an underground powerhouse. The cost of over \$5 billion is to be 85% financed by the Nigerian government via a loan from the China Exim Bank. The project design was finalized in 2012 but on hold until 2016, when the contract was given to Sinohydro in 2017 (NS Energy, 2021). The project was again stalled due to payment defaults by the Nigerian government to a contractor who lost out in 2017. However, an agreement has been reached (CPR Newsroom, 2021), and the project is finally to take off with a goal to be operational in 2030 (Fig. 4.11).

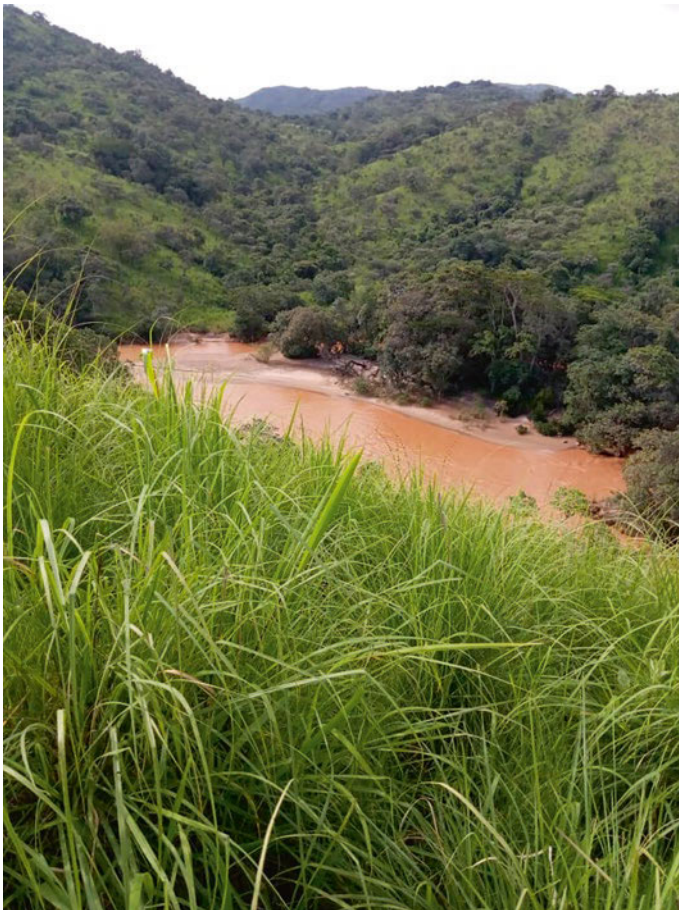


Fig. 4.11 Mambilla Site

### Rationale Behind Inclusion

The size of the project (over \$5 billion) makes it one of the two most expensive projects in Nigeria. This is comparable with the Ajaokuta Steel Project. The two projects have been included on the list of our investigation given their value of \$10 billion, which is 50% of Nigeria's total external debt.

## 4.12 Ajaokuta Steel Project

<b>Sector:</b> Power/electricity	<b>Project value:</b> \$5B+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Ministry of Power and Steel	<b>Location:</b> Kogi State	<b>Contractor:</b> Tyajz Prom Export (TPE) (USSR)

In 1979 a tender went out to develop the Nigerian Steel Industry, and a contract was signed with Tyajz Prom Export (TPE). The 1986 delivery date was rescheduled to 1989. Although TPE had a track record of on-schedule, on-cost delivery of steel projects, the project, initially scoped at \$650 million, absorbed over \$5 billion before being abandoned in 1994. In 2000, the project was restarted based on a public–private partnership (PPP) scheme, but stopped again because of corruption charges related to the award of the commission. In 2016 the sole administrator of the Ajaokuta Steel Company Ltd requested N43B (\$113M) from the Senate Committee on Privatization for a light mill section of the plant and N5B for the completion of a thermal generation plant. This request was made after 38 years had passed and \$5 billion had been spent without any steel production being accomplished (Fig. 4.12).



Fig. 4.12 Ajaokuta Steel Plant

### Rationale Behind Inclusion

The project (costing above \$5B) is one of the two most expensive projects in Nigeria (with the Mambilla Hydroelectric Power project in Taraba State). The two projects made the list of our investigation given their value of \$10 billion, which represents 50% of Nigeria's total external debt.

## 4.13 Kanji Dam

<b>Sector:</b> Dam	<b>Project value:</b> >\$100M	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Water Resources	<b>Location:</b> Niger State	<b>Contractor:</b> Balfour Beatty; Nedeco (Italy)

One of numerous water projects in Nigeria, this significant water project started in 1964 and was completed in 1968 at a cost of about \$200M.

It is one of the longest dams in the world, extending over approximately 10 km. As only 8 of 12 planned turbines have been installed, capacity is only 760 MW instead of the planned 960 MW. The Kanji Dam generates electricity for all large cities in Nigeria, and some is sold to Niger. Electricity output has diminished on some occasions because of the unpredictable water flow of the River Niger during drought (Fig. 4.13).



Fig. 4.13 Kanji Dam

### Rationale Behind Inclusion

This is one historic project that was completed on time and with benefit to the Nigerian community.

## 4.14 Otukpo Dam

<b>Sector:</b> Dam	<b>Project value:</b> \$100M	<b>Status:</b> Stalled/ abandoned
<b>Owner:</b> Federal Ministry of Water Resources	<b>Location:</b> Benue State	<b>Contractor:</b> SCC Nigeria

The Otukpo Dam is a multi-purpose dam, initially designed for a combination of hydroelectric power generation, potable water supply, irrigation and primary dam construction. Specifically, the dam was expected to provide a 130-million cubic metre reservoir and a 3.3 KV hydropower plant for efficient water supply upon completion.

The multi-purpose dam construction was awarded to SCC Nigeria Limited in 2010 and was expected to be completed by 2014. However, after receiving 100% payment of the contract sum, the work is barely 35% complete and has long been abandoned, according to the Fiscal Responsibility Commission (Fig. 4.14).



Fig. 4.14 Otukpo Dam Equipment Yard



**Rationale Behind Inclusion**

The dam was included as a matched opposite to the Kanji Dam, a project of similar size that was completed.

**4.15 Nigeria Satellite 2**

<b>Sector:</b> ITC	<b>Project value:</b> \$250M	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Science and Technology	<b>Location:</b> Abuja	<b>Contractor:</b> Surrey Satellite Technology Ltd (SSTL) (UK)

The President Jonathan Administration decided to build the Nigeria Satellite 2 (NigeriaSat-2) through the Nigerian National Space Research and Development Agency (NASRDA). Its mission was to enhance food security through monthly crop monitoring, to assist with burgeoning urban planning demands and, through the development of engineering skills, to advance the country’s technological capability. In August 2011 NigeriaSat-2 was successfully launched on a Dnepr-1 launch vehicle using the space head module (SHM) configuration from the Yasny/Dombrovsky site in Russia (Fig. 4.15/4.16).



**Fig. 4.15/4.16** Nigeria Satellite Offices

### Rationale Behind Inclusion

In 2008 Nigeria lost the Nigeria Satellite 1 as a result of what some have alleged to be shoddy work by the project engineers. It is interesting to compare a successfully launched satellite with a failed one.

## 4.16 Nigeria Satellite 1

<b>Sector:</b> ITC	<b>Project value:</b> \$250M	<b>Status:</b> Crashed/abandoned
<b>Owner:</b> Federal Ministry of Science and Technology	<b>Location:</b> Abuja	<b>Contractor:</b> Surrey Satellite Technology Ltd (SSTL) (UK)

Nigeria Satellite 1 was the first of five satellites launched by the National Space Research and Development Agency (NASRDA). Nigeria Satellite 1 was the first Nigerian satellite, launched by the Kosmos-3M rocket from the Russian Plesetsk spaceport on 27 September 2003. It was part of the world-wide Disaster Monitoring Constellation System, having the mission of helping to detect and control desertification in the northern part of Nigeria, as well as identifying (with remote sensors) environmental conditions that breed malaria and meningitis. It was also meant to provide the technology needed to bring education to all parts of the country through distant learning and to aid in conflict resolution and border disputes by mapping out state and international borders. In 2008 Nigeria lost the satellite as a result of what some alleged to be shoddy work by the project engineers.

### Rationale Behind Inclusion

It is interesting to compare a successfully launched satellite with a failed one (see project 4.15).

## 4.17 Airtel Nigeria

<b>Sector:</b> ITC	<b>Project value:</b> \$1B+	<b>Status:</b> Completed
<b>Owner:</b> Airtel Nigeria (Airtel Networks Limited)	<b>Location:</b> Nationwide	<b>Contractor:</b> Plot L2, Banana Island, Foreshore Estate

Airtel Nigeria provides mobile services to Nigerians. In 2001 the company became the first telecoms operator to launch commercial GSM services in

Nigeria and has scored a series of many “firsts” in the highly competitive Nigerian telecommunications market (Fig. 4.17).

### Rationale Behind Inclusion

In an environment with multiple IT projects, Airtel provided the opportunity for further investigation into the comparison of project success in the private/government sectors. Airtel also provided Nigeria’s network capacity and coverage on 3.75G platforms, offering high-speed mobile Internet across the 36 states of the federation and the Federal Capital Territory in Abuja. According to Q4 2018 industry statistics by the Nigerian Communications Commission (NCC), the company ranked second in market share for GSM (25.64%) and Internet data (26.6%).



Fig. 4.17 Airtel Nigeria

## 4.18 Nigerian Telecommunications Limited (NITEL)

<b>Sector:</b> ITC	<b>Project value:</b> \$1B+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> BPE	<b>Location:</b> Nationwide	<b>Contractor:</b> BPE in Abuja

Nigerian Telecommunications Limited (NITEL), the result of a merger between the telecoms arm of the postal service and the telecoms arm of the Ministry of Communications, was a monopoly telephone service provider in Nigeria until 1992. Like other state-owned corporations, NITEL did not serve the market well, for example, provide only 450,000 subscriber lines to a population of over 120 million people.

After several failed attempts at privatization, in 2015 the government eventually finalized a transaction that saw NITEL's and its mobile phone arm MTEL's assets transferred to NATCOM (Wikipedia, 2021b). With the great advantage of reliable infrastructure across the country—something that other operators would have jumped at—NITEL/MTEL remained a sleeping giant until its eventual sale (Fig. 4.18).

### Rationale Behind Inclusion

Despite its privatization, NITEL did not succeed with the eventual sale of NITEL to NATCOM. NITEL had lost its market share in the Nigerian telecoms market, with new entrants taking a large portion of the market. Why should a project like NITEL have failed in the hands of the government despite its monopoly and then failed again in the palm of the private sector despite its efficiency and skill?

## 4.19 Godswill Akpabio International Stadium

<b>Sector:</b> Sport	<b>Project value:</b> \$100M+	<b>Status:</b> Completed
<b>Owner:</b> Government of Akwa Ibom State, Uyo	<b>Location:</b> Uyo, Akwa Ibom State	<b>Contractor:</b> Julius Berger Nigeria

The Godswill Akpabio International Stadium in Uyo offers 30,000 seats. It serves as home to the Nigerian Super Eagles, as well as being a centre for social, cultural and religious events. The contract for construction was awarded in 2012 and the project was completed in 2014. The modern multi-purpose sports complex was modelled after the Allianz Arena in Munich. The stadium



Fig. 4.18 NITEL Nigeria

is currently ranked as the best stadium in the country and is frequently used for local and international matches (Fig. 4.19).

### **Rationale Behind Inclusion**

The project demonstrates that large project management principles can be applied to sports venues with success. The comparison with project 4.20 (the Ogbemudia stadium) tests whether the same differences between completed and abandoned projects can be observed in the sports venue sector as in the other infrastructure sectors.



Fig. 4.19 Akpabio Stadium

## 4.20 (Samuel) Ogbemudia Stadium

<b>Sector:</b> Sport	<b>Project value:</b> \$100M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Government of Edo State	<b>Location:</b> Benin City, Edo State	<b>Contractor:</b> Peculiar Ultimate Consult

Originally known as the Ogbemudia Stadium, this 20,000-seater stadium was mostly used for football matches and was the home stadium of Bendel Insurance FC. In 2009 the stadium was banned by the National League due to an unsafe playing surface. Though the state government has attempted to renovate the stadium by signing a contract for the renovations with Peculiar Ultimate Consult, who promised to deliver by 2019, the stadium is still below standard and unfit for matches (Fig. 4.20).



Fig. 4.20 Ogbemudia Stadium

### Rationale Behind Inclusion

See project 4.19.

## 4.21 Abuja International Airport

<b>Sector:</b> Aviation	<b>Project value:</b> \$250M+	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Works Abuja	<b>Location:</b> Abuja	<b>Contractor:</b> CCEC (China)

The Abuja International Airport was built 20 km West of Abuja between 2000 and 2002 and named after Nigeria's first president, Nnamdi Azikiwe.

In 2006, a management contract was signed with a company for 25 years, which included additional facilities (Wikipedia, 2021c). But this contract was revoked by the next government in 2008. A second runway was approved in 2009, but an awarded contract was revoked because of excessive cost (Omoh, 2015). A total of \$50M were approved for the second runway in 2020 (Fig. 4.21).

### Rationale Behind Inclusion

The contrast between the two airports (4.21 and 4.22) seeks to verify whether the same principles between completed and abandoned projects apply as in the other sectors.



Fig. 4.21 Abuja International Airport

## 4.22 Lagos MMA2 Airport

<b>Sector:</b> Aviation	<b>Project value:</b> \$250M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Bi-Courtney Aviation	<b>Location:</b> Ikeja, Lagos State	<b>Contractor:</b> Bi-Courtney Aviation

After the domestic terminal of the Lagos Airport burnt down, a new domestic terminal was commissioned by the Federal Airports Authority of Nigeria (FAAN) in a public–private partnership (PPP) with Bi-Courtney Aviation Services (BASL) in 2003. BASL started managing the terminal in 2007. However, the government then questioned the duration of the agreement and refused partial payments, causing losses for the operator (Blueprint, 2014) (Fig. 4.22).

### Rationale Behind Inclusion

See 4.21.





Fig. 4.22 Lagos MMA2 Airport

## 4.23 Yenagoa International Cargo Airport

<b>Sector:</b> Aviation	<b>Project value:</b> \$200M	<b>Status:</b> Completed
<b>Owner:</b> Government of Bayelsa State	<b>Location:</b> Yenagoa, Bayelsa State	<b>Contractor:</b> Ministry of Works Bayelsa State

The Yenagoa International Cargo Airport project in Bayelsa State was initiated in 2012, inaugurated in September 2018 and opened in 2020. The airport covers 2250 hectares of land with a 3.5 km runway and terminals, accommodates B747 aircraft and is fitted with Category II landing facilities for bad weather. The airport is creating jobs and attracting investors to the state (SageTravels, 2019) (Fig. 4.23).

### Rationale Behind Inclusion

This project provides evidence that a state government can successfully construct an international cargo airport.



Fig. 4.23 Yenagoa Airport

## 4.24 Jigawa Airport Project

<b>Sector:</b> Aviation	<b>Project value:</b> \$200M	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Government of Niger State	<b>Location:</b> Dutse, Jigawa State	<b>Contractor:</b> Ministry of Works Jigawa State

Jigawa Airport was meant to become the perishable cargo hub in the region. One of the foreseen benefits of this project was significant enhancement of the income of farmers in the area, who would have access to international markets for their produce. It was also hoped to boost tourism in Jigawa State, as it was supposed to have the capacity to accommodate B747 aircraft with its 3.6 km runway.

The project started in February 2014. The Federal Civil Aviation Authority (FAA) carried out an inspection of the warehousing, which found that the airport was poorly constructed, there were no passengers, the project was poorly conceived and airlines were not flying there since it was not commercially viable. The airport is largely inactive, which is attributed by an unnamed civil servant to “misplaced priorities” (Ajakaiye, 2020) (Fig. 4.24).

### Rationale Behind Inclusion

This project, unlike its successful paired project, failed in the hands of another state government.



Fig. 4.24 Dutse Jigawa Airport

## 4.25 Tin Can Island Port

<b>Sector:</b> Transportation	<b>Project value:</b> \$400M	<b>Status:</b> Completed
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Apapa, Lagos State	<b>Contractor:</b> Port and Terminal Multiservices Limited (PTML)

Tin Can Island Port is a part of Apapa, the port for the city of Lagos (across from Lagos Harbour). The Tin Can port terminal commenced construction in 1981 and was opened in 1997. In 1991 the Nigerian Port Authority became responsible for operating the port. In 2006, Tin Can Island merged with Roro Terminal when private terminal operators, Port and Terminal Multiservices Ltd (PTML), took over.

Tin Can Island Port is the second busiest port in Nigeria after Apapa Port. The storage capacity of the silos is 28,000 metric tonnes of grain. The terminal handles wheat, maize and malt, and it can take delivery of approximately 4000 metric tonnes of grain daily. The facilities can handle ships of around 30,000 tonnes. There is also a grain bagging facility on-site (Fig. 4.25).

### Rationale Behind Inclusion

The same differences are observed between completed and abandoned projects in the seaport sector as in the other sectors.



Fig. 4.25 Tin Can Island Port

## 4.26 Calabar Seaport

<b>Sector:</b> Transportation	<b>Project value:</b> \$250M	<b>Status:</b> Stalled/ abandoned
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Calabar, Cross Rivers State	<b>Contractor:</b> Julius Berger Nigeria

Calabar Port was notable for being central to trade with white businessmen. The Old Port, as it is often called, was administered by different companies for many years until the Federal Government of Nigeria took over its operations in 1969.

In spite of its historical importance, the port has remained neglected. Calabar Port is faced with unique challenges.

The bad road access into the port is one disincentive for shippers and business people when considering calling at the port. However, the dominant barrier to growth of the harbour (just like other ports in the region) is the inability of the government to dredge the channel (Salau, 2019). The former Minister for Transport, Malam Idris Umar, once stated: “Dredging of the channel could transform the economy of the Niger Delta region. The synergy between the Calabar Port, the Calabar Free Trade Zone, and Tinapa is valid. With the channel dredged, the increase in the volume of economic activities could be substantial and, of course, would transform and grow the maritime economy” (Fig. 4.26).



Fig. 4.26 Calabar Sea Port Authority

## 4.27 Victoria Garden City (VGC) Housing Estate

<b>Sector:</b> Housing	<b>Project value:</b> \$1B	<b>Status:</b> Completed
<b>Owner:</b> HFP Engineering Ltd Lagos	<b>Location:</b> Ajah, Lagos State	<b>Contractor:</b> HFP Engineering Ltd

Victoria Garden City (VGC) Housing Estate was developed in the 1990s as one of the first gated communities within the Lekki area. It is a high-end residential neighbourhood located along the Lekki-Epe Express Way. Its land area is 213 hectares and it sits beside the Lagos Lagoon. The estate has reserved commercial regions separate from the residential field, and the residential area is made up of serene boulevards. The estate has a secure gated entrance and exit.

Most of the buildings in VGC are duplexes, and the uniform houses within the estate are prototypes built by the developer. Security in the area is generally tight. Within the estate are parks and playgrounds (enough space for children to express themselves). It is the right place for those who want to live in comfort, serenity and safety.

VGC was developed by HFP Engineering and then managed by VGC Estate Management Co (in which HFP has a substantial interest). HFP changed management under a management buyout and went into bankruptcy



**Fig. 4.27** Victoria Garden City

in 2019. When the data for this study was collected, the mother company was in receivership, looking for new investors (Fig. 4.27).

### **Rationale Behind Inclusion**

The same differences are observed between completed and abandoned projects in the housing sector as in the other sectors (projects 4.27 and 4.28).

## **4.28 Festac Town Federal Housing Estate**

<b>Sector:</b> Housing	<b>Project value:</b> \$920M	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Festac, Lagos, Lagos State	<b>Contractor:</b> Federal Ministry of Housing

Festac Town Housing Estate (otherwise known as the Black Arts Festival Town) is situated along Badagry Express Way, Lagos, South West Nigeria. The entire town will occupy, in its ultimate phase, an area of 1770 hectares and include seven residential communities of 15–20,000 people. Thus, the

development will ultimately be able to accommodate a total number of 24,000 apartments, or around 120,000 people.

The present development (Phase 1) commenced in 1974 and was completed by the end of 1976. The construction of houses and various services was awarded to around 40 contractors in approximately 70 different sites of the project, while the infrastructure work was assigned to 14 major contractors.

However, the subsequent phases were never started. And, as a result of the neglect of Phase 1, most of the physical infrastructure of the once beautifully planned Festac Town is in a bad condition, the crime rate is increasing and social amenities are deteriorating. This is a marked departure from the original purpose and design of the village during its establishment in 1977 (Fig. 4.28).

### Rationale Behind Inclusion

The project is a contract to Victoria Garden City. Stakeholder interests were not as effectively considered, which ultimately went along with a deterioration of the project.



Fig. 4.28 Festac Town Estate

## 4.29 1004 Housing Estate

<b>Sector:</b> Housing	<b>Project value:</b> \$200M+	<b>Status:</b> Completed
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Victoria Island, Lagos State	<b>Contractor:</b> Federal Ministry of Housing, Abuja

In preparation for handing over to the democratically elected civilian administration of President Shagari in 1979, the Military Government of General Obasanjo needed to address accommodation for federal legislators and their families, who were compelled by their election victory to relocate to Lagos (then the federal capital of Nigeria). Isaac Fola-Alade was contracted to design appropriate accommodation on the 11 hectares of land available (Fig. 4.29).

### Rationale Behind Inclusion

The project constructed six high-rise buildings, four clusters of residential multi-storey condominiums for families of senators and members of the House of Representatives, and four low-rise buildings with over a thousand apartments. The estate opened in 1979, demonstrating that the government was already able to deliver successful housing projects to the public at that time. In contrast, it failed in Fig. 4.30, the Abuja Mass Federal Housing Project.



Fig. 4.29 1004 Housing Estate





Fig. 4.30 Abuja Mass Federal Housing

### 4.30 Abuja Mass Federal Housing Project

<b>Sector:</b> Housing	<b>Project value:</b> \$200M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> FCT Abuja	<b>Location:</b> Abuja districts Apo, Kubwa and Mpape	<b>Contractors:</b> Zvecan Consulting and Engg Ltd (Nigeria); Wengfu Ltd (China)

The Federal Government of Nigeria entered in the year 2000 into a partnership with Zvecan and Wengfu to build the Abuja Mass Federal Housing Project under the Federal Integrated Staff Housing (FISH) programme. The project was financed by the Federal Mortgage Bank of Nigeria, or FMBN. Construction has since commenced on the site but is currently abandoned. A memorandum of understanding (MoU) was signed by the contractors with the Office of the Head of the Civil Service of the Federation (OHCSF) for the off-take of the apartments upon completion. The scheme seems to have failed its purpose of generally accessible housing (Abdullah & Aziz, 2013; Umoh, 2012) (Fig. 4.30).

### Rationale Behind Inclusion

See Fig. 4.29.

## 4.31 Olusegun Obasanjo Presidential Library

<b>Sector:</b> Education	<b>Project value:</b> \$500M+	<b>Status:</b> Completed
<b>Owner:</b> President Olusegun Obasanjo	<b>Location:</b> Abeokuta, Ogun State	<b>Contractor:</b> Gitto Construzioni

The Olusegun Obasanjo Presidential Library was conceived in 1988 to immortalize the president, and it was built after he started his second term as president of the Federal Republic of Nigeria. The library was inspired by the US presidential library system and is the first of its kind in Nigeria.

The Library is owned by the former president of Nigeria and operates as a historic tourist centre with the ambition to also serve as a national archive for the preservation of documents and materials used by the president during his tenure and thus as an academic centre (Fig. 4.31).

### Rationale Behind Inclusion

The comparison of the two library projects demonstrates clearly the importance of having a clear design and purpose from the beginning, which does not change over the course of the project.



Fig. 4.31 Olusegun Obasanjo Presidential Library

## 4.32 Abuja National Library

<b>Sector:</b> Education	<b>Project value:</b> \$500M+	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> National Library of Nigeria	<b>Location:</b> Garki, Abuja	<b>Contractor:</b> Reynolds Construction Co. (RCC) (Nigeria)

The contract for the library was awarded in 2006 to Reynolds Construction, a subsidiary of SBI International Holdings of Switzerland, with a plan to be completed within 22 months.

After 22 months, the project was scaled down from eight to five floors (but its budget was scaled up with the approval of the Federal Executive Council), and the completion date moved back to July 2010. Just as the roofing engineers were about to move in October 2012, a directive from the presidency instructed RCC to revert to the original design of eight floors. In February 2013 RCC requested an extension and again sought an upward review of the budget. No major work has been done since then (Chris, 2021). Meanwhile, the National Library Department is continuing to serve the nation from a rented building with a leaky roof, cracked walls, and broken-down toilets and water pipes (Fig. 4.32).



Fig. 4.32 Abuja National Library

### Rationale Behind Inclusion

See 4.31.

## 4.33 Nigerian Youth Empowerment Scheme (N-Power)

<b>Sector:</b> Social project	<b>Project value:</b> \$500M	<b>Status:</b> Completed
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Nationwide	<b>Contractor:</b> Federal Government of Nigeria

The Nigerian Youth Empowerment Scheme (N-Power) was set up in 2016 as an exploratory project of the Federal Government of Nigeria to support youth unemployment reduction and education by teaching and developing relevant work skills, which should also stimulate the economy overall. Modular programmes allow participants to customize content. Fifty thousand trained volunteers are being developed to cover gaps in public education services (Vanguard, 2017) (Fig. 4.33).

### Rationale Behind Inclusion

Despite over a billion dollars being spent, unemployment increased from 10% to over 23%. Currently, N-Power is also a platform for diversifying the



Fig. 4.33 N-Power Offices

economy. N-Power's objective is to prepare young Nigerians for a knowledge economy. The mission is to create a pool of software developers, hardware service professionals, animators, graphic artists, building services professionals, artisans and more.

### 4.34 Nigeria Subsidy Reinvestment and Empowerment Programme (SURE-P)

<b>Sector:</b> Social project	<b>Project value:</b> \$500M	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Federal Government of Nigeria	<b>Location:</b> Nationwide	<b>Contractor:</b> Federal Government of Nigeria

SURE-P is a scheme that was established during the Jonathan Administration in 2012, applying a part of the Federal Government's savings from the fuel subsidy removal in 2012 into job training and employment for unemployed graduates.

The core of the programme was the provision of employment for unemployed graduates through internship programmes, creating a database of unemployed youth and reducing social vulnerability (Vanguard, 2014). SURE-P has been described as a project without a clear objective that did not disperse funds or did so in biased ways, and the leadership of the programme has also been criticized (CSJ, 2014) (Fig. 4.34).

#### Rationale Behind Inclusion

The programme was limited in its impact by implementation issues (across states) that provide a contrast to the N-Power scheme.

### 4.35 Lagos State Waste Management Authority (LAWMA)

<b>Sector:</b> Environment/waste	<b>Project value:</b> \$200M	<b>Status:</b> Completed
<b>Owner:</b> Government of Lagos State	<b>Location:</b> Lagos State	<b>Contractor:</b> Lagos State Ministry of Works

LAWMA was established in 1991 (replacing its predecessor organization established in 1977) and is the first waste management agency in West Africa.



**Fig. 4.34** SURE-P Offices

Its mission is to provide a professional, efficient and sustainable waste management and disposal service to Lagosian corporate bodies and governments (local and state) in Lagos State.

Before its establishment, waste management in a large commercial city like Lagos was a severe challenge for residents and the government. Lagos was ranked as one of the dirtiest cities in the country. Using a collaborative approach with all stakeholders, and introducing value-added services such as waste collection, recycling, receptacles, billing and service, Lagos State has become one of the cleanest cities in Nigeria (Obieni, 2021) (Fig. 4.35).



Fig. 4.35 LAWMA trucks

### Rationale Behind Inclusion

The LAWMA agency has been installed successfully and has had impact, with ambition for more. This contrasts with project 4.36.

## 4.36 Cleaner Lagos Initiative (Visionscape)

<b>Sector:</b> Environment/waste	<b>Project value:</b> \$200M	<b>Status:</b> Stalled/abandoned
<b>Owner:</b> Government of Lagos State	<b>Location:</b> Lagos State	<b>Contractor:</b> Lagos State Ministry of Works

Visionscape is a public–private partnership with the Lagos State Government to provide waste management services for the Cleaner Lagos Initiative (CLI).

Visionscape has invested several millions of dollars in the purchase of cutting-edge technology and tools in a “24-hour waste management facility”. However, the initiative suspended its operations after “a series of grave threats to the lives of its employees and destruction of its operational vehicles and equipment” in 2018 (Nairaland, 2018). No photo is available because the operation has become defunct (Fig. 4.36).



**Fig. 4.36** Visionscape Offices after dismantling and being taken over by a company

### **Rationale Behind Inclusion**

The Visionscape project also had an excellent rationale but became a victim of hostile actions against it, in contrast to LAWMA in 4.35.

## **4.37 University College Teaching Hospital (UCH) Ibadan**

<b>Sector:</b> Health/hospital	<b>Project value:</b> \$500M	<b>Status:</b> Completed
<b>Owner:</b> Federal Ministry of Health	<b>Location:</b> Ibadan, Oyo State	<b>Contractor:</b> Alexander Gray (UK)



UCH Ibadan was authorized in 1952, started construction in 1954 and was inaugurated in 1956, in order to fill the need for the training of medical personnel and other health-care professionals for the country and the West African sub-region in the Medical Department of University College Ibadan, the first university in Nigeria.

UCH started with 500 beds and 2 clinical departments, Medicine and Surgery. It has evolved to having more than 65 departments, among which is the first Department of Nuclear Medicine in Nigeria. In addition, more than 200 examination couches have been added, with occupancy rates ranging from 65% to 70%. UCH performed the first open-heart surgery in Nigeria, and its wide range of facilities, workforce and track documents have led to patronage by both national and international clientele (Oguntola, 2017) (Fig. 4.37).

### Rationale Behind Inclusion

The two hospitals 4.37 and 4.38 provide again a contrast between a project outcome that works (with admitted limitations) and one with a performance that invites severe criticism.



Fig. 4.37 UCH Ibadan

## 4.38 University of Abuja Teaching Hospital (UATH)

<b>Sector:</b> Health/hospital	<b>Project value:</b> \$500M	<b>Status:</b> Underperforming
<b>Owner:</b> Federal Ministry of Health	<b>Location:</b> Abuja	<b>Contractor:</b> Mssrs Cochair Technology

Formerly known as Gwagwalada Specialist Hospital (founded in 1992), the hospital changed its name and became a subsidiary of the University of Abuja in 2013. However, it never reached its planned capacity of 500 beds or anything close even to the officially claimed 450 beds. Moreover, UATH has deteriorated over the years, with symptoms ranging from unavailability of basic medical equipment to patient complaints over treatment quality and service. This has prompted angry press reports that accuse the hospital of being “the gold standard of disguised incapacity” (Ugwu, 2017) (Fig. 4.38).

### Rationale Behind Inclusion

See 4.37.



Fig. 4.38 UATH Abuja

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# 5

## Insights from the Analysis of the Questionnaires

This chapter presents the results of the econometric analysis of the questionnaire data. An econometric analysis identifies and interprets patterns in the data that we have collected. The patterns allow identifying causal connections between actions that were taken in projects and project outcomes, namely completion (versus abandonment) and for the completed projects, schedule and cost performance. We present the fundamental logic of the analysis, including key results in a graphical form. We put technical content (related to the econometrics methods) into the Appendix of this chapter, so that readers who are not interested in the technical details can read this chapter and understand its critical implications, and readers who do want to check the rigour and care of the analysis can check.

As we explained in Chap. 2, we have data for 19 abandoned projects and 19 completed projects, each with 3 respondents—an owner, a supervisor (both civil servants) and a project manager of the main contractor. A total of 38 of 40 targeted projects represent a response rate of 95%. This gives us a total of 114 questionnaires to work with.

We first examine the distributions of the responses. We show that the three respondent types indeed show “biases”, or views of the project from “where they sit”: owners evaluate differently what went well and what did not; for example, a cost overrun that was absorbed by the contractor looks like a problem to the contractor but may not even register as important for the owner. We also check whether the responses actually differ across abandoned and completed projects: we find that they do, which means that our questionnaire variables capture something that is happening *differently* across abandoned versus completed projects.

Then, we “condense” the 41 variables to a smaller number of 4 “composite variables”, which are called “factors” in the social sciences. We need to do this because each factor captures an underlying dimension of managerial differences that is shared across a number of our variables; the shared dimension represents a common “essence” underlying several variables, of which each variable expresses a piece. (We also do not have enough data points to incorporate all 41 variables separately in a regression to obtain sharp results.) We then show that the four factors (in addition to corruption, the one variable that represents a dimension of its own) are able to statistically explain project completion with success. Finally, we show that the factors also successfully explain the budget and schedule performance of the 19 projects that were completed.

## **5.1 Variable Distributions and Variable Capability to Detect Differences Across Projects**

### **5.1.1 Each Respondent Type Adds Unique Perspectives and Information**

Let us first compare the three different respondent types (owners, supervisors and contractors)—the comparison will give some indication of how different the information and views are that are expressed by the three respondent types (Table 5.1).

First, we see that the responses are positively correlated. A correlation of zero between two variables means that two have nothing to do with each other—they move independently from each other. A correlation of 1 means that the two variables move in unison (whenever one moves up or down, the other does the same), which means the two variables are the same (possibly scaled by a factor). A modest correlation of up to 0.5 means that the two variables are somewhat related (which is to be expected, as, after all, the three respondents do look at the same project), but they differ significantly.

As the three respondents reported on the same project, their responses should have some commonality—but is only moderate, so the three respondents emphasized in their own views the different characteristics of the project. For the completed projects, the two civil servants (owner and supervisor) agree more, with a correlation of 41%, but for the abandoned projects, the supervisor’s response is as highly correlated with the contractor as it is with the owner (at a lower level of 30%).

Table 5.1 Correlations among the responses of the owner, supervisor and contractor

	Owner	Supervisor	Contractor	Owner	Supervisor	Contractor
Owner	1			1		
Supervisor	0.4089***	1		0.2895***	1	
Contractor	0.1516***	0.2595***	1	0.2983***	0.3062***	1
19 completed projects				19 abandoned projects		

Significance levels are indicated as \*\*\*;  $p < 0.001$ ; \*\*;  $p < 0.01$ ; \*;  $p < 0.05$ ;  $p < 0.10$

Now we examine how much the responses shift between completed and abandoned projects while distinguishing between the three respondents. Figure 5.1 shows the distributions of all answers by project outcome: across all answers, a higher score is “better”; therefore, a shift of distribution to the left means a shift towards—across all management aspects—“lower management performance”. We see in Fig. 5.1 that for abandoned projects (right),

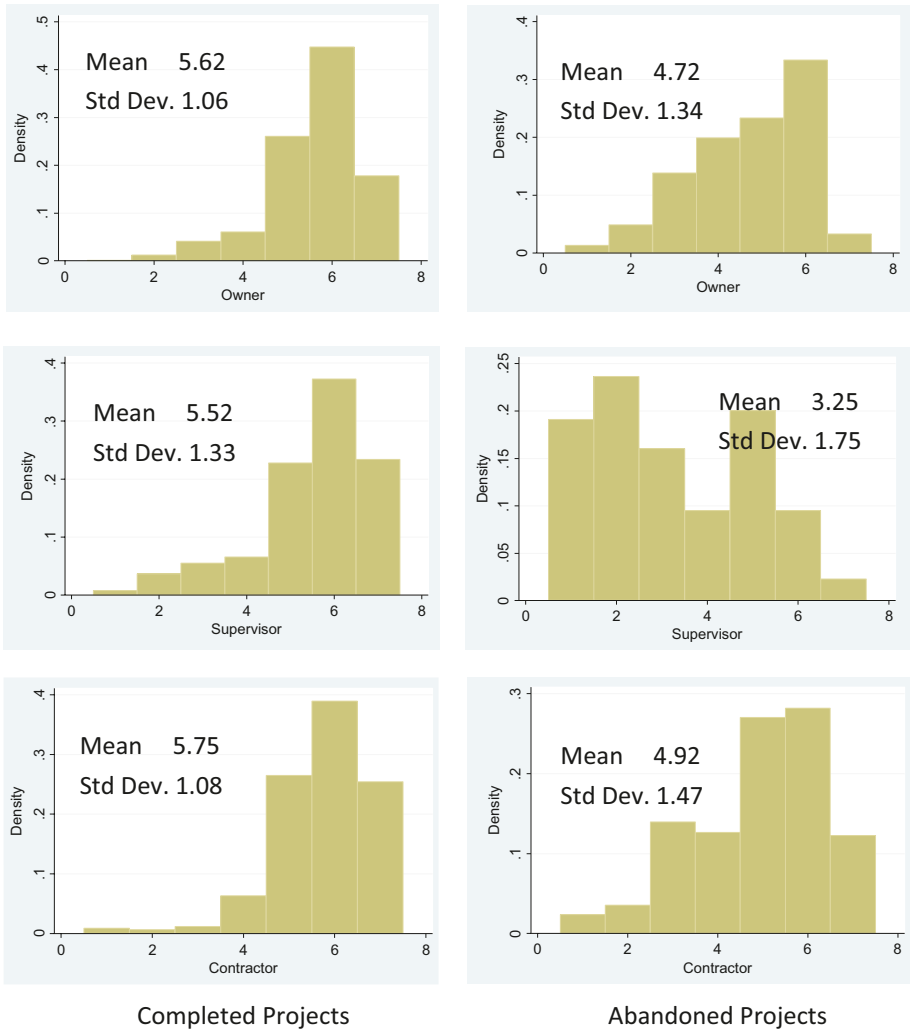


Fig. 5.1 Response distributions by project outcome and respondent type



compared to completed projects (left), the means of the answers shift left (towards lower performance), and the standard deviations grow (the abandoned projects differ more among themselves in their evaluations than the completed projects). The largest difference among projects is in the abandoned category for the supervisors—the standard deviation is the largest, and this is the only non-unimodal distribution.

Most interestingly, the evaluation shift from completed to abandoned projects is the largest for the supervisors: the mean shifts by 1.27 Likert points (versus only 0.9 and 0.83 for owners and contractors, respectively). We thus observe that the supervisor evaluations are the most sensitive to project outcomes. Specifically, the mean responses are not statistically different across the three respondent types for completed projects, but among abandoned projects the responses differ statistically significantly across respondent types, and this is because supervisors lower their evaluations significantly more for abandoned projects than owners and contractors do.

The difference could be caused by the supervisors being closest to the “mess” of the projects and perceiving the differences in practices and actions more acutely than owners and (senior) contract personnel. On the other hand, the owners and contractors might be more reluctant to admit problems or articulate them. Indeed, the following observation provides some evidence of participants not wanting to talk about weaknesses despite seeing them: we had a private conversation with an experienced project manager who worked for a large, respected international contractor. The person said, “If we were not speaking privately at this unobserved place, I would not be able to openly give you any information.” This suggests that, in the questionnaire responses, the contractors, as well as the owners, may have been somewhat more guarded.

However, the key conclusion from this discussion is that the three respondents for the same project see significant differences in their realities of this project. Each respondent brings unique perspectives and observations to the data. Therefore, we take this situation as a justification to treat the three questionnaires of one project as separate data points (each containing information of its own). Therefore, we perform the key analyses as if we had 38 X 3–114 data points, which allows us to identify more subtly patterns (we do check, however, several times whether looking only at one respondent type might invalidate the key patterns, which is not the case—we report this in the Appendix).

### 5.1.2 The Variables Capture Robust Differences Between Abandoned and Completed Projects

The next question is whether differences between completed and abandoned projects were driven by a few variables, or whether the evaluations differed across many questions. In other words, were the differences between completed and abandoned projects “concentrated” on a few variables? If this were the case, we would see evidence of focused weaknesses *or* of an inability by respondents to perceive differences across the board. This is examined in the following t-test tables (Tables 5.2 and 5.3). Table 5.2 shows the differences in supervisor responses across project outcomes (the respondent type with the largest distribution shift in Table 5.1), and Table 5.3 shows the differences in contractor responses (the respondent type with the smallest distribution shift in Table 5.1).

Tables 5.2 and 5.3 tell us that the differences between completed and abandoned projects are not focused on a few variables. To illustrate how the key patterns that we observe are robust across the respondent types, we, for now, still distinguish between them—Table 5.2 shows the variable differences across abandoned and completed projects for supervisors, and Table 5.3 for contractors.

Moreover, even for the contractors, 29 out of 40 questions differ significantly (Table 5.3), although the contractors represent the tightest comparison, with their answers “guarded”, as we saw in Fig. 5.1. Therefore, we can conclude that our questions captured systematic differences between abandoned and completed projects and were indeed seen as different across the projects; differences are observable not just across a few questions.

Importantly, even for the contractors, each of the three broad questionnaire areas (governance, initiation and execution) differs at the 1% significance level (bottom of Table 5.3). Almost every question differs statistically significantly between completed and abandoned projects for the supervisors (Table 5.2: the chances that the differences between the responses for abandoned versus completed projects might have arisen “randomly” are below 5% for the vast majority of variables, as the last column indicates).

**Table 5.2** Two-sample t-test with unequal variances, supervisors

	Mean (abandoned)	Mean (completed)	Difference	Std error	t-value	p-value
G1	4.158	5.684	-1.527	0.385	-3.95	0.001
G3	3.684	5	-1.316	0.508	-2.6	0.014
G4	4.947	6.21	-1.263	0.242	-5.2	0
G5	4.79	6.21	-1.421	0.267	-5.35	0
G6	2.632	5.421	-2.789	0.371	-7.5	0
G7	3.106	5.421	-2.316	0.308	-7.5	0
G8	4.947	6.369	-1.421	0.238	-5.95	0
G9	3.684	5.579	-1.895	0.361	-5.25	0
G10	4.527	6.053	-1.527	0.263	-5.8	0
G11	4.842	6.053	-1.21	0.283	-4.25	0
G12	4.527	6.21	-1.684	0.333	-5.05	0
G13*	3.947	6.684	-2.737	0.408	6.7	0
G14	2.737	6.158	-3.421	0.478	-7.15	0
G15	2.316	5.527	-3.211	0.498	-6.45	0
G16	2.842	6.053	-3.211	0.55	-5.85	0
I17	2.474	3.632	-1.158	0.45	-2.55	0.015
I18	1.842	3	-1.158	0.427	-2.7	0.011
I19	2.211	3.947	-1.737	0.367	-4.75	0
I20	4.263	6.053	-1.79	0.328	-5.45	0
I21	3.894	6.21	-2.316	0.415	-5.6	0
I22	3.263	6.106	-2.842	0.396	-7.2	0
I23	5.444	6.737	-1.293	0.273	-4.75	0
I24	5.278	6.737	-1.459	0.357	-4.1	0
I25	3.778	5.842	-2.064	0.407	-5.05	0
E26	3	6.263	-3.263	0.561	-5.8	0
E27	3.167	6.106	-2.938	0.557	-5.3	0
E28	4.056	6.106	-2.05	0.448	-4.6	0
E29	3.445	5.737	-2.293	0.402	-5.7	0
E30	2.333	5.527	-3.193	0.372	-8.6	0
E31	2.945	5.474	-2.529	0.342	-7.4	0
E32	2.333	5.21	-2.877	0.311	-9.25	0
E33	1.556	3.894	-2.339	0.37	-6.35	0
E34	3.106	5.894	-2.789	0.495	-5.65	0
E35	2.263	5.632	-3.369	0.466	-7.25	0
E36	3.421	4.737	-1.316	0.335	-3.95	0.001
E37	2.369	5.79	-3.421	0.403	-8.5	0
E38	2.684	5.21	-2.527	0.576	-4.4	0
E39	2.421	5.474	-3.053	0.372	-8.2	0
E40	1.895	4.947	-3.053	0.393	-7.75	0
E41	1.684	4.632	-2.947	0.491	-6	0
Mean G	3.67	5.734	-2.063	0.203	-10.15	0
Mean I	3.521	5.362	-1.842	0.238	-7.75	0
Mean E	2.592	5.415	-2.822	0.257	-11	0

N = 19 abandoned projects and 19 completed projects. \* G13 (gratification) coding was reversed to "absence of gratification" to have the same directionality as the other questions ("more is better")

**Table 5.3** Two-sample t-test with unequal variances, contractors

	Mean (abandoned)	Mean (completed)	Difference	Std error	t-value	p-value
G1	5.158	5.737	-0.579	0.359	-1.6	0.116
G3	4.632	6	-1.369	0.413	-3.3	0.002
G4	4.842	5.842	-1	0.355	-2.8	0.008
G5	4.894	5.737	-0.842	0.356	-2.35	0.024
G6	5.316	6.158	-0.842	0.318	-2.65	0.012
G7	5.053	6.158	-1.105	0.322	-3.45	0.002
G8	4.79	6	-1.21	0.271	-4.45	0
G9	4.684	5.79	-1.105	0.409	-2.7	0.011
G10	4.894	5.842	-0.948	0.326	-2.9	0.006
G11	4.579	5.684	-1.105	0.4	-2.75	0.009
G12	4.842	5.894	-1.053	0.399	-2.65	0.012
G13*	4.722	5.632	-0.909	0.504	1.8	0.08
G14	5.21	5.667	-0.456	0.442	-1.05	0.309
G15	5.106	5.667	-0.562	0.497	-1.15	0.266
G16	5.474	6.389	-0.915	0.373	-2.45	0.02
I17	4.684	5.21	-0.526	0.457	-1.15	0.257
I18	4.053	5.316	-1.263	0.394	-3.2	0.003
I19	4.316	5.21	-0.895	0.437	-2.05	0.048
I20	5.527	5.842	-0.316	0.302	-1.05	0.303
I21	5.79	6.158	-0.368	0.263	-1.4	0.17
I22	5.389	6.21	-0.822	0.322	-2.55	0.015
I23	5.79	6	-0.21	0.282	-0.75	0.46
I24	6.158	6.333	-0.175	0.226	-0.8	0.443
I25	5.316	6	-0.684	0.343	-2	0.053
E26	5.842	6	-0.158	0.289	-0.55	0.588
E27	5.684	6.158	-0.473	0.299	-1.6	0.122
E28	5.474	5.79	-0.316	0.295	-1.05	0.292
E29	5.421	5.79	-0.368	0.333	-1.1	0.275
E30	5.421	5.947	-0.526	0.373	-1.4	0.167
E31	4.474	5.632	-1.158	0.429	-2.7	0.011
E32	4.421	5.369	-0.948	0.436	-2.15	0.036
E33	4.527	5.474	-0.948	0.41	-2.3	0.026
E34	4.527	5.579	-1.053	0.488	-2.15	0.037
E35	4.106	5.632	-1.527	0.53	-2.9	0.006
E36	4.894	5.737	-0.842	0.356	-2.35	0.024
E37	4.316	5.737	-1.421	0.465	-3.05	0.004
E38	3.842	5.21	-1.369	0.507	-2.7	0.011
E39	4.632	6.053	-1.421	0.38	-3.75	0.001
E40	4.894	5.79	-0.895	0.362	-2.45	0.018
E41	5.474	6.053	-0.579	0.304	-1.9	0.065
Mean G	4.79	5.739	-0.949	0.212	-4.45	0
Mean I	5.193	5.772	-0.579	0.219	-2.65	0.012
Mean E	4.872	5.747	-0.875	0.234	-3.75	0.001

N = 19 abandoned projects and 19 completed projects. \* G13 (gratification) coding was reversed to "absence of gratification" to have the same directionality as the other questions ("more is better")

## 5.2 Condensing Variables into Aggregated Success Factors

### 5.2.1 Approach

Examination of the data in the first section of this chapter suggests two further steps. First, there are stable differences in the perspectives between owners, supervisors and contractors, which reflect genuine differences in the information that they possessed and the observations they made. Therefore, it makes sense to treat each questionnaire as a separate data point—although three questionnaires have the same project as their subject, the three questionnaires are not simply redundant “duplications”; in fact, they contain complementary data. We therefore treat our data set as consisting of 114 responses.

Second, as explained earlier, groups of the 41 variables “are related” and “get at” the same underlying characteristic of how a project was managed. The questionnaire started with three variable groups—governance, initiation and execution—and then multiple questions explored the areas. For example, questions G3–G9 all probe for a common “thing”, namely how stable, informed and insightful the oversight committee was (e.g. supervision structure was ... G3: stable; G4: regularly in action; G5: giving clear guidance; G6: giving clear approval; G7: kept informed; G8: meeting regularly; G9: examined by initial due diligence). The reason for these “overlaps” is, of course, reliability of getting at the underlying concepts—a respondent may misinterpret or wrongly fill out a single question, but if we “get at” a managerial characteristic with multiple questions, there is a better chance that the responses will be stable and reliable.

In light of the fact that the questions were designed to have overlaps, for reasons of reliability, it makes sense to capture the underlying common (or “essential”) management characteristics by “condensing” the variables. This is accomplished through a statistical approach known as factor analysis. In essence, it is an exercise in testing for commonalities among groups of variables. A factor is an unobserved underlying force, and each variable that is measured in the questionnaire is treated as if it were a linear combination of multiple underlying factors: where in our primary data table, each data point (each questionnaire) is represented by 41 numbers (values on the 41 variables), we now want to represent the questionnaire as a representation of a smaller number,  $n$ , of factors. We do not know a priori how many factors will emerge, so we let the data speak and see what factors emerge—we initially

thought it might be three, which was why the questionnaire had three sections of governance, initiation and execution. However, when we rigorously searched for meaningful and statistically powerful factors, we found not three but four.

The factor analysis was conducted with all variables except for “corruption”, which was treated as a separate concept. The rationale is that corruption does not fall under the managerial characteristics of the project; corruption is part of the project environment and is therefore in its own category.

## 5.2.2 Identifying the Factors

In exploring different possible factor configurations (“exploratory analysis”), we found that a four-factor model offered the best balance between separating the variables well and having factors that successfully combined several variables and had a managerial meaning.

The set of factors is meaningful: the factors cut across our “pre-named” categories (which stemmed from our review of previous work) of governance, initiation and execution. However, when we examine the variables that attach to each factor, there is a clear interpretation of each one, and we can give each factor a name that reflects the variables that it combines (Table 5.4).

Specifically, we conclude that the first factor captures variables connected to contractor selection and qualification. Only G1, “defined supervision structure”, is a surprise in this context, but it loads strongly, and it may capture that once a supervision committee was in place, a solid contractor selection (in contrast to, for example, a political selection) was enabled.

The second factor connects strongly to variables relating to the project goals—business goals as well as societal goals. The third factor collects variables that relate to resources (funding, personnel and logistics) and planning (stakeholders, timelines and risks). The fourth factor captures elements of the supervision structure and stakeholder involvement. (The reader might wonder whether it would be better to split this factor in two, one on supervision and one on stakeholders. However, it turned out that such a five-factor solution was less statistically robust and had more cross-loadings; in other words, the data suggests that supervision and stakeholder management capability tended to go together.)

**Table 5.4** Which variables are consolidated into four success factors

Question	Factor 1: contractor selection	Factor 2: project goals	Factor 3: resources & planning	Factor 4: supervision & stakeholders
G1: Defined supervision structure G14: Appropriate contractor selection process G15: Rigorous and open contractor selection process G16: Selection process based on contractor experience E26: Contractor has strong capability E27: Contractor had strong prior experience E28: Contractor and supervisor had defined roles E29: Contractor and supervisor worked well together E30: Sub-contractors has strong capability				
I20: Project goals were understood by all I21: Project goals were measurable I22: Project goals were prioritized I23: Project had abusiness case I24: Project benefits to economy or society were clear I25: Project goals were subjected to risk scenarios				
E31: Plans existed for managing external stakeholders E34: Project was adequately resourced E35: Project funding was renewed E36: Adequate supply of skilled government staff E37: Adequate logistical support E38: Realistic project timeline E39: Well-defined risk plan E40: Comprehensive risk plan				
G3: Supervision structure remained stable G4: Supervision structure regularly provided oversight G5: Supervision structure guidance for “gray areas” G6: Supervision structure gave clear approval G7: Supervision structure was kept informed G8: Supervision structure met regularly G9: Supervision due diligence present from the outset G10: Supervision structure uncovered difficulties G11: Supervision structure uncovered irregularities G12: Supervision structure guidance for problem areas I17: Planning received wide visibility I18: Public were able to ask questions about the project I19: Wider stakeholders had visibility and input E32: Plans positively influenced stakeholders E33: Stakeholder views were used to make changes				

**Note:** Variable G2 was a descriptive variable and thus not relevant for the factor analysis. Variable E41 (quality of the risk plan) had to be dropped from the analysis because it cross-loaded across all factors

Thus, we have consolidated the 41 variables into 5 success factors that approximately summarize the larger number of variables in underlying success factors—contractor selection, project goals, resource provision and planning, governance and stakeholder management, and corruption (remember, this was treated separately, as an “external context” going into the analysis). We will now search for patterns of what explains project completion armed with these aggregated success drivers.

### 5.3 Econometric Prediction of Project Completion

Armed with the aggregated success factors, or underlying management characteristics, we can now attempt to *detect causal patterns* that explain why projects were abandoned: we predict the probability of project completion in a logistical regression (a probit model)—completion is a zero-one variable, so we cannot use a normal linear regression with a continuous dependent variable. The dependent variable in the regression is the logarithm of the probability of a project being completed (the formal specification is shown in Appendix 3 of this chapter).

We add one more variable into this logistical regression. The reader may recall that we treat the three responses related to one project (owner, supervisor and contractor) as three different data points. We include a measure of how much the three respondents on one project disagree: if the three respondents disagree strongly, this may reflect problems (for instance, in working together, in agreeing on plans or in agreeing on goals). For any of the variables, respondent disagreement is measured as follows:

1. For each project and variable, take the three responses and average them to create a baseline.
2. For each respondent, take the *absolute value* of the difference from the baseline (the average of this variable). This is the disagreement for a variable for each respondent, and the average over the three respondents' disagreement scores is this variable's disagreement score; averaged over all variables, we get the project's respondent disagreement score.

The set of analyses shown in Table 5.5 predicts the logarithm of the probability of project completion as the dependent variable, with the independent variables discussed earlier. The coefficient related to each variable expresses how much the (log of the) completion probability changes if this success variable changes by a small amount (and the standard error of the coefficient expresses how much “noise” is in the data, and thus how reliable this coefficient is). If the standard error is much larger than the coefficient itself, then we cannot be sure whether this coefficient is really even different from zero, in other words, whether this variable even has an effect. This is also expressed by the statistical significance.

Table 5.5 gives us the first core finding of this chapter: the high rate of project abandonment in Nigeria is not mysterious. It can in fact be explained



Table 5.5 *Probit* regressions of the probability of project completion

	<b>Factor 1:</b> contractor selection	<b>Factor 2:</b> project goals	<b>Factor 3:</b> resources and planning	<b>Factor 4:</b> supervision and stakeholders	Corruption	Respondent disagreement	Constant
Coefficients	1.40***	1.01***	0.99***	1.03***	-0.97**	-0.89**	-13.27**
Standard errors of coefficients	0.43	0.31	0.50	0.62	0.72	0.42	

Note: (McFadden's) Pseudo- $R^2 = 0.58$ ; significance levels are indicated as \*\*\*:  $p < 0.001$ ; \*\*:  $p < 0.01$ ; \*:  $p < 0.05$ ; \*:  $p < 0.10$

by the managerial characteristics of the projects: all four factors are strongly significant (at the 5% level or better), and their coefficients are of an equal order of magnitude, which means that no one factor dominates, but they all have important influence. In addition, corruption is as important as each of the four managerial factors—this is not surprising, as corruption not only makes a project more expensive but also distorts decisions (as we will quantitatively show later). Finally, disagreement among the respondents (in their answers) is also a significant factor, as it captures the potential for tensions and misalignments among their actions.

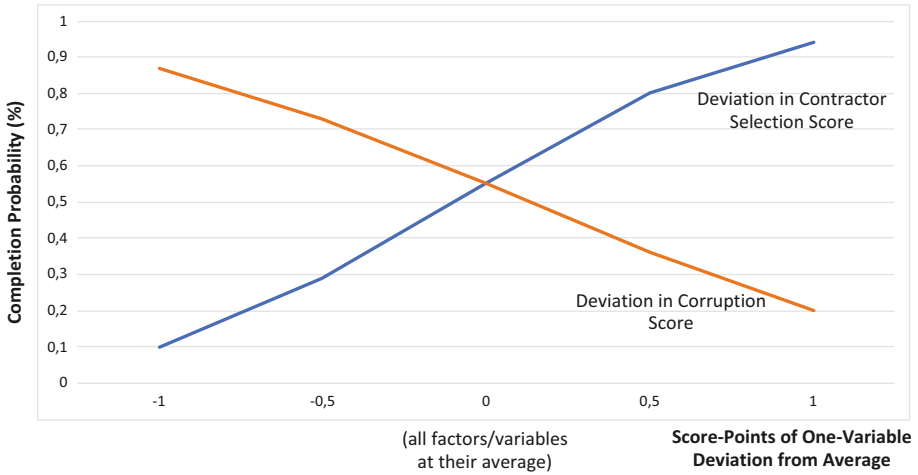
All variables are statistically significant, being combined in one model, which implies that they measure different aspects of the project. Finally, the model offers a level of explained variance of 58%. This suggests that the project characteristics that we have measured do not merely capture small influences, but our variables together explain a large part of the probability of a project reaching completion or being abandoned during execution.

In order to examine the robustness of the model, we added an additional control variable: we counted how many times the president and thus the government changed during the life of a project (this varied between 0 and, for three projects, 12 times). The idea behind this variable is that each government change carries with it the danger of disruption and discontinuity (as we will see amply illustrated in the case studies). However, this control variable is not statistically significant (neither alone nor when included together with the other variables), and we therefore do not show it in the reported tables. The effect of discontinuity, while plausible, is so noisy that it cannot be reliably identified in an econometric analysis.

Now we need to discuss the meaning of the parameters in Table 5.5, which represent a “model” that predicts the completion probability of a project depending on its scores of the factors and the corruption and disagreement variables. We show some elements of this model in graphical form in Fig. 5.2, *which shows by how much the completion probability changes if the two most influential variables change by one score point up or down*. The midpoint of the x-axis in the graph is the completion probability when all factors are at their average—it is 55%.<sup>1</sup> The two curves show how the completion probability changes when one variable changes while the other variables are held constant (we chose the two variables/factors with the largest and smallest regression

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<sup>1</sup> The average completion probability of our 38 projects is, of course, 50%, because that is how the sample was constructed. However, as our regression is not linear, the success probability of the average parameter values is not the same as the average success probability; it is slightly offset.



**Fig. 5.2** Change in completion probability if factor score points change

parameter because they have the greatest effects; the effects of the other variables lie in between).

The two curves in the graph demonstrate powerfully how large the effects of the variables are: if the corruption score can be reduced by *one score point* from its average (which is 4.89, in a range between 1 and 7). If corruption can be lowered to 3.89, the completion probability increases from 55% to 88%! If, in contrast, corruption deteriorates to a score of 5.89, the completion probability diminishes to 20%. We could not more powerfully confirm our previous prediction that corruption does not just increase project costs but may destroy the chances of completion at all. The effect is literally huge—a 30% completion probability increase for a \$1B project translates into an expected cost of \$300M (assuming the whole budget is spent, which was indeed the case in our case studies)!

Similarly, a one-score-point improvement in the contractor selection score, from its average of 4.74 to 5.74, increases the probability of completion to 95%. Again, we could not demonstrate more powerfully the importance of contractor selection.

Thus, the econometric analysis is not a theoretical exercise of style; rather, it shows how incredibly important it is to manage the success variables that we have identified and measured. Our data demonstrates that the effect of achieving even moderate improvements can be staggering.

In order to be sure that we are not biasing our results by treating the responses from the three respondent groups as separate data points, we carry out an additional set of analyses in Appendix 4. It examines how each of the

three types of respondent explains the success of the project. This analysis uses the same variables as in Table 5.5, but without respondent disagreement (as we now look at only one respondent group). In this analysis, significance levels are lower because the number of data points in each regression is only one-third of the overall regression. However, the qualitative shape of the results stays robust across the three types of respondent.

## 5.4 Econometric Prediction of Cost and Schedule Overruns for Completed Projects

Having shown that the variables measured in our questionnaire (consolidated into four success factors, plus the corruption measure), we now examine whether our variables can also predict schedule and cost performance for the set of completed projects. We conduct this examination using linear OLS (ordinary least square) regressions.

### 5.4.1 Effect of Variables on Budget Overruns

Table 5.6 shows the regression results of how our variables predict cost overruns (measured as a percentage of budget, which normalizes the absolute budget size away).

As in the prediction of project completion, we again find that our (condensed) variables matter, all reducing budget overruns (the signs of their coefficients are negative). All variables are statistically significant, and they explain not just some but a large fraction of the variance in the cost overrun performance measure (69% for the full model). Not only is the explained variance high, but the model overall is also highly statistically significant (the F-statistic for the model is  $F = 14.612$ .  $p < 0.001$ ).

As in the prediction of project completion, the coefficients of the four factors (managerial characteristics) are a similar size. However, the coefficient for corruption is—at -33—four times the size of the coefficients of any of the managerial factors. This strengthens the finding of the completion regression: corruption as an individual variable is very important, especially for the project's budget compliance—corruption directly inflates the project budget, in addition to contributing to inefficient decision-making.

Interestingly, the respondent disagreement reduces budget overruns. Disagreement increases the chance of the project of being abandoned (Table 5.5), but given that the project was completed, disagreements among

Table 5.6 Regression of cost overruns (% of budget) for completed projects

	<b>Factor 1:</b> contractor selection	<b>Factor 2:</b> project goals	<b>Factor 3:</b> resources and planning	<b>Factor 4:</b> supervision and stakeholders	Corruption	Respondent disagreement	Constant
Coefficients	-505.1**	-311.9**	-351.0**	-412.1**	321.0**	-312**	9936***
Standard errors of coefficients	695	71	412	702	401	701	

Note: Explained variance  $R^2 = 0.52$ ; significance levels are indicated as \*\*\*:  $p < 0.001$ ; \*\*:  $p < 0.01$ ; \*:  $p < 0.05$ ; .:  $p < 0.10$

respondents are associated with lower overruns. The most plausible explanation of this is that given that the project was completed rather than abandoned, there is a “luxury of different views” associated with lower overruns: when the project goes badly (overruns are high), everyone has to agree that it goes badly. When the project is proceeding adequately (“it is OK”), things are possibly more ambiguous in the sense that people might disagree how well (or badly) things are going.

In order to test the robustness of the statistical results, we again added control variables: first, the number of government changes during the life of the project (the same variable is in the project completion regression), and again, this variable turned out statistically insignificant. Second, the initial *budget size* of the project was included (we could do this only in the regression with the completed projects as we did not have reliable total budget estimates for the abandoned projects). The initial budget size is a measure of complexity and therefore project difficulty, and one might expect that (percentage) overruns are worse for larger projects. However, this turns out to not be the case—the budget size is (as for the government changes) statistically insignificant. One interpretation is that all the projects in the sample are large enough to be difficult, and the forces that cause them to encounter difficulties are not driven by size.

Similar to Fig. 5.2, Fig. 5.3 demonstrates that the variable effects are large enough to be of strong economic significance. The average budget overrun of the 19 completed projects is 760% (of the overrun, as a percentage of the original budget). This drives home the point that “completed” is not the same as “successful”—an almost eight-fold overrun is not a great performance. However, not all projects had such large overruns, and the econometric model from Table 5.6 predicts that the budget performance can be greatly influenced if the success factors can be changed.

The two curves in the graph again powerfully demonstrate how large the effects of the variables are: if the corruption score can be reduced by 1 from its average of 4.4 (while holding the other variables unchanged), the overruns can be almost halved (however, if the corruption score deteriorates by 1, the overrun increases by almost 50% to 1100%). Reducing the budget overrun by half is worth \$370M, on average, over the 19 projects! If the contractor selection process score can be improved by 1 point, overruns diminish by two-thirds, to just over 200% (but if the contractor selection deteriorates by 1 score point, the overrun almost doubles). The impacts of the other variables are in between (closer to the contractor selection variable).

We again verify that these results across all three respondent groups are not caused by one (or dominated by one) respondent group only. We show the

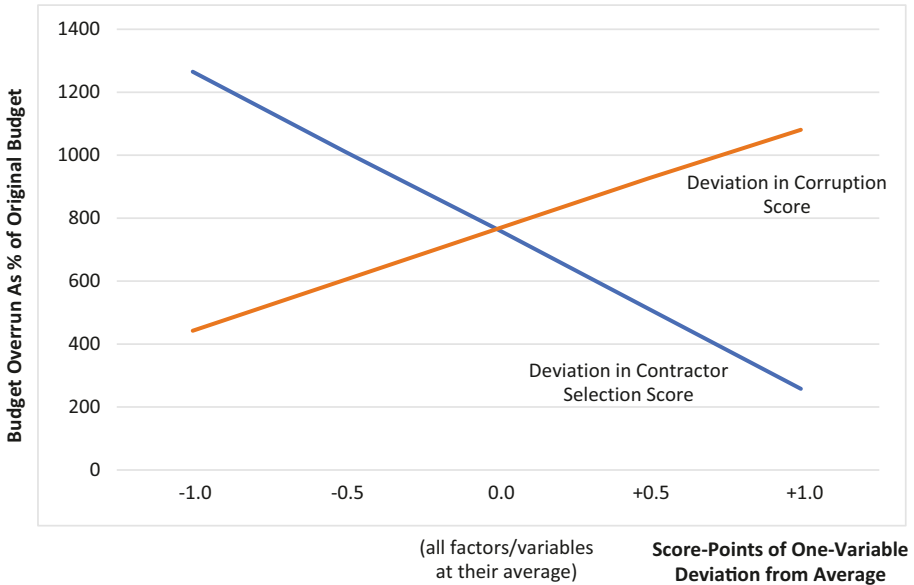


Fig. 5.3 Change in budget overruns if factor score points change

cost overrun regressions separately by respondent group in Appendix 5. This analysis shows that the results are representative and similar in each of the respondent groups, with slightly lower significance levels because of a smaller number of data points.

#### 5.4.2 Effect of Variables on Schedule Overruns

Table 5.7 shows the regression results of how our variables predict schedule overruns (measured as a percentage of planned project duration). As for budget overruns, we again find that our (consolidated) variables matter, all reducing schedule overruns as well (the signs of all coefficients are negative). All variables are statistically significant, and they explain not just some but a large fraction of the variance in the cost overrun performance measure (49% for the full model). Not only is the explained variance high, but the model overall is also highly significant (the F-statistic for the model is  $F = 9.41$   $p < 0.05$ ).

We again demonstrate the economic significance of our success drivers (factors and variables) in graphical form in Fig. 5.4. The *average* schedule overrun among the 19 completed projects was 134% (of the originally planned duration). The highest impact on the schedule lies in project goals and supervision (and we can see in Table 5.7 that the stakeholders' factor is almost as

Table 5.7 Regression of schedule overruns (% of planned duration) for completed projects

	<b>Factor 1:</b> contractor selection	<b>Factor 2:</b> project goals	<b>Factor 3:</b> resources and planning	<b>Factor 4:</b> supervision and stakeholders	Corruption	Respondent disagreement	Constant
Coefficients	-18.5**	-191.1***	-9.2*	-188.0***	34.1**	16.8**	2547***
Standard errors of coefficients	70	69	10	63	53	61	

Note: Explained variance  $R^2 = 0.40$ ; significance levels are indicated as \*\*\*;  $p < 0.001$ ; \*\*;  $p < 0.01$ ; \*;  $p < 0.05$ ; .:  $p < 0.10$



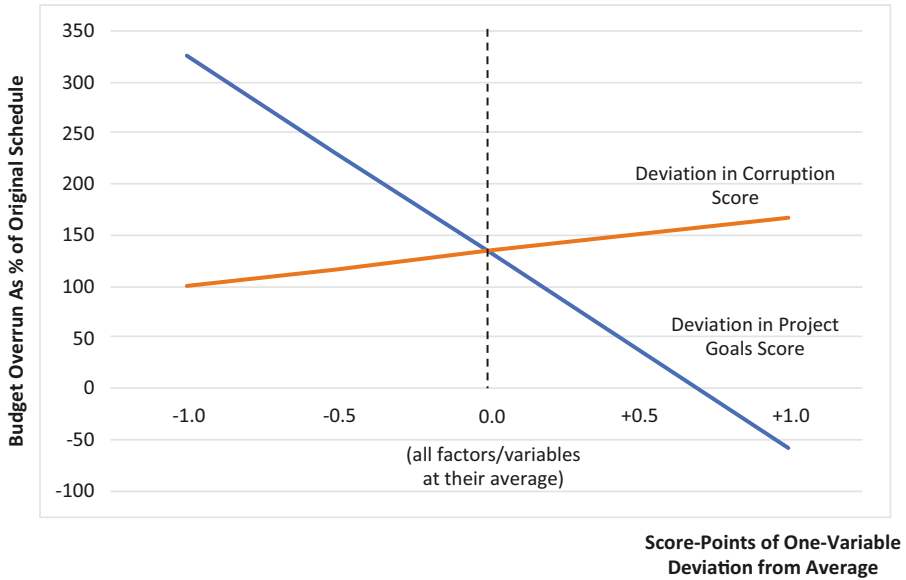


Fig. 5.4 Change in schedule overruns if factor score points change

important): if we could improve the project goals and supervision factor by 1 score point (from its average of 6, while holding the other variables constant), the schedule overrun would be reversed to a schedule *acceleration* of 50%!

This is, of course, not a “prediction” but an artefact of a linear extrapolation pushed further than is realistic. Once the schedule has been achieved, further improvements will not improve the schedule further, as the pressure to do so disappears. Whatever slack one has created will then be used to improve quality, reduce cost or increase profit. This limit of linear extrapolation is, of course, the reason why we show only “one-score-point changes” in the graphs in the first place. However, the linear regression model still provides an estimation of how powerful the difference made by small improvements can be.

Interestingly, the schedule is less affected by contractor selection, resources and planning factors. Contractor selection has a dominant effect on budget adherence, as we have seen in Fig. 5.3 (after all, that’s where prices are negotiated), but it does not dominate schedule adherence. Clearly, there is room to look for more fine-grained evidence of this in our case studies.

Moreover, corruption is much less important for schedule adherence—the schedule overrun varies “only” between 100% and 180% for a full two-point change in the corruption score around the average. This is instructive—it gives us tangible evidence that the corrosive effect of corruption lies in bad decisions that can derail a project, which we see in the completion probability

graph in Fig. 5.2; and the corrosive effect lies in the budget—corruption directly costs money, as we have seen in Fig. 5.3.

(The respondent disagreement variable has only a small effect, so we do not further discuss it here.)

Finally, we again verify that these results across all three respondent groups are not caused by one (or dominated by one) respondent group only. We show the schedule overrun regressions separately by respondent group in Appendix 6. This analysis shows that the results are representative and similar in each of the respondent groups, with slightly lower significance levels because of a smaller number of data points.

## 5.5 The Corrosive Effect of Corruption

This chapter establishes an important basis for the conclusions that this book will reach. At first, this study articulated a number of “project success factor” variables, entirely arising from the study of previous expert work on very large projects in other countries, without any consideration of Nigerian special circumstances, and certainly without any “partial interest” input from parties in Nigeria that may prefer certain conclusions over others. These variables were given to 114 professionals who have been actively working on Nigerian projects, but without any explanation of how which variable fits into a predicted framework of project success, and, moreover, ensuring different perspectives by asking respondents from owners and supervisors (civil servants), as well as contractors (employees of private companies). None of the respondents could “censor” their responses in order to influence our findings, because no one knew how the many managerial variables would turn out to have influenced success. (We saw that respondents were possibly a bit more, or less, open in admitting the size of project weaknesses, but there was no “biasing” of our results; directionally, there was agreement.)

Because of this impossibility of external influence on the outcomes of our examination, we can claim that our analysis is “objective”—it is in no way influenced by any opinions of powerful parties who might have had an interest in the direction that our conclusions might take. No one, including ourselves, was able to predict which elements of the framework that we had assembled from previous project success studies in other countries would turn out to be the most important in the Nigerian public project context.

This is what our statistical analysis accomplishes: it identifies four managerial “characteristics” or “success factors” underlying, or “consolidating”, our 41 variables: (1) the way the project goals were articulated and followed up,

(2) the selection process of the contractor, (3) the way the project was resourced and planned, and (4) the way a supervision structure was set up and obeyed and stakeholders were taken into account. A critical additional success factor was the absence (or presence) of corruption (a single variable in the questionnaire), which was as important for a project's completion as any of the other factors. Finally, we saw that disagreements in the responses among the three respondent groups captured some types of underlying miscommunication, or possibly tensions and misalignment, and it therefore also predicted lower project success.

Our statistical analysis strongly demonstrates that all six drivers matter, not only for project completion but also for budget and schedule adherence in those projects that were completed. These findings imply that project success in Nigeria is not mysterious but analysable and understandable, and improvements can be identified and put in place.

One limitation of statistical analysis is that the variables it uses are aggregated and therefore somewhat abstract. In addition, the causal interactions between the four managerial characteristics do not appear in the econometrics: for instance, if the project were not planned well, resources may not be stably and sustainably allocated. This, in turn, disturbs the way the contractors behave—they may walk out at some point or play games in order to cushion their budgets so they do not go bankrupt when funding is disrupted. These interactions will become fully apparent only when we look at the projects in more narrative detail.

However, one causal interaction that we *can* examine econometrically is the effect of corruption on the decisions in the project. In order to do this, we include not only corruption in the project completion regression, but also an *interaction term*, the *product* of (*Factor x*)  $\times$  (*Corruption index*). If this product is significant in the regression, this means that the effect of Factor x will be changed (get larger or smaller) as the extent of corruption changes; in other words, corruption has an effect on effectiveness of other managerial decisions—this is precisely the “corrosive effect” of corruption that we have previously mentioned.

In the completion probability regression, the “corrosive effects” of corruption are not detectable; in other words, corruption directly reduces the completion chance of a project but does not influence the effects of the other variables. However, the interactions *are* econometrically visible in the cost overrun regression for the completed projects. The result is reported in Table 5.8. Because of the small size of the data set, we could not simply add the interactions into the full regression without losing significance; instead,

**Table 5.8** Regression of the effects of interactions between corruption and other variables on cost overruns (% of planned duration) for completed projects

Model	Factor coefficient (standard error)	Corruption coefficient (standard error)	Interaction of corruption with this factor coefficient (standard error)	Constant	Explained variance (R <sup>2</sup> )
Factor 1 only: contractor selection	-572** (631)	370** (401)	260** (391)	8117***	0.37
Factor 2 only: project goals	-272** (364)	361** (472)	260** (391)	8591***	0.32
Factor 3 only: resources and planning	-287** (472)	350** (406)	249** (306)	8072***	0.36
Factor 4 only: supervision and stakeholders	-364** (429)	371** (510)	142* (412)	8356***	0.29

Note: significance levels are indicated as \*\*\*:  $p < 0.001$ ; \*\*:  $p < 0.01$ ; \*:  $p < 0.05$ , \*:  $p < 0.10$

the table elaborates elements of Table 5.6, showing each factor and its interaction with corruption one at a time.

As in Table 5.6, the coefficients of the factors are negative, which means that increasing the index of, for instance, contractor selection *reduces* the predicted amount of budget overrun. In contrast, the coefficients of corruption (in each partial regression) are positive, which means that an increase in the index of corruption *increases* the predicted budget overrun.

The focus of this table is the coefficient of the interaction term (Factor  $\times$  X (corruption index)). This coefficient is positive (and significant) in all four partial regressions. This coefficient means that if the corruption index increases, then the budget overrun increases, and thus the overrun-reducing effect of the factor is weakened. In other words, increasing corruption weakens the budget-overrun-reducing effects of contractor selection, project goals, resources and planning, and supervision and stakeholder relations. This is graphically illustrated in Fig. 5.5, which adds the interaction to the main effects of Fig. 5.2: an increase in corruption (by one point) flattens the regression coefficient, and thus the slope of the regression curve, of contractor selection—it becomes less effective.

This illustrates that the corrosive effect of corruption on the important project decisions and practices can be econometrically measured—as we discussed in the overview of existing knowledge in Chap. 2, corruption does not “merely” inflate budgets but weakens the effectiveness of project management practices throughout the project.

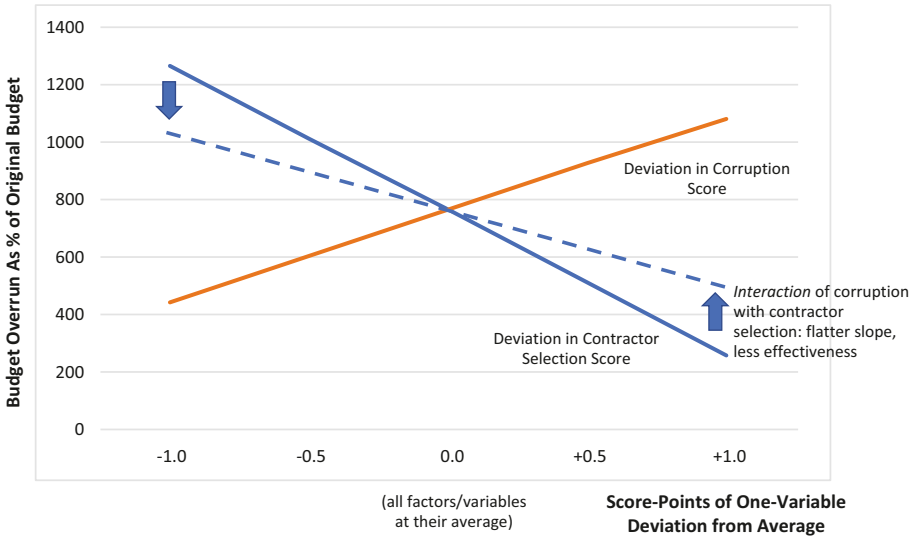


Fig. 5.5 Corruption through interaction weakens contractor selection effectiveness

This analysis has illustrated how we can quantitatively demonstrate the corrosive effect of corruption. However, the observation is still valid that econometric analysis is somewhat abstract and does not directly demonstrate *how* the success factors and corruption affect other decisions and project outcomes. The next step in our study is therefore the assembly of 11 case studies: detailed narratives that illustrate what it looks like when budget continuity is not assured, when stakeholders are ignored, when project goals are not articulated and accepted by the public, or when the choice of contractor is not made professionally, based on track record and competence; moreover, the causal interactions among the managerial success drivers will become apparent in the case studies.

The next chapters will in this way connect the econometric results with life on the ground. Then, we will be in a position to identify the core reasons for large public project failure in Nigeria; and, once we have identified the core reasons, we can try to offer sensible and practical recommendations.

## Appendix 1 Correlations Among Independent Variables Across All 114 Responses

This appendix contains the customary correlations table, which shows that the variables are only weakly or moderately correlated.

**Table 5.9** Variable correlations

	G1	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	G18	G19	G20	G21		
G1	1																					
G3	0.392***	1																				
G4	0.287***	0.616***	1																			
G5	0.357***	0.577***	0.715***	1																		
G6	0.538***	0.610***	0.441***	0.467***	1																	
G7	0.491***	0.601***	0.400***	0.637***	0.643***	0.406***	1															
G8	0.216***	0.447***	0.536***	0.520***	0.597***	0.608***	0.619***	1														
G9	0.332***	0.400***	0.424***	0.530***	0.462***	0.441***	0.492***	0.566***	0.607***	1												
G10	0.254***	0.424***	0.453***	0.566***	0.441***	0.492***	0.566***	0.607***	0.607***	0.191***	1											
G11	0.309***	0.320***	0.473***	0.459***	0.285***	0.300***	0.431***	0.454***	0.647***	0.370***	0.370***	1										
G12	0.354***	0.334***	0.500***	0.535***	0.360***	0.407***	0.464***	0.474***	0.707***	0.724***	0.191***	0.191***	1									
G13	0.135	0.123	0.0568	0.129	0.321***	0.370***	0.259***	0.360***	0.192***	0.00638	0.00638	0.00638	0.00638	1								
G14	0.563***	0.418***	0.343***	0.350***	0.658***	0.641***	0.333***	0.540***	0.415***	0.346***	0.346***	0.346***	0.346***	0.346***	1							
G15	0.556***	0.405***	0.311***	0.330***	0.671***	0.633***	0.281***	0.523***	0.324***	0.262***	0.233***	0.233***	0.233***	0.233***	0.233***	1						
G16	0.561***	0.403***	0.281***	0.279***	0.666***	0.599***	0.263***	0.474***	0.337***	0.282***	0.319***	0.323***	0.323***	0.323***	0.323***	0.323***	1					
G17	0.287***	0.457***	0.290***	0.144	0.585***	0.484***	0.192***	0.520***	0.326***	0.275***	0.214***	-0.0127	0.437***	0.506***	0.396***	0.396***	0.396***	1				
G18	0.320***	0.390***	0.170*	0.0749	0.640***	0.499***	0.132	0.366***	0.224***	0.136	0.197**	0.0590	0.430***	0.492***	0.406***	0.406***	0.406***	0.406***	0.815***	1		
G19	0.476***	0.350***	0.215*	0.185**	0.619***	0.561***	0.200**	0.413***	0.375***	0.305***	0.367***	0.0836	0.535***	0.528***	0.492***	0.492***	0.492***	0.492***	0.690***	0.722***	1	
G20	0.451***	0.424***	0.111	0.156*	0.494***	0.435***	0.148	0.238**	0.304***	0.235**	0.240**	0.210**	0.606***	0.505***	0.517***	0.307***	0.388**	0.388**	0.606***	0.606***	0.606***	1
G21	0.529***	0.317***	0.130	0.186*	0.523***	0.464***	0.0981	0.157*	0.238**	0.190**	0.293***	0.227**	0.584***	0.511***	0.534***	0.263***	0.411***	0.507**	0.507**	0.687***	0.687***	1
G22	0.610***	0.480***	0.323***	0.401***	0.669***	0.623***	0.315***	0.437***	0.310***	0.244**	0.272***	0.282**	0.648***	0.629***	0.623***	0.377**	0.464***	0.573**	0.573**	0.631***	0.631***	1
G23	0.393***	0.424***	0.280***	0.397***	0.312***	0.238**	0.246***	0.181*	0.328**	0.302***	0.283***	0.0389	0.459***	0.355***	0.368***	0.0419	-0.00681	0.200**	0.200**	0.359***	0.359***	1
G24	0.413***	0.200*	0.171*	0.224**	0.384***	0.259***	0.210**	0.211**	0.262***	0.219**	0.233**	0.124	0.551***	0.442***	0.499***	0.103	0.128	0.276***	0.276***	0.596***	0.596***	1
G25	0.483***	0.358***	0.183*	0.299**	0.546***	0.446***	0.169*	0.318***	0.306***	0.245**	0.277***	0.0897	0.638***	0.579***	0.617***	0.307***	0.305**	0.474**	0.474**	0.641***	0.641***	1
G26	0.528***	0.323***	0.232**	0.296***	0.620***	0.517***	0.198**	0.395***	0.298**	0.217***	0.285***	0.293***	0.821***	0.780***	0.853***	0.348***	0.389***	0.489***	0.489***	0.619***	0.619***	1
E27	0.529***	0.317***	0.222**	0.233**	0.591***	0.532***	0.231**	0.419***	0.326**	0.246**	0.306***	0.267***	0.824***	0.829***	0.864***	0.394***	0.389***	0.523***	0.523***	0.567***	0.567***	1
E28	0.476***	0.318**	0.217**	0.286**	0.487***	0.419**	0.131	0.317***	0.271**	0.243**	0.231**	0.136	0.677***	0.616**	0.622***	0.226**	0.232**	0.436**	0.436**	0.557***	0.557***	1
E29	0.530***	0.369***	0.308***	0.363***	0.632***	0.548***	0.214**	0.470***	0.392***	0.348***	0.404***	0.102	0.725***	0.714***	0.681***	0.458***	0.458***	0.538***	0.538***	0.570***	0.570***	1
E30	0.530***	0.396***	0.191**	0.242**	0.658***	0.586***	0.193**	0.405***	0.335***	0.206**	0.247***	0.214**	0.774***	0.753***	0.753***	0.487***	0.487***	0.538***	0.538***	0.615***	0.615***	1
E31	0.346***	0.426**	0.249***	0.294***	0.484***	0.448***	0.263***	0.490***	0.388***	0.382***	0.328***	0.127	0.475***	0.473***	0.429***	0.510***	0.444**	0.557**	0.557**	0.445***	0.445***	1
E32	0.433***	0.424***	0.253**	0.280***	0.555***	0.511***	0.177**	0.431***	0.379***	0.305***	0.338***	0.272**	0.582***	0.525***	0.535***	0.514***	0.541***	0.644***	0.644***	0.527***	0.527***	1
E33	0.432***	0.456***	0.191**	0.206**	0.670***	0.579***	0.172**	0.411***	0.299***	0.233**	0.266***	0.103	0.537***	0.540***	0.498***	0.656***	0.683***	0.734***	0.734***	0.527***	0.527***	1
E34	0.286***	0.436**	0.272***	0.325**	0.461***	0.421**	0.267***	0.242**	0.362***	0.245**	0.344***	0.251***	0.367***	0.318***	0.374***	0.267**	0.279**	0.337**	0.337**	0.263**	0.263**	1
E35	0.477***	0.440***	0.244**	0.244**	0.505***	0.497***	0.247***	0.287***	0.347***	0.245***	0.383***	0.358***	0.423***	0.372***	0.407***	0.354***	0.375***	0.429**	0.429**	0.356***	0.356***	1
E36	0.422***	0.361***	0.226**	0.273**	0.520***	0.532***	0.183*	0.264***	0.301***	0.195**	0.293***	0.204**	0.422***	0.394***	0.404***	0.306***	0.352***	0.455***	0.455***	0.473***	0.473***	1
E37	0.544***	0.518***	0.302***	0.451***	0.574***	0.562***	0.303***	0.280***	0.372***	0.234**	0.398***	0.320**	0.524***	0.443***	0.539***	0.214**	0.290**	0.404**	0.404**	0.439***	0.439***	1
E38	0.283***	0.429***	0.381***	0.366***	0.428***	0.367***	0.260***	0.222**	0.296***	0.223**	0.364***	0.139	0.342***	0.299***	0.299***	0.204**	0.299***	0.310**	0.310**	0.285***	0.285***	1
E39	0.547***	0.591***	0.391***	0.459***	0.472***	0.664***	0.346***	0.406***	0.437***	0.269**	0.393***	0.246**	0.601***	0.575***	0.624***	0.375***	0.470**	0.518***	0.518***	0.579***	0.579***	1
E40	0.529***	0.589***	0.379***	0.419***	0.769***	0.689***	0.336***	0.401***	0.369***	0.205**	0.374***	0.245**	0.606***	0.567***	0.642***	0.449***	0.541***	0.552**	0.552**	0.539***	0.539***	1
E41	0.504***	0.581***	0.295***	0.343**	0.783***	0.675***	0.263***	0.417**	0.413***	0.216**	0.397***	0.226**	0.620***	0.611***	0.661***	0.504***	0.588***	0.581***	0.581***	0.489***	0.489***	1

	I22	I23	I24	I25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40	E41
G1																				
G3																				
G4																				
G5																				
G6																				
G7																				
G8																				
G9																				
G10																				
G11																				
G12																				
G13																				
G14																				
G15																				
G16																				
I17																				
I18																				
I19																				
I20																				
I21																				
I22	1																			
I23	0.421***	1																		
I24	0.467***	0.748***	1																	
I25	0.607***	0.608***	0.642***	1																
E26	0.670***	0.459***	0.506***	0.705***	1															
E27	0.604***	0.415***	0.508***	0.683***	0.897***	1														
E28	0.598***	0.492***	0.543***	0.616***	0.687***	0.644***	1													
E29	0.632***	0.432***	0.412***	0.633***	0.731***	0.699***	0.737***	1												
E30	0.695***	0.421***	0.465***	0.674***	0.810***	0.782***	0.646***	0.744***	1											
E31	0.538***	0.179*	0.225**	0.509***	0.476***	0.417***	0.392***	0.468***	0.572***	1										
E32	0.592***	0.280**	0.379***	0.551***	0.575***	0.506***	0.472***	0.512***	0.677***	0.834***	1									
E33	0.577***	0.188**	0.304***	0.556***	0.503***	0.518***	0.456***	0.544***	0.671***	0.703***	0.789***	1								
E34	0.382***	0.210**	0.163*	0.432**	0.402***	0.372***	0.247***	0.263***	0.446***	0.390***	0.454***	0.453***	1							
E35	0.404***	0.247***	0.189**	0.465***	0.417***	0.426***	0.298***	0.360***	0.490***	0.484***	0.555***	0.544***	0.848***	1						
E36	0.403***	0.275***	0.263***	0.520***	0.427***	0.443***	0.369***	0.437***	0.485***	0.277***	0.403***	0.559***	0.546***	0.643***	1					
E37	0.587***	0.372**	0.352***	0.566***	0.564***	0.511***	0.478***	0.473***	0.586***	0.469***	0.600***	0.539***	0.801***	0.819***	0.647***	1				
E38	0.397***	0.250***	0.257***	0.411***	0.326***	0.332***	0.231**	0.275***	0.364***	0.341***	0.420***	0.382***	0.680***	0.627***	0.441***	0.675***	1			
E39	0.705***	0.454***	0.502***	0.663**	0.630***	0.615***	0.536***	0.556***	0.634***	0.466***	0.601***	0.598***	0.618***	0.643***	0.594***	0.755***	0.615***	1		
E40	0.720***	0.383***	0.434***	0.627***	0.660***	0.597***	0.538***	0.607***	0.685***	0.496***	0.634***	0.667***	0.563***	0.606***	0.540***	0.715***	0.526***	0.855***	1	
E41	0.626***	0.303**	0.375***	0.628***	0.620***	0.625***	0.466***	0.603***	0.695***	0.470***	0.607***	0.687***	0.571***	0.600***	0.532***	0.679***	0.492***	0.796***	0.899***	1

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

There are a number of moderate correlations; for example, G1, the existence of a well-defined supervision structure, is correlated with a number of positive outcomes. The highest correlation is between E39 (a realistic timeline) and I25 (budget risk scenarios), with value of 0.663. In other words, the variables are different and not just repetitions of one another.

## Appendix 2 Factor Analysis

Suppose for now that we have identified  $n = 3$  factors. Thus, the realization of variable  $i$  ( $i$  runs from 1 to 41, as we have 41 variables) for questionnaire  $j$  ( $j$  runs from 1 to 114, as we have 114 questionnaires),  $x_{ij}$ , becomes:

$$\text{Variable realization } x_{ij} = \sum_{k=1}^3 \alpha_{ik} f_{kj} + \varepsilon_{ij}.$$

The factor analysis algorithm chooses a set of ( $3 \times 114$ ) numbers that minimize the “error”,  $\varepsilon_{ij}$ , or the deviation from the actual collected numbers caused by representing the data with a smaller number of three new underlying variables. The hope is to find factors where each of the variables is indeed influenced only by a coefficient,  $\alpha_{ik}$ , belonging to *one* factor, which then “represents” several variables—if each variable were equally influenced by all factors, we would not be able to condense the regression analysis. The factor analysis approach has two steps:

1. Exploratory factor analysis: We do not want to “presuppose” what the underlying factors are (we want to let the data speak rather than only look for what we thought at the outset might be there). The exploratory factor analysis identifies what number of “candidate factors” makes sense (how many underlying managerial characteristics are there really?) through a structural model (in which each variable is modelled as a linear combination of the factors).
2. Confirmatory factor analysis: This establishes the robustness of the candidate number of factors in the structural model. (More detail on the structural model can be found in Appendix 2.)

The factor analysis was implemented through a family of statistical techniques known as structural equation modelling (SEM). SEM is widely used in social science research and analyses the structural relationship between the



measured variables (the 41 items shown above) and the underlying (latent) constructs. This method is powerful because it estimates the multiple and interrelated dependence across variables and latent factors in a single analysis. The exploratory and confirmatory factor analysis was conducted using the *sem* package in R. The probit analysis was conducted using the *glm* package in R. A number of statistical tests was performed in order to ensure robustness of the factor analysis and the regressions.

This four-factor solution was validated through confirmatory factor analysis. Table 5.10 shows the final factor loadings, rather than just showing which variable was explained by the factors in Table 5.4 in the body of this chapter. The reader may remember that factor analysis pretends that each variable is a linear combination of the underlying factors, as shown above in the equation. A “factor loading” then represents the coefficient  $\alpha_{jk}$  in the earlier equation, which connects this variable to each factor (normalized such that each variable’s factor loadings add up to 1).

Ideally, we want to have each variable represented by only one factor (i.e. all the bold numbers in the table above are 1, and all the non-bold numbers are 0), which would mean that four variable groups were each perfectly “summarized” by one factor. This does not work, of course, because real-life data is never that clean, and it would imply that the multiple variables in each group are all the “same”. They are not, however, as each one captures a separate “flavour” of the underlying factor and is therefore not the same (but the factor “abstracts” these flavour differences away).

Nonetheless, if the variables are indiscriminately determined by all factors, then the “variable consolidation” does not work because the factors do not “group” multiple variables into underlying characteristics. As a rule of thumb, if a variable has a loading of above 0.7 on one factor (which means that its loading on other factors must be low), then it is viewed as strongly expressing this factor. Table 5.4 shows that the final factor loadings from the confirmatory factor analysis are very strong indeed.

This factor model is statistically robust (summary statistics are shown above) and has strong factor loadings. A factor model is weak if many variables attach to more than one factor and thus do not strongly represent one “underlying management characteristic”. However, in this model, few variables attach to more than one factor; “cross-factor loadings” are few, and they are not very strong (only one variable, E41 = risk plan quality, touched upon all factors and had to be taken out). Therefore, we can conclude that this set of factors is robust.

Table 5.10 Variable loadings in the four-factor model

Question	Factor 1: contractor selection	Factor 2: project goals	Factor 3: resources and planning	Factor 4: supervision and stakeholders
G1	<b>0.8820</b>	0.2412	0.1291	0.1281
G14	<b>0.8951</b>	0.1716	0.1060	0.1825
G15	<b>0.8127</b>	0.2163	0.1631	0.2219
G16	<b>0.7930</b>	0.2218	0.2319	0.2163
E26	<b>0.7612</b>	0.2193	0.1721	0.1032
E27	<b>0.8125</b>	0.1294	0.1531	0.2531
E28	<b>0.7452</b>	0.1501	0.2862	0.2440
E29	<b>0.7921</b>	0.2164	0.1287	0.2381
E30	<b>0.7845</b>	0.1981	0.2317	0.2161
I20	0.2167	<b>0.8312</b>	0.1065	0.2412
I21	0.2816	<b>0.7521</b>	0.1531	0.2137
I22	0.2176	<b>0.7912</b>	0.1761	0.2341
I23	0.1731	<b>0.7821</b>	0.2412	0.2198
I24	0.1037	<b>0.7921</b>	0.2721	0.2213
I25	0.2318	<b>0.7841</b>	0.2145	0.2821
E31	0.1249	0.2417	<b>0.8312</b>	0.1961
E34	0.2172	0.2218	<b>0.8102</b>	0.2339
E35	0.1926	0.2113	<b>0.7931</b>	0.2103
E36	0.2318	0.2417	<b>0.7716</b>	0.2124
E37	0.2143	0.1821	<b>0.8012</b>	0.2013
E38	0.2016	0.1652	<b>0.7830</b>	0.1931
E39	0.1395	0.1926	<b>0.8121</b>	0.2417
E40	0.2917	0.1274	<b>0.7418</b>	0.2261
G3	0.2315	0.2812	0.2103	<b>0.8126</b>
G4	0.2109	0.1343	0.1934	<b>0.7831</b>
G5	0.2381	0.1036	0.1437	<b>0.7910</b>
G6	0.2831	0.2163	0.1620	<b>0.7762</b>
G7	0.1420	0.2154	0.1026	<b>0.8126</b>
G8	0.2662	0.1673	0.2164	<b>0.8312</b>
G9	0.1981	0.2720	0.1274	<b>0.7812</b>
G10	0.1291	0.2195	0.1037	<b>0.8154</b>
G11	0.2187	0.1283	0.1943	<b>0.7912</b>
G12	0.1301	0.1651	0.1659	<b>0.8217</b>
I17	0.2318	0.1639	0.2103	<b>0.8143</b>
I18	0.2140	0.2312	0.2330	<b>0.7782</b>
I19	0.1938	0.2162	0.1832	<b>0.7841</b>
E32	0.2150	0.1984	0.2012	<b>0.7940</b>
E33	0.1832	0.1043	0.1295	<b>0.7841</b>

## Notes

Bold numbers represent core loadings to the “assigned” factor. Highlighted numbers represent cross-loadings of > 0.25

Variable G2 was a descriptive variable and thus not relevant for the factor analysis. Variable E41 (quality of the risk plan) had to be dropped from the analysis because it cross-loaded across all factors

## Appendix 3 Specification of the Logistical Regression

As the outcomes are binary (completed or abandoned), we use a probit model based on the assumption that  $Prob(Y=1) = \Phi(X^T \beta)$ , where  $Y$  is the vector of outcomes (0 s or 1 s corresponding to abandonment or completion),  $X$  is the vector of independent variables (the factor scores),  $\beta$  is the vector of coefficients, which are the parameters to be estimated, and  $\Phi$  is the cumulative standard normal distribution. We then estimate the log likelihood function:

$$\ln \mathcal{L}(\beta; Y, X) = \sum_{i=1}^n (y_i \ln \Phi(x'_i \beta) + (1 - y_i) \ln (1 - \Phi(x'_i \beta)))$$

Logarithms of the likelihood variable are taken in order to turn the product of independent variables into a sum, to which a regression can be applied. If the value of an independent variable changes, it then influences (according to the regression) the logarithm of the probability of the project being completed.

## Appendix 4 The Logistical Completion Probability Regression by Respondent Group

The three respondent-specific regressions are shown next to one another in Table 5.11.

The contractor regression adds a twist by including the size of the project as an additional variable (which implies that the larger the project gets, the more contractors struggle). The overall levels of explained variance are lower, because one variable is missing (namely, the disagreement among respondents), and significance levels are lower because the data points in each regression are only one-third of the overall regression (as Table 5.12, Factor 2 illustrates). However, the qualitative shape of the results stays robust across the three types of respondent, as demonstrated again by the size of the coefficients of the independent variables being compared.

Because of the lower significance levels, due to smaller numbers of data points, each factor is not statistically significant for each respondent group in Table 5.10. However, each factor is significant at least for two respondent groups, so the overall conclusion remains robust that all four factors matter.

**Table 5.11** *Probit* regressions of the probability of project completion, by respondent group

	Owner respondents	Supervisor respondents	Contractor respondents
<b>Factor 1:</b> contractor selection	0.997** (0.40.2)	0.2528 (0.572)	0.3122* (0.4912)
<b>Factor 2:</b> project goals	1.422*** (0.481)	1.3256*** (0.481)	1.2428*** (0.5815)
<b>Factor 3:</b> resources and planning	1.285*** (0.8051)	0.551** (0.612)	1.0551** (0.0673)
<b>Factor 4:</b> supervision and stakeholders	1.7632*** (0.4287)	0.3064* (0.780)	0.1281*** (0.4218)
Corruption	-0.462* (0.831)	-0.2517* (0.6012)	-0.2013* (0.631)
Project size			-0.4014* (0.0.6471)
Constant	-24.061***	-12.3689***	-11.1025***
McFadden's Pseudo-R <sup>2</sup>	0.3901	0.4412	0.4781

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.12** *Probit* regressions of the completion probability, comparison of significance levels across respondent groups

Independent variables	All respondents			
	Owners	Supervisors	Contractors	
<b>Factor 1:</b> contractor selection	***	**	–	*
<b>Factor 2:</b> project goals	***	***	***	***
<b>Factor 3:</b> resources and planning	***	***	**	***
<b>Factor 4:</b> supervision and stakeholders	**	***	*	*
Corruption	**	*	*	*
Respondent disagreement	**	NA	NA	NA

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

## Appendix 5 Robustness Analysis: Cost Overrun Regressions by Respondent Group

**Table 5.13** Cost overruns for owners

	<b>Model 1:</b> factor scores	<b>Model 2:</b> factor scores and corruption
<b>Factor 1:</b> contractor selection	-178** (491)	-207.21** (487)
<b>Factor 2:</b> project goals	-692.1*** (482)	-698.01*** (398)
<b>Factor 3:</b> resources and planning	-172.3** (721)	-201.72** (691)
<b>Factor 4:</b> supervision and stakeholders	-98.4** (801)	-118.83** (871)
Corruption		172.01** (681)
Constant	10,210***	7376***
R <sup>2</sup>	0.3904	0.451

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.14** Cost overruns for supervisors

	<b>Model 1:</b> factor scores	<b>Model 2:</b> factor scores and corruption
<b>Factor 1:</b> contractor selection	-850.1*** (821)	-997.01*** (839)
<b>Factor 2:</b> project goals	-231.1** (620)	-247.17** (712)
<b>Factor 3:</b> resources and planning	-192** (793)	-271.06** (839)
<b>Factor 4:</b> supervision and stakeholders	-190.2** (640)	-273.98** (720)
Corruption		217.09** (991)
Constant	18.1208***	10,619***
R <sup>2</sup>	0.3312	0.3601

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

## Appendix 6 Robustness Analysis: Schedule Overrun Regressions by Respondent Group

**Table 5.15** Cost overruns for contractors

	Model 1: factor scores	Model 2: factor scores and corruption
<b>Factor 1:</b> contractor selection	-52.3 (684)	-89.32 (694)
<b>Factor 2:</b> project goals	-182.3* (782)	-200.3* (881)
<b>Factor 3:</b> resources and planning	-178.5* (1019)	-201.1* (922)
<b>Factor 4:</b> supervision and stakeholders	-1403** (571)	-1778.2** (614)
Absence of corruption		287** (487)
Constant	18,210***	13,983***
R <sup>2</sup>	0.2728	0.3971

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.16** Comparison of significance levels for cost overruns across respondent groups

Independent variables	All respondents	Owners	Supervisors	Contractors
<b>Factor 1:</b> contractor selection	**	**	***	—
<b>Factor 2:</b> project goals	**	***	**	*
<b>Factor 3:</b> resources and planning	**	**	**	*
<b>Factor 4:</b> supervision and stakeholders	**	**	**	**
Corruption	**	**	**	**
Respondent disagreement	**	NA	NA	NA

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.17** Schedule overruns—owners

	<b>Model 1:</b> factor scores	<b>Model 2:</b> factor scores and corruption
<b>Factor 1:</b> contractor selection	-4.82* (85)	-5.32* (81)
<b>Factor 2:</b> project goals	-11.40** (63)	-12.17** (67)
<b>Factor 3:</b> resources and planning	-5.79* (46)	-6.23** (44)
<b>Factor 4:</b> supervision and stakeholders	-46.12** (43)	-45.61** (47)
Absence of corruption		6.12* (71)
Constant	621***	519.6***
R <sup>2</sup>	0.3421	0.3806

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.18** Schedule overruns—supervisors

	<b>Model 1:</b> factor scores	<b>Model 2:</b> factor scores and corruption
<b>Factor 1:</b> contractor selection	-7.83** (78)	-7.12** (83)
<b>Factor 2:</b> project goals	-4.96* (71)	-5.22* (76)
<b>Factor 3:</b> resources and planning	-7.84** (60)	-8.71** (62)
<b>Factor 4:</b> supervision and stakeholders	-60.82*** (60)	-62.08*** (67)
Absence of corruption		4.12* (72)
Constant	823.61***	677.08***
R <sup>2</sup>	0.3241	0.3481

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.19** Schedule overruns—contractors

	<b>Model 1:</b> factor scores	<b>Model 2:</b> factor scores and corruption
<b>Factor 1:</b> contractor selection	-4.83* (75)	-5.73* (82)
<b>Factor 2:</b> project goals	-4.61* (51)	-4.89* (56)
<b>Factor 3:</b> resources and planning	-2.91 (60)	-3.21 (62)
<b>Factor 4:</b> supervision and stakeholders	-49.26*** (33)	-54.32*** (37)
Absence of corruption		-2.12 (0.0521)
Constant	782.12***	535.48***
R <sup>2</sup>	0.3218	0.3725

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

**Table 5.20** Comparison of significance levels for schedule overruns across respondent groups

Independent variables	All respondents			
	Owners	Supervisors	Contractors	
<b>Factor 1:</b> contractor selection	**	*	**	*
<b>Factor 2:</b> project goals	***	**	*	*
<b>Factor 3:</b> resources and planning	*	**	**	—
<b>Factor 4:</b> supervision and stakeholders	***	**	***	***
Absence of corruption	**	*	*	—
Spread in responses	**	NA	NA	NA

Note: significance levels are indicated as \*\*\*\*:  $p < 0.001$ ; \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$

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# 6

## Two Library Projects

We now analyse two major library construction projects: first, the National Library project, which was commenced in 2006 under President Obasanjo (whose term expired in 2007), using government funding; despite millions of dollars being spent, only a shell of a building was standing in 2020. Second, we look at the private Olusegun Obasanjo Presidential Library, which was begun in 2002 and completed in 2006–2007; it was funded through private donations.

### 6.1 The National Library of Nigeria in Abuja: An Abandoned Project

#### 6.1.1 Project Initiation

A concept long discussed (UNESCO, 1954) and advised by the Ford Foundation in 1960 the idea of a national library was finally legislatively enacted in 1970 (National Library Act, 1970; Agidee, 1970; Ekpe, 1979). Over the years, through this Act, 37 libraries have been established around Nigeria as part of the National Library project. A library system was seen as significant to the national development goals of education and information-sharing, new skill acquisition, innovation and strategic thinking (Aguolu, 1989; Meraz, 2002).

However, the crowning achievement was seen as being the construction and implementation of a national library building. Prior to this building, the

national library was housed in an office located in a rented apartment in Abuja, in a building in a poor state of repair, unfit for the importance of this institution. A shabby apartment was hardly the place for Nigeria to showcase its leadership in African education; nor was it capable of supporting an evolution of sophistication and services. The national library was to be “the reservoir of the intellectual memory of the Nigerian Nation”. It would represent a metric of successful state development plans and the stage of development. In the words of a minister of education of Nigeria, as “a giant of Africa” Nigeria wanted to build a national library of the very highest standard in Africa, showcasing Nigeria’s leadership in education. The building would house the “national reference library”, the centre where, according to the National Library Act, mandatory registration of all publications and issuance of the ISBN and ISSN numbers for the publication of books and journals took place (Akintude & Selbar, 1995; Gill et al., 2001).

In 2006 it was finally determined that the time had come, and a legislative group convinced President Obasanjo to sign the bill authorizing construction. In response to the wishes of the stakeholders (the educational establishment), a 13-storey building design was adopted because, according to the minister of education in 2019, its size represented a performance indicator used to measure a nation: other comparable countries had libraries on a similar scale, including Ethiopia, Kenya and South Africa, and Nigeria should be no different. After the president signed the act, this large project could proceed.

### 6.1.2 Contract Signature and Execution

A contract for a 13-storey national library was awarded to Messrs Reynolds Construction Company (RCC), for the sum of N8B (US\$61M), with a completion schedule of 22 months. The choice of contractor followed a process, which was (in addition to the qualifications of the contractor) rated positively in our questionnaire by the respondent representing the high-level civil service that had “project ownership”. However, the questionnaire respondent who represented the part of the civil service responsible for project oversight rated both the contractor award process and the contractor’s qualifications poorly—this discrepancy does not prove that the award process was a failure, but it clearly reflects that the project supervisors had great difficulty managing the contractor’s behaviour and the project progress.

By the time President Obasanjo stepped down from office, little progress had been made, with only the construction of foundations complete. In interviews, we were given hints that corruption was partially to blame, forcing

RCC to pay money at every stage in order to make progress. This meant that the contractor had insufficient funds to achieve completion within the contract without making a loss. However, this is not formally stated anywhere—it is, in effect, “hearsay”—because it has been impossible throughout the process to get anyone to make official statements about corruption.

In 2007 President Obasanjo left office. The president immediately succeeding him was known not to be in favour of this project. Moreover, this was a period characterized by austerity measures, “when we had to cut our coat according to our size”. Therefore, it was decided to reduce the number of floors from 13 to 5, so that “we could finish it quickly because we were not sure of the sustainable funding”. This decision was taken not by the Federal Executive Council but by the Ministry, and it echoed the fact that projects did not have dedicated funding (for their life cycle), so managers had to repeatedly approach the Budget Office and the National Assembly to approve a budget for the year. Funding could dry up on the basis of budget cuts and shortfalls driven by other (non-project-related) issues. (As an aside, the decision also seemed to generate points with the (new) president.)

Although the project was scaled down from 13 to 5 floors, ironically its budget was scaled up after protracted negotiations with the contractor, who claimed that they had run out of funds and could not achieve completion. By the time a new contract had been settled, another two years had passed, and the contract sum had increased by 120% to \$137M; the completion period also changed to 21 months, beginning in July 2010.

After two years, construction work progressed to the fifth floor, with only the roofing left to be completed. However, just as the roofing engineers were about to move into the project site, another directive came from the (again new, as President Yar’Adua had died and President Jonathan had come in) presidency via a letter dated 11 October 2012, which was sent to the consultant to instruct RCC to revert to an amended design of eight floors. In February 2013 RCC requested another extension and again sought an upward review of the contract.

No major work has been done since then. The National Library Department continues to occupy a rented building with a leaky roof, cracked walls, and old toilets and water pipes. The building is an unfinished shell, as shown in Fig. 6.1. Since 2013 the contractor has allegedly been charging a daily fee for pieces of equipment left on the site for over seven years.

A letter by the Education Ministry, dated 9 July 2019, entitled “National Library of Nigeria Headquarters Project, Abuja: Submission of Revised Estimated Total Cost (RETC)”, indicated a disparity of \$20M (between



**Fig. 6.1** The National Library Building in Abuja in 2019, with five floors

the government estimate for completion of the National Library Project and the contractor's demand for project completion). The letter also detailed an argument between the contractor and the Nigerian government, which had offered the contractor the net sum of \$120M to return to the site to complete the project. However, the contractor insisted on being paid \$180M.

### **6.1.3 Conclusion**

It was evident from our interviews that there was a desire to correct and revive the abandoned project, but doing so was made difficult by the lack of funding, the risk of litigation and a lack of planning. Developments in modern technology also reduce the need for a library of this nature—and thus the need for another \$190M in the face of other urgent demands. Some stakeholders interviewed argued that rather than spending another \$180M on the National Library, the fund should improve the Nigerian university libraries.

## 6.2 Olusegun Obasanjo Presidential Library: A Completed Project

### 6.2.1 Project Initiation

The concept of a presidential library was conceived by President Obasanjo in 1988, and the bulk of construction took place during his second term in office, between 2002 and 2007 (although it was not officially dedicated and opened until 2017, see BBC, 2017).

President Franklin D. Roosevelt oversaw the creation of the first presidential library in the USA in 1939—something that has now become standard practice in the USA. The idea behind these buildings is to keep presidential documents for the historical record and for the development of the national archive (Ginsberg, 2010). The Obasanjo library is the first of its kind in Nigeria, and, in the same spirit, it is not just a library. It is an extensive museum of Nigerian history (with an emphasis on Obasanjo's role in that history), housing over 16 million documents and 3.5 million books, several historical pictures and over 4000 artefacts explaining the trajectory of Olusegun Obasanjo and his two-term stints in power, both as military and civilian president of Nigeria. The library sits on 32 hectares of land in the Abeokuta Ogun State of Nigeria, and it includes a 1000-seat auditorium and 153 rooms with recreational facilities, as well as an amusement park (Akinwande, 2019).

Private donors funded the presidential library project, and by way of acknowledgement, their names are engraved at the entrance of the library. However, critics have alleged that these donations were made when President Obasanjo was serving as the president of the Federal Republic of Nigeria, when he had the power to “arm-twist” donors.

### 6.2.2 Project Execution and Outcome

The execution of the project took place closely overseen and supported by the project owner, the president himself, which conferred the ability to overcome obstacles. Not even the sudden death of the head of the leading project contractor, MD (a family firm), could stop the project. President Obasanjo convinced the contractor's management team to keep all the workers in place, purchased the necessary materials and made a cash payment of 10% of the project cost to pay the staff salary, which enabled the project to continue.

In addition, the project suffered from cost overruns driven by increasing costs of procurement arising from inflation and the cost of foreign exchange

(many material parts of the projects were imported). The final numbers reflected the fact that the project was certainly not problem-free—the budget overran by 100%, and the final project dedication happened eight years later than originally planned. However, it was completed and is now in operation (Fig. 6.2).

The library's official brochure states its value to the community: "At a more local level the library will teach children and young adults the essential concepts of leadership and citizenship through the example of a former president. By upholding the critical worth of good governance, the exhibitions should inspire future leaders of Nigeria." Furthermore, some stakeholders have commended the presidential library project as a good initiative that will assist knowledge and intellectual capabilities developed using the archive of presidential documents. Indeed, a subsequent president, President Jonathan, is also planning a presidential library (on a smaller scale).

However, other stakeholders have criticized President Obasanjo's library on the basis that it is a colossal waste of money. They have argued that a private presidential library offers no insights into the national development of a developing country. Questions have also been raised about how to finance the library in the future, given that it is *not* self-sustaining. Stakeholders have argued that the library could be donated by President Obasanjo to the Nigerian government.



Fig. 6.2 Olusegun Obasanjo Presidential Library

### 6.2.3 The Difference Between the Two Projects: In the Words of Former President Obasanjo

The case studies invite interpretations of the sources of the two libraries' different fates. We had a chance to listen to President Obasanjo regarding his view of the differences, since he was in charge of both projects (at least at the outset). He suggested that there were three “differences” between the two projects, which resulted in their completion and abandonment, respectively (citations are taken from Jimoh 2021: 104):

- **Clarity of purpose.** “We knew exactly what we wanted with the Presidential Library, but the public sector did not (and does not) know what to pursue with the National Library.”
- **Continuity of purpose and execution.** This is illustrated by the determination to continue despite repeated specification changes. “We stuck with it in the Presidential Library. Even when the owner of the contractor company died, we decided we would continue ... and so we did.” In contrast, “The National Library had its specifications changed twice, from thirteen floors to five floors to eight floors. The new government (after mine) felt it was too big and wanted a reduction, and the government after that decided this project was of international visibility and needed the National Library to be enlarged to meet international standards.”
- **Continuity of funding.** “I had collected sufficient funds for the entire project from my donors (many companies gave). The donors trusted that this project would be what they signed up to, [and] that’s why they gave.” (It is unknown but assumed that overruns on this project were funded by large personal reserves or additional “donor” rounds that were requested.) “And that’s what we did. In contrast, the National Library was starved and stalled (for funding) after I left office.” (This suggests that subsequent governments did not always support this project in annual budget reviews, which caused some of the delays.)

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# 7

## Two Bridge Projects

Infrastructure development is a critical driver of any economy. In a developing country such as Nigeria, it is central to the improvement of national development, especially roads and bridges that expand networks, reduce transportation bottlenecks, enable investment opportunities and connect (ethnic) communities. This chapter presents two major bridge projects. The first is the Second Niger Bridge, started under President Jonathan in 2013 and with a completion date of 2017, which, at the time of writing (2021), is still only 17% complete, with more than a billion dollars having been spent on it. The second is the Third Mainland Bridge, started in 1977 under the civilian Shagari government and sitting as fragments after he was ousted in 1983, which was finally completed under President Babangida (the last military president) in 1990, at a cost of \$1.1B, and is currently a major traffic artery carrying a million vehicles per day.

### 7.1 The Second Niger Bridge: A Stalled Project

#### 7.1.1 Project Initiation

The Second Niger Bridge was conceived to widen traffic capacity in addition to the old First Niger Bridge at Onitsha (which had been built in 1965 and caused structural stability concerns because of excessive loads). The Second Niger Bridge was first proposed by the Shagari government at the end of the 1970s as a critical link to the communities in the South-East and South-South of Nigeria. But the project was never materially pursued until, before

his election, President Goodluck Jonathan announced (to general applause) his intention to finally build the bridge; indeed, he promised at an Onitsha town hall meeting on 30 August 2012 that “he would go into exile if he did not deliver on the project by 2015” (Wikipedia, 2020).

The Jonathan Administration committed \$850K to the planning and design of the bridge, but it took until 2015 for work on the project to begin. The project was announced as a public–private partnership (PPP) involving a consortium between Julius Berger and the motorways investment company of the Nigeria Sovereign Investment Authority (NSIA), based on a design, finance, build, operate and transfer (DFBOT) model that would cost US\$653M, with the federal government contributing US\$150M, while the consortium would raise the rest of the funds. The government established a “Presidential Infrastructure Development Fund (PIDF)”, from which it would finance the project (Olisah, 2020).

President Jonathan explained this as follows. “We designed a funding model bringing in the private sector, arranging with Julius Berger. And we set up a sovereign wealth fund. With the sovereign wealth fund, we could fund projects with government budgeting and in collaboration with Julius Berger. It was a tripartite arrangement, so the funding was through the public–private partnership (PPP), with seed loans from the sovereign wealth fund. The first money that we used was from the sovereign national wealth fund for that project.”

However, the language that was used publicly about the PPP was slightly misleading. What President Jonathan meant by a “PPP model” was a tripartite arrangement of collaboration between the government, the private sector and the contractor (on the financial model) to deliver the project. It was not the case that the contractor would ever fund the project or run it upon completion. There was no financial plan in place beyond an intention that the private sector would bring in the funds, and the contractor was meant to work with this assumption and start the project. In the meantime, the government went to the sovereign wealth fund and pulled out \$150M (and more later). The hope was that this would inspire the private sector to invest and the contractor to bring equipment to the project site and commence work. President Jonathan’s words were, “We designed a funding model bringing in the private sector, arranging with Julius Berger ...,” but this meant getting the contractor started using the money from the sovereign wealth fund. Indeed, it was not that the government had the funds to complete the project, but rather that the private sector would soon come to fund the project.

President Jonathan stood for re-election in 2015 but was unsuccessful, being beaten by President Muhammadu Buhari (who had been a military government president in the 1980s). The Buhari Administration cancelled the



**Fig. 7.1** The Second Niger Bridge at 17% completion in 2021

contract in August 2015 (Jide, 2015). This was when the real trouble started. Again, President Jonathan commented: “Unfortunately, I laid the foundation stone very close to the election period. People were complaining, but we did not care. (...) The financial model for the Second Niger Bridge was very good, but political reasons got in the way. We play politics with everything in Africa. I am saying this to impress it upon you. In this country, we face a severe issue of successive government continuity with good projects.”

The project was expected to be completed in 2017. The bridge construction work stopped for 31 months, and the project has not moved beyond 17% of construction (although the completion status is a matter of opinion, as we will see below, see Fig. 7.1). It has already cost the Nigerian government more than a billion dollars.

### **7.1.2 Contract Disputes and Recontracting**

There was some public discussion about who the bridge would benefit most among the three regions the bridge would connect. Public commentary stressed, “The Second Niger Bridge is not an Igbo Bridge. The South-East cannot claim ownership of the bridge more than Delta and Edo States.” However, this somewhat tense public discussion did not result in a loss of public support for the project; on the contrary, as the project stalled, representatives from all three regions called for its continuation.

The Buhari Administration (at least publicly) supported the project, prompting comments in the press: “But interestingly, this vision has been sustained by the Buhari government” (*Business Day*, 2020). However, the public terminology of a PPP consortium was stopped. Indeed, the PPP structure was accused of “failing to perform” (*Vanguard*, 2020), and the Infrastructure Concession Regulatory Commission (ICRC) expressed concerns about the cost of the project, the toll fees to be charged under the public–private partnership (PPP) and the design, build, finance, operate and transfer (DBFOT) model. Moreover, it cited issues relating to the compensation to be paid to the host communities located along the proposed bridge.

The government redefined the project as government-owned and funded. Its spokespersons commented: “The government is now funding the project. The PPP model wasn’t working, and that was why construction work on the project stalled for a while. So, in order to make progress, the government decided to take it up, as well as [to] make budgetary provision for it (...). The era of PPP is over and it is fully funded by the government this time.” In answer to the question about whether the government had the funds to continue with the project, the controller said, “Of course, the government has the funds. Why are you afraid about whether government has the funds or not? The federal government has decided to fund the bridge and we are happy to see that” (Okechukwu, 2018).

Interestingly (and supporting our interpretation that it was not the contractor who failed to deliver), the project was awarded to the same contractor, namely Julius Berger Nigeria, which had also (successfully) built the Third Mainland Bridge. The difference was that a local contractor was added to the main contractor, Reynolds Construction Company (RCC; the contractor who had won the contract for the abandoned library project), replacing NSIA, which had been part of the original consortium. The contract sum was \$541M (N206B) (*NAN*, 2020a).

### 7.1.3 Continued Stalling

Even after being rewarded the contract, Julius Berger left the site because of a lack of funding from the federal government. The press commented: “A cross-section of citizens has cautioned that the appropriate thing should be done by expeditiously releasing funds and not starving the project of funds to make it a reality” (Amaize et al., 2018). A parliamentary committee expressed concerns about the “slow pace of work, [and that] there is no way that President Buhari will commission the Second Niger Bridge during his tenure”. However,

the committee blamed the contractor for “showing its unfit and unprofessional behavior in the way it has handled these projects”; it also accused Julius Berger of irregularities in securing the contract—that there was no due procurement process (NAN 18 July 2020a).

The Buhari Administration continued to pay lip service to the project, and the president visited the site multiple times. After talk of the work being 33% complete, in October 2020 President Buhari said that “the Second Niger Bridge has attained a 46% completion status” (NAN 8 October 2020b); in addition, Mr Fashola, the Minister of Works and Housing, said on television that the government had committed to completing the bridge by the first quarter of 2022.

However, the authors observe that little progress has been made at the time of writing (early 2021; see Fig. 7.2); indeed, concern is being publicly expressed that the bridge will not be completed even after Buhari’s second term (*Vanguard*, 2020). Moreover, the government budget simply has no room for the large mobilization of funds that would be necessary to go from a 46% completion status to full completion: the Nigerian government’s total capital project budget for 2021 is insufficient to complete the project by 2022. Nigeria’s application for funding of other projects, such as the Electricity Transmission Network and Infrastructure, at \$486M, is still pending at the

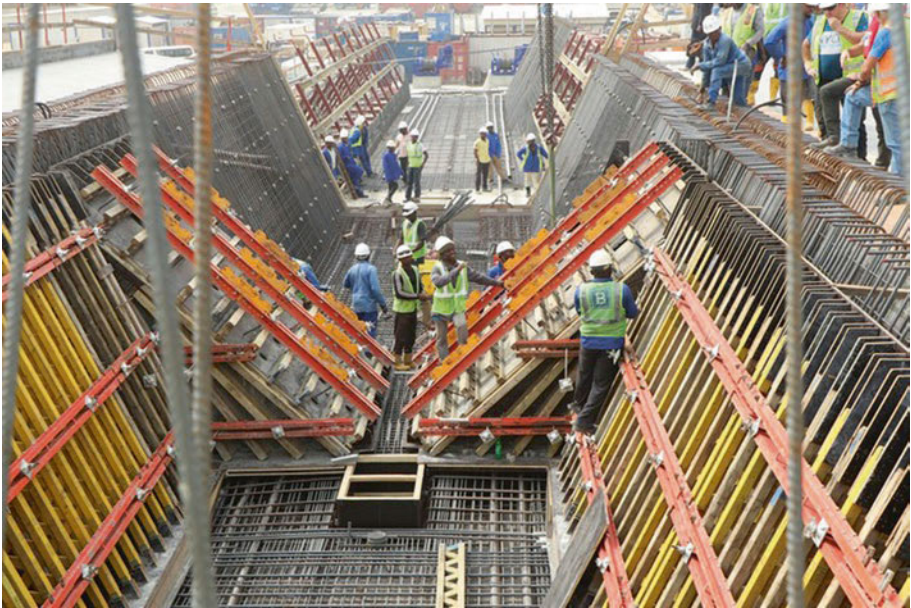


Fig. 7.2 Second Niger Bridge work in process in 2021

World Bank. Another application to the World Bank by the Buhari Administration in the amount of \$1.5B, to finance recurrent expenditure for the 2020 budget, is being given slow consideration but is subject to reform by the Nigerian government. Thus, it is not clear where the financing for the bridge will come from, and we must therefore conclude that the aforementioned hopeful announcements represent political statements rather than being based in truth.

### 7.1.4 Diagnosis of the Reasons for Failure, in the Words of (Former) President Jonathan

President Jonathan was accused of not being serious in his intentions: “In 2015, Jonathan used the project as a campaign tool, assuring Nigerians that while the old Azikiwe (Nnamdi) built the First Niger Bridge, the young Azikiwe (himself) would build the second. Unfortunately, Jonathan did not win the election for his second term” (*Business Day*, 2020).

The authors had the opportunity to interview President Jonathan and asked why the bridge project had not been completed on schedule and why the 31-month delay had not been prevented? At first, President Jonathan said that even though Dr Ngozi Okonjo-Iweala, Coordinating Minister of the Economy and Minister of Finance, came from Anambra State (one of the states that the bridge would connect), this showcasing of the importance of the bridge to her and the people of Anambra State was not enough to get the project done. (The implication was that somehow this might have been her fault.) We probed further and uncovered the real issues, according to the president.

In his words, “I am telling you from the state level to the federal level there are people who initiate programmes and projects without funding. You want to gain some political points by telling people, ‘We are doing this for you. Mr President, Mr Governor, we are doing this for you.’ But if you go to the minister in charge of works or finance and say, please, how do you intend to fund this project, they will begin to tell you how Mr President thinks we should do the project and they have no choice. Nobody will show you the project’s financial plan, and these are significant reasons why major projects failed in this country” (Jimoh, 2021: 110).

Thus, the project again illustrates (as with the National Library in Abuja) the lack of financial plans for large government projects in Nigeria. The Second Niger Bridge lacked financial planning; it was merely initiated, in President Jonathan’s words, “You just want to gain some political points by telling people we are doing this for you.” Thus, from the outset, scheduled

completion was not a priority. President Jonathan suggests that for project success in Nigeria, “You must have a financial model for payment, and if you want to borrow, you must have a repayment plan. When you don’t design a payment model, you may not execute that project. A president can wake up in the morning and award one project of, say, N3B [\$8M]. Yet, once the president moves up to N35B [\$90M] and above, this is where the financial model must come in or the project will fail” (Jimoh, 2021: 110).

### 7.1.5 Conclusion

This project had been long in the making and offered large benefits to the Nigerian nation, given the number of states that the bridge would connect. President Jonathan had a strong rationale for starting the project. However, the project became a political pawn: first, as an election play for him (used at the “last minute”) and then in the refusal by the Buhari Administration to continue the project (perhaps understandable in light of the missing financing, but in contrast to their lip service). The lack of continuity is already emerging as a continuous theme.

The second continuous theme is the lack of stable funding (which is also visible in the library projects). President Jonathan announced the set-up of a PPP consortium based on a sovereign wealth fund, which did not quite describe the financing situation or put in place a solid financing model that would enable the project to be completed. This construction was then dismantled by the Buhari Administration, and a lack of funding stability again caused work to stop.

Finally, when the project is fought over and undermined by its owners (the various government branches), first, the contractor is put in a difficult situation, being denied the stability of engagement that is necessary to make investments and to dedicate resources, and second, the contractor then faces hard-to-resist temptations to game the project, hide budgets and obtain profits by any means (which we again saw in the library projects, on the positive and negative sides).

The Buhari Administration says it is not interested in the PPP funding models used by some other countries. Could there be another political game going on with the bridge? Nonetheless, the contractor is not visibly moving the project forwards, and different parties claim different completion levels (as mentioned earlier). President Jonathan regretted the ongoing political game with the Second Niger Bridge, but it was a game of his own making.

## 7.2 The Third Mainland Bridge: A Completed Project

### 7.2.1 Introduction

Three main bridges connect the mainland to the island in Lagos State in Nigeria. They are the Eko, Carter and Mainland bridges. Of the three, the Third Mainland Bridge has the longest span, at 11.8 km (Fig. 7.3). The bridge connects both the Oworonshoki and Apapa-Oshodi Express Ways while running through to the Ibadan Express Road from Lagos. President Ibrahim Babangida's Administration completed the construction of the bridge in 1990. For a long time, it was the longest bridge in Africa, carrying over a million vehicles per day.

### 7.2.2 Starting and Stalling

The project was commenced in 1977, under the military government of President Obasanjo, with a goal of completion in 1980. Obasanjo resigned in 1979 and handed power over (for the first time in Nigeria's short history) to a



Fig. 7.3 The 11.8 km Third Mainland Bridge at Adekunle Junction



civilian administration under Shehu Shagari. The project continued, and its first phase (5 km, ending at an exit at Ebute-Metta) was completed in 1980, but at this point the project stopped progressing.

The Shagari government was ousted by a coup in 1983, which led to another military government under General Buhari. The project stopped under the new administration. Widespread dissatisfaction with Buhari's restrictive governance led to another coup, after which General Ibrahim Babangida (who had also played an active role in the coup of 1983) became the new president in 1985 (*Encyclopedia Britannica*, 2020). In 1986 President Babangida announced that he would return power to a civilian government in 1990, a transition that finally took place in 1993 after some complications (such as an attempted coup by a Muslim Major from the North in 1990 and the relocation of the country's capital from Lagos to Abuja, in the centre of the country in 1991). The handover of power was complicated, as Babangida annulled the elections; finally, under pressure, he handed power over to a civilian interim government under the businessman Ernest Shonekan. In the midst of these tumultuous events, President Babangida picked up the Third Mainland Bridge project again and led it to completion by 1990.

### 7.2.3 Restarting the Project Under President Babangida

The authors had the chance to interview (former) President Babangida in early 2020, who explained the reason behind his decision to finish the bridge and what influenced him. We cross-checked this for accuracy with some of the senior government officials (the project owner) and the contractor involved in the project (Jimoh, 2021: 112):

*I will tell you a story. In 1982–1983 I was watching the show 48 Hours on American television. They said in the programme that Nigeria was a country of riches, and I watched that programme to the end. I think Okonjo Iweala, or someone, talked about projects in Africa and Nigeria called “White Elephant Projects”. So, they went on the bridge and said this is one of the classic examples of building fantasy projects and showed the bridge that ended in the middle of the water. That stayed with me, even when I came into office, and I always had it on my mind.*

*Then, in 1983, the Shagari government was toppled, and unfortunately he did not have enough time, so he could not have done anything about the bridge at that time. So, when we came in, it came back to me that there was a challenge that I had no option other than to face. We had to do something about it to prove the cynics wrong, a challenge that we must tackle with determination to prove to some people that Nigeria could solve problems.*

*Now, I had a very talented young man who was the military governor of Lagos. I also had a lot of talented engineers. So, I told the governor, we need to talk about the bridge, and I asked, is it doable? Can we do it now? He said, yes, we can do it. So, I told him you should get the people who have worked on such projects before, such as Julius Berger Company or Melafi Mark Anthony Construction Company. He went out to mobilize the contractors. The contractor worked out the job with its engineers, and they found out that the job could be executed.*

*I called the contractors and told them: "Look, I want this bridge to become a reality." I told them, "I am not interested in the technical details, because I am not a technical man, but get me this bridge, and I assure you, we will be able to pay the money." I also got them to make a promise: "I will come back here on my birthday, promise me, give me this as my birthday present." And the contractors promised me they would provide me with the project. And that went well.*

Thus, this project had an owner who knew what he wanted, and a professional contractor handled the bridge. However, other principles of megaproject management were not followed—there was no contract bid for a mega project of this nature, as is normally the case, no stakeholder engagement and no proper government monitoring department. President Ibrahim Babangida was not interested in detail—the contract was awarded for \$1B (finally running to £1.1B), and we do not know how the computation was done. The contract sum was higher than what many people considered appropriate for the remaining work, and some stakeholders made a case of alleged corruption. We asked President Babangida whether corruption was an element in the project (as some had claimed). He confirmed, "Yes. People could think that since the amount involved is enormous at one billion dollars."

The design was what the contractor deemed suitable for the bridge. And, as "God will have it", the project was completed on time; at least, as the president said, "Give me this as my birthday present." The project emerged from the president's desk. There was no approval process beyond President Babangida.

## **7.2.4 Project Execution and Outcome**

Some stakeholders argued that President Babangida knew what he wanted from the bridge even before he became president. He did not hide his intention to complete a bridge; it was not a "White Elephant Project" that ended in the middle of the water.

The project file confirms the involvement of the Federal Ministry of Works, and some of the ministry officials participated in the survey that was

conducted. Still, the ministry could do little to influence the contractor's interest because of the fear of the military government. For instance, nothing could be done in terms of contract negotiation. The project owner's quality of representation was not particularly strong in the field, beyond the military president's office, and the president confirmed that he had "a lot of talented engineers". Ministry officials beyond the president's office played a very weak oversight role. The contractor was having a field day in every respect (on due process in contractor selection, see Von Branconi and Loch, 2004; Olatunji, 2008).

During the contract execution stage, the subcontractor arrangement (by the main contractor) seemed effective, as was the management of the supply chain, and there was clarity of problem-escalation procedures. One example of this occurred when the bridge was to be extended to Yaba/Oyingo and the contractor felt this was not part of the project. The supervising ministry staff and the minister of works brought this to the president's attention, and the section was ultimately included. The Army also protected the military government on a daily basis. All other stakeholders were powerless and could not mount any reasonable engagement in the project's life cycle for fear of the military.

In the end, there is clear evidence that a quality global standard project was delivered on schedule and with little cost overrun. The bridge is an economic success. There is, however, criticism—some stakeholders cite Lagos State's masterplan, which renders the nation-building role of the Third Mainland Bridge dependent on the completion of the Fourth Mainland Bridge, which it was promised would be built by President Babangida but which was not tackled during the eight years he was in office.

### 7.2.5 Conclusion

This case is representative of the approach of "heroic leadership" of powerful decision-makers (in many cases, the presidents themselves) who tried to accomplish significant improvements for their country (which, in this case, worked) but neglected their own limitations (in knowledge and decision-making) and the impacts of their "lonely" (personal with little consultation) decisions on continuity.

The "rescue" of the Third Mainland Bridge is one case of a dominant leader getting his way, cajoling the project contractor to deliver project management with effective collaboration—with a generous price and the application of power later on to deliver. It is not that there is weak leadership of mega

projects in Nigeria; on the contrary, there are “Über-Leaders”, who fill an institutional vacuum with “lonely” (and sometimes wise but sometimes ill-informed) decisions.

The anecdote of President Babangida and the Third Mainland Bridge shows both the strengths and weaknesses of a project management system with weak institutions—powerful leaders (who often had good intentions!) could move mountains and accomplish things. The lack of continuity meant that the project was initially in a bad state, but Babangida was able to overcome this discontinuity and finish the project within his term.

On the other hand, leaders do not always get it right and they make mistakes. Babangida picked up on the Third Mainland Bridge by accident, quite “randomly”. What if he had not watched the critical television show? Would the project have continued to languish? Or, might he have discovered a different languishing project that was even more important than the Third Mainland Bridge? As successful as this project rescue was, was it the right project to choose? The complexity of the economic benefits of multiple large government projects is too great for leaders acting on a whim to choose the right priorities, regardless of how powerful they are. Even if they are able to push their choices through, this does not mean they are the best choices for the nation that they are trying to build.

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# 8

## Two Power Plants

The completion of the Egbin Power Station in 1985 teaches the lesson that the successful construction of a power plant in Nigeria is possible if there is not much external interference. The second case, the Calabar Power Station, is just one part of a large project to build ten power plants in gas-producing states in Nigeria. After 13 years (instead of the planned 4), seven of the ten plants have been constructed, but they produce only a fraction of the foreseen power for the country. The systemic nature of power generation, distribution and sales was not taken into account, with very negative consequences.

### 8.1 Egbin Power Station, Ikorodu Lagos State: A Completed Project

#### 8.1.1 Initiation and Completion

Egbin Power Station is the largest power-generating station in Nigeria, with an installed capacity of 1320 MW, consisting of six units of 220 MW each. The station is located at Ijede/Egbin, in Ikorodu, approximately 40 km north-east of Lagos.

The project was designed and decided under the Shagari government in June 1980, with construction work starting in 1982 by the Marubeni Consortium, which used the Hitachi Company of Japan for the electrical and mechanical work and Bouygues of France for the civil works. The budget was \$250M and the targeted completion was May 1985. It was the first gas-fired

plant in Africa, with six independent 220 MW-capacity boiler turbine units. It is still the largest power plant in Nigeria (Wikipedia, 2020).

Two military coups intervened, the first resulting in the military government of President Muhammadu Buhari in 1983. However, the new government continued with the plant, with the first unit being completed and commissioned on 13 May 1985 by the president. The other five units were commissioned at six-month intervals until May 1987 by President Ibrahim Babangida (who had taken over from Buhari in the summer of 1985 following another military coup).

Thus, the project was two years late overall (a 40% schedule delay), and the final cost ran to \$690M, a budget overrun of 176%. So, the project had some challenges, but it can be called a success, in spite of two regime changes over its duration (Fig. 8.1).

### 8.1.2 Success Conditions and Challenges

Why was Egbin successfully completed in the face of (painful) government turnovers, while other projects had succumbed to disappearing support and budgets when the political leadership changed? No official statements or press articles are available, as this project happened too long ago, but the authors were able to interview two government officials.

The project enjoyed overwhelming support from the government, as well as the population—it was obvious that (the capital at the time) Lagos needed a large amount of electric power. A town was resettled, without any protests, in



Fig. 8.1 The Egbin Power Station

contrast to the Zungeru Hydropower Plant, which we discuss in Chap. 10. The population supported both projects, but in 1982 it still trusted the government more than it did in 2015, when the dam was built. The government financed the project from its own budget, which was less strained in 1982 than later on. Thus, the subsequent governments continued to support the project. Finally, the command structures in the military governments were stricter, and the government held the monopoly on power generation and distribution—once there was a consensus at the top, the projects happened.

The project also benefited from good collaboration with the contractor, Marubeni. A former member of the Egbin management team commented that the contractor had good technology, “did what it took” and even came back after the project was finished to check whether things were going well. In addition, the design factored in significant robustness by oversizing both the boilers and the turbines.

The project had its challenges, as large projects often do. For example, the power lines over the lagoon into Lagos posed engineering challenges. The gas pipeline was not completed when the first unit was commissioned, delaying the actual start. Furthermore, the HPFO (high pour fuel unit), which enabled the plant to run on fuel as back-up when necessary, was delivered by ship from Port Harcourt in the South. However, the ship did not fit under a bridge in Lagos, so the unit had to be delivered on trucks via roads, which caused a long delay. Ultimately, the project was delivered with reasonable overruns (in the context of large government projects in Nigeria), enabled by functioning governance.

### 8.1.3 Privatization and Trouble

On 1 November 2013 the federal government (under the Jonathan Administration) privatized the power plant, following a World Bank/IMF-encouraged privatization programme of public companies that had begun under President Obasanjo. Egbin Power Station became a joint venture between Sahara Power Group and KEPCO, which purchased a 70% holding for \$407M.

However, the plant then experienced losses, because the transmission grid was kept under government ownership and received no investment, rendering it unable to transport the electricity generated. Moreover, the distributors regularly did not pay the government’s wholesale energy trader, which in turn did not pay the power generators (*The Economist*, 2016)—in 2017 Egbin was



owed \$350M and could neither invest nor raise funds. It therefore shut down for a period and ran far below capacity for a long time before being refurbished (Power Links, 2017). These market failures have plagued all power plants in Nigeria, including the Calabar Power Station, which we will discuss next.

## 8.2 The Calabar Odukpani Power Station: Completed but with Little Delivery

### 8.2.1 Project Initiation

The Odukpani power plant near Calabar City (from now on referred to as Calabar Power Station) was to be one of ten power plants that would comprise the Nigerian National Integrated Power Project (NIPP). The NIPP initiative was conceived in 2004 under the administration of President Obasanjo, with the aim of addressing the issues of insufficient electric power generation and excessive gas flaring from oil exploration in the Niger Delta region. The concept of NIPP was to add a medium-sized gas-using power station to each gas-producing state in the Niger Delta (using the otherwise flared gas), resulting by 2008 in an addition of 10,000 MW to the national grid's 1500 MW in 2000 (Power Sector Nigeria, 2012). The original NIPP concept foresaw seven plants, which was reduced to six because one state was already far advanced with one (where the government had promised to invest half). However, then four other plants were added, on which construction had begun, so the final NIPP initiative included ten plants (personal interview with a power ministry executive). Calabar Power Station was one of the ten.

A new organization, the Niger Delta Power Holding Company (NDPHC), was created as a special-purpose vehicle to manage this project. The funding plan for the NIPP was to source a foreign loan and afterwards sell an 80% stake of the completed power plants to private investors, who would operate them efficiently and profitably, in order to recover the investment. In August 2005 the National Council of State and the National Assembly approved an initial \$2.5B for the NIPP from the "Excess Crude Oil Account". The power plants were originally estimated to cost around \$200M each (around \$2.2B for the ten plants, plus the additional one, where the government would add financing) and were planned to be completed by 2008.

By 2007 (when the government changed), approximately \$2.8B had been spent on advance payments (Okedu et al., 2018), including \$1.78B in funded

letters of credit, which allowed some of the projects to continue despite the funding interruption that was about to strike.

The change in administration after the election in 2007 (to the government of President Yar'Adua) interrupted funding for more than two years as the new administration subjected the project to rigorous legal, financial and political reviews.

### 8.2.2 Project Complications and Delays

At the outset, seven plants were planned to be built with simple cycle designs (of lower efficiency), but they had provisions for future extension to a (more efficient) combined cycle operation. Together, the seven plants were to operate 22 GE 9E gas turbines, with a nominal rating of 126 MW, which delivered a net capacity of 112.5 MW after adjustment for site conditions (the Calabar Power Station was to house 5 of the 22 turbines). The Calabar project was given to the Marubeni Corporation (Japan) and Gitto Group (Nigeria) contractors.

After the two-year interruption resulting from the new government's scrutiny, additional delays accumulated. The project was expanded to include power transmission lines and sub-stations, as well as gas pipelines from the sources to the plants. However, the NDPHC stated that the pipelines had been disrupted by vandalism in the Niger Delta, in addition to wider community hostility. The minister of power told the media about a host community in Delta State, which demanded a huge sum of money—far more than the cost of the power project—for the community in order to appease their ancestral deities before cutting down a tree that was standing on the right of way of the power plant near the deities' shrine (Power Sector Nigeria, 2012). Also, there were delays arising from engineering equipment being ordered from abroad and delivered much later.

In late 2009 President Yar'Adua fell severely ill and left the country for treatment, but he died upon his return in February 2010. Vice President Jonathan, who had been the chairman of NDPHC, *ex officio*, became acting president and then—after winning the election in 2011—president, so the NDPHC changed leadership. By 2012 the emerging picture was that as a result of the added scope (transmission and gas pipelines) and the various delays suffered by the projects, they had consumed over \$8B, with only 4774 MW of the planned 10,000 MW being built (Advisory Power Team, 2015).

On the other hand, there was optimism in 2012 because the Nigerian Electricity Regulatory Commission (NERC) authorized state and local

governments, as well as communities in the country, to generate and distribute their own electricity. With this authorization, the Cross Rivers State Government (where Calabar was situated) started a move to generate and distribute electricity in its domain, with an N30B (around \$80M) investment plan. The state's commissioner for power, Augustine Nwokocha, told the press: "The state will generate enough capacity, have a robust transmission infrastructure that will take the power to the people and have a solid distribution infrastructure that will take it to their routes."

### 8.2.3 Delivery of the Calabar Power Station in 2015

The source of gas for the Odukpani power station was planned to be the Addax Adanga oil and gas field, approximately 100 km offshore from Oron. The Calabar project included the engineering, procurement and construction of a pipeline from Ikot Nyong to Oron to Adanga. However, when the project was revived in 2011, following the federal government's suspension and investigation, it was discovered that Addax had no plan to develop the gas resources of the Adanga field. The planned gas supply evaporated and had to be replaced.

An alternative gas supply from Frontier Oil's Uquo gas-processing plant was contracted. Following all due process, a new, shorter pipeline was contracted for the supply of 131M cubic feet of gas per year. The supplier Accugas claimed to have invested \$600M in building gas-production, processing and transportation infrastructure, with third-party financing to supply gas to the Odukpani power station.

At the end of May 2015 (outgoing) President Goodluck Jonathan inaugurated—with much fanfare—three new gas-fired power plants, including the 560 MW Calabar project, out of the ten projects fast-tracked by the NIPP framework (Patel, 2015). However, in the end the gas supply at Calabar was not ready. Not only had there been the aforementioned gas pipeline vandalism prior to the April 2015 elections, but the Accugas (formerly "Frontier Oil") pipeline was simply not finished. The Calabar plant had all the equipment installed, but it could not operate because of a lack of gas to burn (Fig. 8.2).

A provisional gas supply from Obigbo/Imo River was arranged and delivered through the completed segment of the pipeline. The supply could only sustain two units—not the five that had been installed. It was put into service in 2015 but could deliver only 220 MW.



**Fig. 8.2** The Calabar Power Plant in 2021

(In parallel, the Cross Rivers State Government attempted to build a smaller plant of 23 MW of electricity for the supply of the City of Calabar. However, this power plant was shut down one day after the power station was commissioned in 2019 because of fears over its reliability.)

#### **8.2.4 What Has Been Delivered? Lessons from the Project**

For the 10 NIPP power plants, the original cost estimates were approximately \$2.2B, including pipelines, switchyards and connections to the grid. However, the estimate is that more than \$8B have been spent. The result of this investment consists of the following (in January 2021): seven completed and functional power plants (including Calabar); one completed but with a design downgrading from combined cycle operation to the simpler and less efficient open cycle; and two that are close to completion but not finished.

This project is evidently heavily over budget (not untypical for very large projects) but nevertheless complete! The problem is that delivery outcomes have been severely below the design plans: the 7.5 “completed” plants deliver—instead of a capacity generation of 3000 MW (which is already a reduction by half in terms of the goals announced by Obasanjo in

2004)—only 1300 MW, around 30–40%, to the grid. The reasons for this lie in a combination of both problematic supply and delivery capacity (Ali, 2016).

At Calabar Power Station, these limitations take the following two forms (interview with a senior power ministry official). The first problem exists on the demand/distribution side. Calabar's parent NDPHC sells the electricity to the Nigeria Bulk Electricity Trader (NBET), which sells to various (privatized) distribution companies. However, the distribution companies have not paid their bills—they cover only about 40% of the price that Calabar Power Station officially charges—arguing that they need to invest capital to upgrade their equipment, that the tariffs they are allowed to charge are too low and that Nigerian electricity customers do not pay their bills (*The Economist*, 2016). Therefore, the government is forced to subsidize all electricity generated by Calabar to the tune of 60%, which is paid from the annual budget and represents a significant drain. In addition, the decrepit national power grid, which leaks power to a high degree, cannot receive the full output from the Calabar plant and therefore limits the operation of the plant to a maximum of 337 MW, corresponding to only three of the five units ever being in operation at the same time.

The second problem exists on the supply side. The Gas Sales Agreement (GSA) with Accugas has a feature that, in hindsight, was an error—it has a fixed “take or pay” piece that requires the power plant to pay at least for the gas volume that would run four of the five generation units, even if the amount really taken up is smaller. In other words, although Calabar Power Station never has more than three generation units in operation, it always pays for an amount of gas corresponding to four units. This causes a significant additional loss. The GSA with Accugas is backed by a World Bank Partial Risk Guarantee (an insurance scheme that was introduced by the World Bank to Nigeria), which obliges the federal government to make up for supply losses. The problem is that this risk guarantee was designed for extraordinary situations (occasional and catastrophic risks), but it is used here for a systemic constantly operating loss. This second steady loss is payable by the federal government and draining nationwide public resources.

In summary, Calabar Power Station produces electricity but at a huge loss to the government, which begs the question about whether this generation has any positive productivity for the electricity grid (and this is also the case in light of the very large investment that was made to get the plant operating in the first place).

The final assessment of this project acknowledges that a power plant has been built (one of 7.5), but without taking into account that this plant is a component of a larger system, namely, the grid and the players generating,

trading and distributing electric power. The component within this system, first, contributes only weakly to the system, at a fraction of its theoretical capacity (because the system is so flawed that it cannot even use the capacity of the plant); and, second, it is causing a large and systemic loss to the government. The national funds used here produced an asset, but they nevertheless ended up being squandered.

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# 9

## Two Express Road Rehabilitation Projects

The comparison between the Lagos-Ibadan Express Road and the Lagos-Badagry Express Road involves two projects of similar size and complexity. Both roads had fallen into substantial disrepair, limiting economic usage and transit and risking the safety of drivers and vehicles using the roadways.

The two projects allow us to look at the attempts of two different contracting regimes: the first to make a public–private partnership (PPP) work, and the second the usual public project construction from the outset. The PPP scheme failed, and yet the Lagos-Ibadan Express Road is complete (or almost complete), whereas there is still no end in sight for the Lagos-Badagry Express Road. Examining the reasons for the problems is instructive for our enquiry.

### 9.1 The Lagos-Ibadan Express Road Rehabilitation: A Completed Project

#### 9.1.1 Original Construction of the Express Road

The Lagos-Ibadan Express Road is a 127.6 km-long expressway connecting Ibadan, the capital of Oyo State, and Lagos, Nigeria's largest city. President Olusegun Obasanjo's Administration constructed the express road in 1978 when he was the military head of state of the Federal Republic of Nigeria. It was Nigeria's first multi-lane express route.

The road maintenance was handed over to the Federal Roads Maintenance Agency of Nigeria, (FERMA), which had just been established and was



responsible for connecting roads between states in Nigeria; it also had the role of improvement, maintenance and construction of new road networks. Road maintenance in Nigeria is subject to annual budgetary appropriation by the federal government and the vagaries thereof.

The road was officially opened to traffic on 8 August 1978. In September serious pavement failure occurred in the form of cracks, potholes, deformations, pushings and ruttings. As a result, an investigation was carried out to determine the causes of failure, the adequacy of pavement design and the quality of the materials used, both in the failed and functioning sections of the road. The results showed the causes of failure to be heavy axle loads, a lack of sub-soil drainage and the use of sub-standard materials (Ibrahim, 1981). Thus, the effects of gouging and corruption were felt almost from day one of the economic usage of this very important economic artery.

### 9.1.2 A Reconstruction Project in a PPP Scheme

Thirty years later, repairs and improvements to the road, as well as the provision of additional lanes, were long overdue (Fig. 9.1). In 2009 President Umaru Musa Yar'Adua developed a government policy for PPP schemes to



Fig. 9.1 Lagos-Ibadan Express Road before the habilitation contract

help engage the private sector in funding road constructions. The Yar'Adua Administration signed a PPP agreement with construction company Bi-Courtney Highway Services, based on construction costs of \$593M, to be executed over four years, with a concession period of 25 years. (There was also a bus rapid transit [BRT] scheme, with a separate lane in each direction alongside the expressway, which was to be delivered by Lagos State Government. This side project created its own problems, but for reasons of space we will not elaborate on this separate project here.)

However, the construction failed to take off. Under the contract, the government expectation was that at least the sum of N86.5B (\$227M in the 2020 exchange rate) would be spent by Bi-Courtney, but by 2012 not much had happened. While the PPP arrangement remained unexecuted, the expressway was a source of grave hardship to travellers, with a resultant loss of productivity from long travel times, in addition to a loss of lives and property through vehicle accidents and robbery, among other things (Elebiju & Ilesanmi, 2020). Bi-Courtney said the delay in executing the concession came from a government delay in the approval process of the project design.

In 2012 President Jonathan cancelled the concessionary agreement with Bi-Courtney. In November Mike Onolememe, Nigerian Minister of Works, announced revocation of the agreement. A government investigation judged the concession of the Lagos-Ibadan Express Road a failure: several things had been taken for granted by both government and the concessionaire. The government officials did not have enough knowledge about PPP schemes and they failed to employ the services of experienced legal/transaction consultants or technical advisers. Thus, the design of the project was left entirely to the concessionaire, who drew up an agreement that was skewed in its favour—the result was structured to fail from the outset (Ahmed, 2011).

However, a Bi-Courtney company representative emphasized in an interview with us that the delays had been caused by the behaviour of the government: first, the Ministry of Works delayed the approval of the road project from the agreed 6 months to 18 months, accounting for a whole year of delay. Second, the investor (who would take the PPP concession) wanted certain guarantees, such as being paid back in dollars, not naira, and getting some assurances about minimum levels of toll income. The government, however, refused to give commitments, while demanding a design change with more lanes, which the investors resisted because traffic predictions did not justify the extra lanes. The apparent “non-work” was a result of these frustrating deadlocks. In the end a final decision meeting between Bi-Courtney and the Ministry of Works was repeatedly delayed because one ministry official after

another refused to chair the meeting; eventually, President Jonathan decided the delay was unacceptable and simply revoked the concession.

Bi-Courtney challenged the decision in court and managed to secure a court injunction restraining a new concession agreement, which was finally rejected in court only in 2016 (*The Nation*, 2016). The subsequent administration under President Buhari also criticized Jonathan's government for cancellation of the contract. The Minister of Works, Housing and Power, Fashola, said during an interview: "The past government did not act in good faith (...). The answer is no cancellation if the contract is performing. What to do is renegotiation. I am not saying that the government must not terminate non-performing contracts. Indeed, these are rights that are standardly provided in all well-drawn contracts" (Jimoh, 2021: 118). In other words, the subsequent government alluded that a negotiation should have been attempted with Bi-Courtney in order to avoid failure of the PPP scheme. (However, this criticism needs to be interpreted in light of the hostility against PPP schemes, which the Buhari government itself exhibited in the context of the Second Niger Bridge project.)

### 9.1.3 Restructuring the Project as a Government-Owned Project

The President Jonathan Administration, after revocation of the concessionary agreement, awarded the contract for rehabilitation of the road to Julius Berger Nigeria and Reynolds Construction Company Limited, for the sum of N167B (then \$801M, and in 2020's exchange rate \$440M). On 8 July Mike Onolememen, Minister of Works, announced that the two firms had emerged as the preferred bidders and would deliver the road within 48 months (by 2017); also that the ministry had obtained the certificate of "No Objection" from the Bureau of Public Procurement (BPP) (*The Nation*, 2013).

However, the running of the road reconstruction as a public project brought back the all-too-familiar problem of unreliable funding. Funding was intermittent, and the contractors were not paid. Construction slowed and then stopped when 2016 brought a walkout.

In June the Minister of Power, Works and Housing, Babatunde Fashola, presented to the House of Representatives' Investigative Committee on Breach of Privilege, Violation of Appropriation Act and Incitement of the Nigerian Public a request for a supplementary budget or a transfer of funds with legislative approval. In the same presentation he accused the National Assembly of slashing N21B off the N31B vote for the Lagos-Ibadan Express Road. He

said: “We were asked to complete those abandoned projects; the budget of the Lagos-Ibadan Express Road was reduced by the National Assembly from N31B to N10B. We owe the contractors about N15B, and they have written to us that they are going to shut down.”

The walkout letter by the division manager of Julius Berger, received on 5 June, said: “Honourable Minister, it has become evident that the required adequate funding for the continuation of the project is not available (...) We trust you will understand that therefore, and as a consequence of the unacceptable financial risk to Julius Berger Nig. PLC, we are left with no choice [other] than to immediately commence suspension of the works on the project, as earlier notified.”

The corresponding letter from Reynolds Construction, dated 2 June, said: “At the moment, the outstanding debts for approved certificates for certified works stands at N7, 829, 277, 294 (...) It is noted that the 28-day window allowed for payment of the certificates by Clause 60.4 of the Conditions of Contracts had long expired. In addition, there is another certificate (No. 19) of N1,108,334,258 under processing. (...) Thus, making a total of N8, 937,611, 552. The mounting debt profile on this project is worrisome” (Olawoyin, 2017).

The news in 2018 was that the current government had “cleared the debts” for the project (i.e. they had paid the contractors), and around 50% of the highway upgrade had been carried out at this point (Fig. 9.2). However, as a result of these funding-related hold-ups, project completion would not be achieved until 2021 (World Highways, 2018). The latest update comes from an announcement by the Minister of Works and Housing on television in Abuja on 5 June 2020, “committing” the federal government to completing the Lagos-Ibadan Express Road in the first quarter of 2022.

### 9.1.4 Discussion

We have listed the Lagos-Ibadan Express Road as “completed” because, with the current funding and the two contractors reaching the home stretch, there is a reasonable expectation that it will be finished by 2022 (or maybe soon after). However, this project is no great success. It will limp to completion at best after 13 years (more than three times the originally planned 4 years), with a budget of perhaps \$1.2B (four times the original budget of \$300M).

We have seen similar problem themes in several other cases, in particular, the instability of funding, to the point of contractors stalling, and the disruption from one administration to the next. One particular theme of this case is



**Fig. 9.2** Lagos-Ibadan Express Road during the habilitation contract

the failed PPP scheme. We have seen an announced (but probably not entirely real) PPP scheme, which was nevertheless strongly condemned by the Buhari government, in the Second Niger Bridge Project. We will also see a failed PPP scheme in the Ajaokuta Steel Project. The PPP failure in the Ibadan project is particularly instructive.

The claims and counterclaims are complicated and messy—Bi-Courtney was accused of having negotiated a lopsided agreement in its favour (taking advantage of inexperienced government counterparts) and of a conflict of interest involving having the honorary legal adviser to President Yar’Adua on its board. On the other hand, Bi-Courtney argued that the road had not been developed because its efforts to source funds to execute the project had been frustrated by the federal government, in addition to being held back by bureaucratic bottlenecks at the Ministry of Works.

The real lesson here is that the failure of this PPP was not caused by specific idiosyncratic reasons but reflected a general problem of one administration’s agreements not being honoured by the next. One legal analysis comments: “Notoriously, when there is a change of government in Nigeria, contract agreements of the previous administration may be subject to ‘review’ or ‘probes’, which are sometimes politically motivated and not driven by public consideration. In this instance, President Yar’Adua’s Administration’s

concession was cancelled by President Jonathan's Administration" (Elebiju & Ilesanmi, 2020), which was, in turn, criticized by the next administration, as we saw earlier.

Moreover, this observation from within the country is corroborated by an analysis from the UK: "According to stakeholders consulted, there is still some uncertainty about the extent to which government is committed to the concept of road user charges. The government is reportedly currently working to develop a National Tolling Policy and has draft legislation under consideration by the National Assembly, which is meant to formalize the government's commitment to increasing the level of private finance in the road sub-sector. However, both bills have been in development for a number of years – the concept of establishing a road fund and a federal road authority were initially developed in 1997 by the Steering Committee for Road Vision 2000" (Cambridge Economic Policy Associates, 2015: 10).

As we will discuss in our Conclusions and Recommendations chapter, PPP schemes can be powerful ways to get infrastructure projects completed without stretching public finances. However, this requires a clear and reliable government policy, together with the sophisticated capability of the government to negotiate productive agreements with hard-nosed concessionaires. If these conditions are not developed in Nigeria, this avenue for the productive mobilization of private capital will not be available.

## 9.2 Lagos-Badagry Express Road Rehabilitation: A Stalled Project

### 9.2.1 Brief History

The Lagos-Badagry Express Road is the local name for the Nigerian section of the Trans-West African Coastal Highway. The road connects Lagos, Nigeria, with Dakar, Senegal, and the Nigerian part ends at Seme Border Station. Construction on the Lagos portion originally commenced in 1998. As an extremely important artery for intra- and inter-country transit, it was decided in 2010 to make a concerted effort to widen the road from two lanes (with four lanes in some sections) to ten lanes, with a light rail running in the centre. President Jonathan awarded the \$500M contract to the China Civil Engineering and Construction Company (CCECC), a state-owned enterprise (SOE) from China.

The project was greeted with jubilation by all stakeholders, given the immense need for transportation capacity. However, by the end of 2020 it had still barely begun (the Federal Controller of Works called the work “10.6% completed” in December 2020 [NAN, 2020]). Moreover, instead of improving the lives of the residents in the adjacent areas, it has made their lives worse, having brought traffic to a virtual standstill, resulting in significantly increased commuting times (from 15–20 minutes to 3–4 hours in some stretches), slowing down business transactions (forcing companies to open local offices because their employees cannot travel), causing accidents and resulting in robberies of commuters, who are sitting ducks in their cars.

The project demonstrates a combination of insufficient financial planning, which resulted in unreliable funding, questionable accounting and misrepresentations to the public, with excuses that point away from the sources of the problems.

Maybe the project has not strictly been abandoned (a transportation artery of this importance cannot simply be “abandoned”). However, despite repeated assurances from various parties, after 10 years there is no end in sight for a 60 km stretch of motorway (Fig. 9.3). Completion of the project will certainly not happen within the period of the current Federal Buhari Administration, and it is not even remotely within sight (Ochonma, 2019).



**Fig. 9.3** The state of much of the Lagos-Badagry Express Road ten years into the project

## 9.2.2 Was the Problem the Fault of the Contractor?

The contract was awarded to Chinese SOE CCECC. The contractor left the site in 2016, and the Lagos State governor vowed to “order them back onto the site” in 2019. Was this contractor a failure?

Chinese contractors have been influential in Nigeria for three decades, and CCECC is the most prominent among them. Chinese contractors have gained significant market share in Nigeria because they “undercut local contractors by 25%” (Corkin & Burke, 2007); in addition, they bring financing from China that has, in contrast to loans from the IMF or Western countries, no strings attached in terms of political practices of the government (Osondu-Oti, 2016). On the other hand, Chinese contractors are not well liked by their local competitors (not surprisingly) or by employee associations because they skimp on wages and have the reputation of monopolizing senior management positions for Chinese employees, leaving only low-level positions to Nigerians.

In addition, there is growing suspicion about China, and by association against CCECC as a fully government-owned SOE, with respect to their motives. Are they spying and secretly identifying natural resources to be exploited? For example, some journalists have asked: “Such use of the area photographs that identified the locations of minerals through the use of sophisticated seismic instruments was evident in the recently arrested Chinese nationals in some Northern states where they were extracting minerals for exportation to China. Is such an act classified under ‘Railway’ construction?” (Oduombaku-Wilson, 2020).

However, CCECC is clearly a competent and established contractor. It holds more than a hundred public contracts in Nigeria, including the \$1.2B light rail project in Lagos, the Lagos-Kano railway, with a budget of \$1.4B and four airport terminals to the value of \$500M. CCECC *did* abandon a contract previously—in 1995 (military) President General Abacha awarded them a contract to rehabilitate the national railway system (with straightening of tracks, adding locomotives and training local personnel). However, a senior foreign affairs officer in the Ministry of Foreign Affairs later admitted that the project had not been completed because of inadequate funding/non-disbursement of funds (the complication being that there might be undisclosed reasons for abandonment that were not available to the ministry, as the military exclusively handled external relations) (Osondu-Oti, 2016: 35).

The conclusion of this discussion is that the contractor was most likely not the cause of the problems; rather, their walking off the construction site in



2016 was a symptom of the continuing instability of funding, resulting in a failure to pay their fees.

### 9.2.3 Dodgy Funding and Accounting

In 2009 the federal government received a \$660M loan from the World Bank. However, only a small portion of this fund was for the Lagos-Badagry Express Road (addressing only an important intersection within Lagos), and this part of the loan was finally approved by the federal government only in 2016 (Opeyemi, 2016). The funding ran out quickly and with it the payments to the contractor CCECC, who ultimately abandoned the site in 2016 to stem their losses. However, the funding scarcity could not be discussed by the contractor in public: a CCECC representative still gave the rainy season as the official reason for the lack of progress (*Premium Times*, 2017)—rains are indeed torrential during rainy season, but this is hardly an excuse in a region of Nigeria where this is the case every year.

However, various government sources did admit the funding scarcity. For instance, the commissioner for works and infrastructure admitted in April 2016 that the slow pace of work on the Lagos-Badagry Express Road was due to the scarcity of funds for the project, elaborating that the ministry had inherited 244 road projects from the previous administration in different local government areas of the state and 42 of the projects had been completed, while construction work was ongoing on others (Ihua-Maduenyi, 2016). Furthermore, in November 2020, Babajide Sanwo-Olu, Governor of Lagos, finally alluded to overambition, publicly stating that the delay had been caused by “the government’s plan to build a first-class infrastructure that people would be proud of when completed [turning it from a two-lane road into a highway of ten lanes with a light railway in the centre]” (Olisah, 2020) (Fig. 9.4).

Disturbingly, possible severe budget irregularities came to the attention of the public in connection to the Lagos Light Rail Project (which was the “Siamese twin” of the express road project because the rail in its centre is part of the light rail project). However, an unwillingness by federal and state agencies to work together was one obstacle for the Siamese twin. The light rail project had been commenced in 1983 (as the “Metroline Project”) by Governor Jakande but was stopped by (military) President Buhari two years later on the basis of it being a waste of taxpayers’ money. The project was revived by Governor Tinubu in 2003, with a budget of \$1.4B. However, little progress had been made when Tinubu left office in 2007.



**Fig. 9.4** Large portions of the Express Road are still under construction in 2021

The new governor, Fashola, revived the project again in 2008, awarding the contract to CCECC and promising completion in 2011. When this deadline passed, a new deadline of 2015 was set, which also passed. At this point, the governor's spokesperson commented: "Let me draw your attention to the fact that when the governor said that (rail will be completed in June 2013), he also mentioned that all these will be subject to availability of funds. So, if the World Bank loan is still being held up by the federal government and there are still issues, definitely it would be impossible to do magic" (Olawoyin, 2020). The next governor again promised completion of the light rail project, the deadline for which again passed in 2019. The current governor, at the time of writing, Sanwo-Olu, promised that the blue line rail project would be completed in 2020 and become operational in 2021, but there are no indications that this will happen.

Confidence does not seem to be increased by accounting discrepancies in Lagos. In a 2010 report delivered by the China Railway Construction Corporation to its shareholders, published on the company's website, the company claimed that the sum of \$182M had been earmarked for completion of the project. This differed from the one released by Lagos State Government, which puts the project cost at \$1.2B (Olawoyin 2020). Moreover, some basic benchmarking was offered by the opposition politician,

Gbadamosi, who said in a public debate before the election in 2019: “The light rail project is being built at a cost of over \$1B. However, there is a heavy rail project in Addis Abbaba that started in 2011 and was completed in 2016, already in use. [It was] Built at the cost of \$5.2M per km, where we in Lagos apparently spend \$54M per km on that light rail project, which has been on for the past ten years and has not been completed” (Gbadamosi, 2019). Of course, these are the words of an opposition politician, but they pose difficult questions about cost levels and squandered budgets nonetheless.

### 9.2.4 Protest, Additional Funding and Patching Up

On 20 May 2019, road users, including business people and private citizens, as well as students of Lagos State universities, staged a significant protest. Dr Joe Okei-Odumakin, one of its leaders, said to the authors that the protest denounced the poor condition of the road and the challenges of hardship, economic loss, delayed medical emergency help, as well as street robbery (because car drivers stuck in traffic are easy victims). They accused the government of a complete lack of concern about their needs. The federal and state governments mobilized massive security forces to dispel the protest with guns.

At this point, finally, additional funding was mobilized. In 2020 the Federal Government of Nigeria raised N100B (approximately \$330M) with an Islamic Finance fund via income-bearing Sovereign Sukuk certificates, with the purpose of financing real estate and manufacturing investments. Correspondingly, the government’s 2020 budget contained N2.73B (around \$7M) for the Lagos-Badagry Express Road (Okeowo, 2020), but there would be additional funding of N4.5B (approximately \$11M) from the Sukuk fund (NAN, 2020).

In June 2020 Lagos State Government summoned the contractor, CCECC, to return to the construction site. However, in the meantime, “palliative” work was assigned in two sections to state agencies of Lagos State Government and the Federal Government of Nigeria (*Construction Review Online*, 2019). This was hailed in a ceremony by the deputy governor, who lauded the cooperation across agencies (indeed, a federal and a state agency working together without mutual sabotage was hailed as a major success).

However, the measures are only “palliative” (reflecting the funds available)—they patch up portions of the road in order to allow cars to move, but they do not address the widening of the road through additional lanes and the addition of the light rail. Although this is celebrated as a success for local citizens (and it does improve their commutes somewhat), it does not address the

fundamental lack of progress of the project. The 10.6% completion status cited by the federal controller of works looks like it will stay that way for the foreseeable future.

### 9.2.5 Conclusion

The Lagos-Badagry Express Road is a crucial project with huge economic benefits and support from stakeholders on all sides. No technological uncertainties have hindered progress. However, it has not made significant progress over ten years, in the process worsening the lives of the citizens living nearby (Agency Report, 2021).

The themes that appear as explanations are recurring: overambition (possibly driven by pride or special interests) made the required budgets very substantial, which, combined with a lack of financial planning, led to an instability of the budgets available. This, in turn, made progress a hostage to money shortages, prompting the contractor to stop work. Added to these economic obstacles were dodgy accounting, which, as with the sister light rail project, may have funnelled a significant part of the already scarce funds into corrupt avenues, and all this was exacerbated by multiple subsequent politicians using the project (as well as other projects, such as the Lagos Light Rail Project) as campaign fodder, promising delivery to tight deadlines without a plan (or commitment) for how to make it work. In short, the project was set up to fail, just like other projects in our sample.

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# 10

## Two More Power Plants

The Zungeru Dam/Hydropower Plant has seen its share of difficulties and has consequently been delayed; it is still under construction at the time of writing, but it is already delivering some electricity and seems to be turning the corner.

This is in contrast to the Delta State Power Plant, sponsored by the state to fill an urgent need for electricity, as it is the primary oil-producing region of Nigeria. This project sits abandoned, with billions having been spent on it, and accusations and charges of corruption stand in the way of any possible forward movement in the future.

### 10.1 The Zungeru Dam/Hydropower Plant: A (Soon-to-Be) Completed Project

#### 10.1.1 Brief History

The Zungeru Hydropower Plant project was originally planned in 1982, but it took until 2012 for President Jonathan to announce its start. Zungeru is a 700 MW hydroelectric facility being built with Chinese assistance on the upper and middle reaches of the converging Kaduna rivers in Niger State. The Federal Ministry of Power is the owner and implementing authority of the project. With an original cost estimate of \$1.3B, Zungeru is the largest hydro-power project under construction. It was financed with a “concessional loan and preferential export buyer’s credit” of the Export-Import Bank of China (China Exim Bank); this loan came with the appointment of a Chinese

contractor, a consortium of the China National Engineering Electric Co. Ltd (CNEEC) and Sinohydro. The China Exim Bank supplied around 75% of the funding, while the Nigerian government contributed the remaining 25% (\$309M). Construction work on the power plant started in May 2013 and was expected to take 60 months (until 2018).

The highly technical project consists of a 2400m RCC roller concrete gravity dam and a clay core rock-fill dam, a powerhouse behind the dam, four 175 MW turbines and a tail race channel. The Niger State Government was fully behind the project, with the governor publicly stating: “We are conscious of the importance of this project, not only as it affects our people, but for the nation, too. That is why we put in place a committee to interface with the communities and the contractors. We don’t want anything to delay the delivery of this project. All hands must be on deck to ensure that we have a hitch-free operation on-site and for the project to be delivered on schedule.”

Shortly thereafter, it became publicly known that the project would displace 98 communities domiciled in three neighbouring councils of the state. Therefore, Professor Chinedu Nebo, Minister of Power, inaugurated the Zungeru Hydro Community Relations Committee (CRC) in February 2014, in order to oversee the relocation of approximately 22,000 people in the affected communities. The government also hired Global Legend Integrated Concept Company, a professional service provider based in Nigeria, for the relocation of communities.

An effort to support the relocated communities was required, with financial support for the Hydroelectric Power Producing Areas Development Commission (HYPPADEC) through the federal HYPPADEC Act of 2010 (Poindexter, 2014). However, ten months later, communities challenged the project in court, seeking a permanent injunction over low compensation and omission of names, while the project was stalled because of what the federal government described as “teething problems”. The state minister for power described the suing parties as “communities and powerful people” that forced the government to “bend over backwards” to satisfy them (Okafor, 2014).

Work stopped when Sinohydro laid off around 90% of its workforce (Echewofun, 2015). The HYPPADEC bill was amended in 2015 to reduce the contribution that hydropower projects needed to make to the commission. However, it took until the end of 2015 for Sinohydro to rehire 800 workers and restart work, a delay of two years (*Construction Review Online*, 2016).

After the restart, the project progressed as planned. There were some problems, such as torrential rains that put the entire construction site under water and forced the construction teams to dig the tailrace area out from the water



and mud. However, these were within the normal expected range for such a large project and were overcome by the contractor in collaboration with the project supervising company, Tractebel, and its Nigerian partner firm. In March 2018 the federal government declared the project 45% complete (Bhaktar, 2018). The authors visited the site in the summer of 2019 and witnessed orderly progress (Fig. 10.1).

The project was not completed in 2018 as planned. The communities resettlement litigation will delay completion until 2022 (possibly early 2023) and cause a budget increase to the amount of \$1.5B. However, one turbine started producing electricity at the end of 2019, and at the time of writing, in early 2021, progress looks so solid that completion now looks highly likely.

### 10.1.2 Enabling Factors of Completion

The authors discussed the Zungeru project with Edozien, Permanent Secretary of the Ministry of Power, Works and Housing, the project owner. He stated: “Yes, there are vacuums in government project management, which need to be filled by a process of project management activities, and there are at least six things to be done that can make a project successful.” He named six principles that he thought were being followed in the Zungeru project, enabling it to avoid funding shortfalls and overcome difficulties.

1. There is a clear statement of objectives by the owner, at the right specificity (neither too high-level and vague nor too detailed, specific and inflexible).
2. There is “good faith” with the contractor, which enables the flexibility of working through (inevitable) problems and surprises without any party insisting on a fixed view and/or suing. (This was endangered in 2016, when several subcontractors started a lawsuit for a number of small issues—



Fig. 10.1 Zungeru construction site in the summer of 2021

Edozien did not even [want to] know what they were. However, the project organization worked through them.)

3. Funding stability—the loan from China has been ringfenced in a fund, so project continuation is not subject to annual budget battles (which are a major obstacle to project continuation in Nigeria).
4. There is a clear governance structure, with respected lines of authority. The government (minister) only controls for continued pursuit of the agreed goals. Then, there is a project supervisor in the ministry, who supervises the project consultant (Tractebel), which has a supervising team on-site that supervises and controls the (Chinese) contractor.
5. The contractor is competent and has the capacity to deliver the project.
6. Everyone must understand their role and stick to it. (For instance, the consultant, who was paid by a time and materials contract, initially felt they were responsible for their time and effort only, and not for the outcomes of their supervision. They subsequently stepped up. Or, the governor tried to interfere and was prevented only because [then] President [Buhari] refused to intervene, so it was referred back to the governance structure.)

These six requirements are consistent with the principles that our study has found. They are too rarely followed (including by the Ministry of Power, Works and Housing, as we have seen). The experience of the Zungeru project suggests that Edozien should have added a seventh principle: do not forget, neglect or underestimate stakeholders, even if they are simple village communities that are displaced by the project. These communities managed to mobilize powerful supporters and caused significant overruns and delays, which would have been avoided had they been taken seriously from the beginning.

## **10.2 The Delta State Oghareki Power Plant: An Abandoned Project**

### **10.2.1 Initiation**

Delta State hosts the majority of the oil production in Nigeria, representing a considerable amount of industrial activity. However, the federal electricity supply was 100 MW, compared to the approximate 1000 MW needed. The idea of building an independent power plant (IPP) for Delta State was first proposed in 2000, during the administration of Governor James Ibori. Ibori

ultimately did not take on the project before leaving office in May 2007, but Emmanuel Uduaghan, his successor, did.

In an executive council meeting in May 2009, Governor Uduaghan approved the contract award for the acquisition and installation of two Open Cycle Rolls Royce Trent Gas Turbine generators capable of being fired by natural gas and diesel oil to generate 100 MW of electricity. The contract was awarded to Davnotch Nigeria Limited, in partnership with an American firm, Southern Integrated Energy Limited, at a cost of \$125M, corresponding to N21.75B at the 2009 exchange rate of N176 to a dollar (Marskson, 2020).

### 10.2.2 The Alleged Corruption

In 2010 Ovuozorie Macaulay, Commissioner for Energy at the time, in his brief to the state's Economic Management Team, alleged that the government had paid 60% of the contract sum to Davnotch the same year (actually, within a couple of days). The commissioner also alleged that at the time the contract was awarded, one of the owners of the company (and its founder) was Victor Ochei, a member of the Delta State House of Assembly.

The investigation further alleged that the contract sum of N21.7B did not include land acquisition, appointment of consultants, insurance, environmental impact assessment (EIA), construction of a 132/33KVA transmission line to bring the generated power to the grid or construction for the gas supply for the IPP project. This led to the upward adjustment of the contract sum in 2010 to N23.2B (Marskson, 2020).

These revelations immediately sparked accusations of corruption. For instance, the Delta State Elders, Leaders and Stakeholders Forum addressed the Chairman of the Economic and Financial Crimes Commission (EFCC) with the accusation that there was no formal contract between the state and Davnotch, no invoices and no letter of credit (an accusation that Davnotch denied). However, the Federal Crime Agency later examined the case and confirmed that Davnotch did not have an operating licence, meaning that the contract payment should never have been authorized by the assembly (as confirmed to the authors in an interview). Victor Ochei became speaker of the Niger State Assembly in 2011. He claimed on his website that he had divested himself of all connections to Davnotch when he became speaker, and he denied all involvement when the corruption affair heated up. In 2014 Ochei resigned as speaker of the assembly (Kupferman, 2016).

In July 2011 Governor Uduaghan expressed the belief that the plant would be completed before the end of his tenure in 2015, as the two Rolls Royce

generators were being delivered before the end of 2011. However, it soon transpired that almost no work was being done on the construction site, and the turbines were delivered to an empty site and were therefore out in storage (Fig. 10.2). The usual excuses were given, for example, the lack of gas supply, the rainy season and a fire in early 2015 (this was reported in the press as “putting some old equipment on the site and incinerating it to have an excuse” [Shibayan, 2018]). Davnotch issued a press statement stating that “if building a power plant is that easy our country would have solved her power problems a long time ago” (Global Energy Monitor Wiki, 2020).

However, by the end of 2015, weeds had overtaken the project site, which had been deserted for a year. The temporary offices were under lock and key, while the warehouses were far from complete. The press reported that Davnotch had abandoned the project (Oghre, 2015). In May 2017 observers noted that apart from the access road to the project site at Oghara, a perimeter fence, three buildings and a gantry, there was nothing else on the ground. Governor Okowa, who inherited the project when he took office in 2015, said during a town hall meeting at Oghara (which included the former governor, James Ibori) that the government needed money to connect the turbines at the plant to a gas pipeline. “A lot still needs to be done. We have brought in technical partners. Delta cannot complete the project alone because of dwindling resources. We need about N20 billion to bring it to a functional level. The options are either to sell outright. But the important thing is to make it



Fig. 10.2 Delta State Oghareki Power Plant Site behind gate

functional” (Oliomogbe, 2017). In other words, the government needed almost the entire original contract sum again in order to get the plant built. Okowa installed an investigation task force to find the culprits, but this did not result in indictments.

The government announced, under the outgoing governor, Uduaghan, that it “had finalized plans to sell off the IPP project to investors” (Orusi, 2016). However, to date there are no indications that any willing investor has been found.

The Nigerian Economic and Financial Crime Commission (EFCC) launched an investigation, and the preliminary report alleged that more than 50% of the total contract sum had been paid to the contractor before the contract was awarded correctly. Furthermore, the accounts of how much money had actually been paid to Davnotch were contradictory (Oghre, 2015).

Moreover, in early 2016 the Serious Fraud Office (SFO) of the UK opened an inquiry into Rolls Royce, alleging bribery in multiple countries. One of these countries was Nigeria, the bribery having been committed by the company PSL Engineering & Control, which was acting for Rolls Royce, allegedly to influence government officials; Victor Ochei was allegedly named in the inquiry as having been involved in this act of bribery (Urhobo Today, 2016).

Facing a combination of the money having run out (as the state did not have the funds to pay for the project twice) and of unresolved controversy over bribery and embezzlement, the project has been abandoned and is unlikely ever to be rescued (at least in its current form).

### 10.2.3 Implications

No court rulings or punishments have been issued in the Oghareki plant failure. The public angrily demanded that action be taken—for example, the Empowerment for Unemployed Youth Initiative pointed out that corruption contributed to poverty and unemployment, and they blamed the former governor, Ibori, and former speaker, Ochei: In their words, “From [...] evidence submitted, it remains clear that [Ochei] using his privileged position, in flagrant abuse of public service rules and in contravention of the Money Laundering Prohibition Act, influenced and obtained the full payments for the said contract amount and diverted same to acquisition of choice properties, political flamboyance and ferreting funds from Nigeria overseas” (Shibayan, 2018).

The Federal Crime Agency confirmed to the authors that there had been fundamental problems with due process. A second inquiry was launched by

the office of the state attorney general—but this was also questioned by the Empowerment for Unemployed Youth Initiative who alleged that the state attorney general was appointed by the Executive and approved by the State Assembly, thus suffering from a possible conflict of interest. In any case, no judgements have been handed out, and therefore there are no culprits. Certainly, Ochei has not been backward in “showing off his wealth”; for instance, he was described in the rainbow press as selling one of his three Toronto luxury penthouse apartments (Kupferman, 2016). He has also vigorously pursued his political career, for instance, by filing and winning a lawsuit against his political party, the APC, forcing annulment of the party’s primary election for the governor race because the election had sidelined him (Okafor et al., 2019); and in 2020 Ochei was appointed by President Buhari as the executive director of Maritime Labour and Cabotage Services in the Nigerian Maritime Administration and Safety Agency (NIMASA) (Vanguard, 2020).

There is an interesting contrast to this outcome in the UK: the Serious Fraud Office did hand out judgements. It identified 12 counts of conspiracy to corrupt or failure to prevent bribery in seven countries: Indonesia, Thailand, India, Russia, Nigeria, China and Malaysia. Rolls Royce was ordered to pay fines of £497M, plus costs to the SFO in the UK, in addition to £141M to regulators in the USA and £21.5M in Brazil. Furthermore, 38 employees faced disciplinary hearings. Some people complained that this was not enough, but action was taken and the company was severely punished, with a sum three times its annual profits plus a depression of its share price (BBC News, 2017).

However, no action was taken in Nigeria. Thus, this study cannot name anyone as having engaged in corruption. However, it is abundantly clear that corruption and bribery have been committed, and the lesson for perpetrators is that they can get away with it.

In concluding, we can summarize that the Delta State Oghareki Power Plant project is perhaps the most extreme example of corruption among our case studies. Corruption singlehandedly sunk this project into failure. In the other cases, corruption was more subtle—while present, it led to cost increases and bad decisions, weakening projects so they possibly succumbed to other problems that they might otherwise have overcome. Corruption is always corrosive, but this case is a disturbing illustration of how \$125M can disappear into the pockets of powerful officials and their foreign accounts, destroying an important project and massively contributing to poverty and deprivation in their state.

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# 11

## The Ajaokuta Steel Project

### 11.1 Project Initiation

The idea of large-scale national steel production first arose as early as 1958 among the soon-to-be rulers of an independent Nigeria when it emerged that the regions at Agbaja, near Lokoja, as well as Udi, near Enugu, had significant amounts of iron ore (Matusevich, 2003: 191). The official view became that “any efforts to increase [a developing country’s] power status through technological advancement must come through their own development of indigenous steel (...) no country can talk about power status or the pursuit of it, and the defense of national interests, in any form without a well-established, integrated, fully operational native steel industry” (Unongo, 1980: 7).

Between 1961 and 1965, several proposals were invited for the construction of an integrated iron and steel complex, but the result was that the (Western) suppliers did not believe this could be done economically using local raw materials. In 1967 discussions about a possible contract were initiated with the Soviet Union in response to Western countries criticizing Nigeria’s civil war (instead of supplying weapons). Gaining a relationship foothold in the largest African country was important for the Soviet Union; soon after, a team of Russian steel experts recommended a blast furnace/basic oxygen facility (using the technology that Russia excelled in rather than the upcoming direct reduction technology that used gas rather than coke); as a result, the Russian firm Technoexpert was awarded a contract in 1970 to examine the quantity and quality of Nigerian ore and coal.

The year 1971 saw the creation of the Nigerian Steel Development Authority (NSDA) to carry out surveys and research and to plan, construct

and operate steel plants. The NSDA received several rounds of reports from the Russians, and difficult negotiations took place between the Nigerian government and the Soviet contractor, Tyajz-Prom Export (TPE). There was widespread unease about deepened relationships with the Soviets (Alli-Balogun, 1988: 195), but a contract for the construction of a plant was finally signed in 1979 (just before the military president, General Obasanjo, handed over the government to a civilian). A few months later, the new civilian Shagari Administration declared steel to be a high priority and created a ministry for steel. The contract foresaw an initial phase with a plant of 1.3M tons of annual production capacity, for a sum of \$2B (with Nigeria also covering 50% of the cost of transporting and housing 7000 Soviet technicians and their families on-site).

In the words of (former) President Obasanjo: “In my first presidency, there was the general belief that steelmaking was at the heart of industrialization. India had built a first steel plant with Russian help, and they built their second almost without help. We thought we needed to achieve that, but we did not have enough money to do it alone. So, we went to the Soviet Union, and there we obtained the best deal on offer: we got a free loan from the Russian government, and we commissioned an experienced Soviet contractor, TPE, to design and build the plant. I started the project, but then it was executed through the ministry of mines.”

The choice of location was difficult and ultimately “non-optimal”. A place close to the available ore and coal deposits had to be found, and while Ajaokuta was one of the candidates, Onitsha was closer to both deposits. However, economic optimality was trumped by political justifiability (in 1974, just four years after the civil war, awarding a strategically important project to one of the strongholds of the rebelling state was not considered prudent) (Oyeyinka & Adeloje, 1988: 26).

Moreover, much has been made of the raw materials dilemma: Nigeria had large ore deposits (albeit with low iron content, below 40%) but a paucity of coking coal, while there was an abundance of gas (from oil production). Therefore, the choice was between an (old technology) blast furnace process, with a relatively cheap “beneficiation” of local ore, and a modern direct reduction process using cheap gas for heating, as well as iron reduction, but requiring higher-grade ore (of around 80%, which would have to be imported because an intermediate step to upgrade the local ore would have been prohibitively expensive). In the end, the blast furnace process was chosen (pushed for by TPE), but coking coal would have to be imported at least initially, because the local coking-ready coal from Lafia/Obi had excessive ash and sulphur content, as well as structural mine problems.

Therefore, the plant would require a dedicated 66 km rail line to transport ore from the mine at Itakpe, in addition to a river port to receive imported coking coal. Thus, it was clear from the outset that the economics of the plant would not be straightforward.

Nonetheless, all these problems ultimately had solutions and were known to the decision-makers, and none were “showstoppers”. In our interview, President Obasanjo commented: “The Russians warned us that our own iron ore would have to be ‘beneficiated’ in order to feed this plant. So, we knew we would have to invest in this, and also, we would have to dredge the river port to ship the coal, and we committed to building a railway stretching from the iron ore deposit to the plant and further South to the coast. So, we made these three additional commitments at the outset – ore beneficiation, river port and ore railway, to make it work” (Jimoh, 2021: 144).

However, another aspect of Nigeria’s grand steel ambition was more insidious: Ajaokuta was not the only project in the pipeline. Nigeria’s industrialization was believed to require a portfolio of steel mills: 1977 saw the signing of a contract with a consortium of ten German and Austrian firms to construct a 1M ton direct reduction plant, Delta Steel; and 1979 witnessed contracts (with Japanese and German companies) for three rolling steel mills of 200K tons per year in Katsina, Jos and Oshogbo to produce bars and wire rods (based on the steel output from Ajaokuta and Delta). More plants were foreseen.

Although Delta was commissioned in 1982, it never produced more than 200K tons per year, and even this declined because of rampant corruption (for instance, paying inflated prices for materials), which led to declining production and, finally, an end to its operations in 1995, which, in turn, shut down the rolling plants (Amzat, 2018). More generally, undertaking these overly ambitious projects at the same time turned the steel dream into a nightmare for Ajaokuta (Oyeyinka & Adeloje, 1988: 15): there simply wasn’t enough money, or talent, to carry out all these projects.

## 11.2 Project Construction and Cessation by 1988

In 1980 the FSDA became defunct and was replaced by specialized companies, one of them being the Ajaokuta Steel Company. TPE had originally been expected to deliver the project in 1989 and to deliver half the capacity as output by 1983. TPE had a track record of on-schedule, on-cost delivery of steel projects, including in Brazil, South Korea and China. However, the Soviets wanted to focus on the steel mill, so Western contractors had to be

found for the civil works. Furthermore, disputes arose (with the Soviets withholding personnel because their accommodation had not been built), tensions arose between Russian and Nigerian personnel (because the Russians were perceived to be receiving astronomical salaries, among other things, see Alli-Balogun, 1988: 632), and delays and overruns accumulated. By the end of 1983, all work had to be halted because, being in an economic recession, the government ran out of money and stopped paying the contractors. The civil works contractors withdrew their personnel, blocking TPE's work (Matusevich, 2003: 214), and work essentially stopped.

At the end of 1983 the military deposed the Shagari government and installed General Muhammadu Buhari as a military president. Within days, the Canadian-educated general manager of Ajaokuta was in jail, along with 12 fellow senior managers, accused of "stupendous dishonesties" (corruption and mismanagement), and all work at Ajaokuta was halted. In addition, relationships with the Soviets became so frosty that Nigerian officials accused the Soviets of wanting to bring more "technical personnel" than was necessary, with the Nigerian embassy refusing visas to 500 Russians who wanted to enter Nigeria in 1987.

Discontinuity across administrations was again, as we have seen previously, a factor in this tale. Of course, every administration had its own view. Here is the view of (former) President Obasanjo, who signed the original contract in 1979 (Jimoh, 2021: 145):

*Just after the handover to President Shagari, a representative of TPE came to meet Obasanjo in his retirement home with the complaint, "Mr President, you did not hand over well". The president asked why he felt that way, to which the man replied that the minister of mines and steel was demanding a bribe. The minister had refused to sign the certificates of completion of jobs, which were needed for payment. But they could not pay any bribe from their contract sum since the payment for the contract was from Russia. "We do not have control over such payment since the bribe payment is not part of the bid." In sum, the project was blocked because of a "lack of enthusiasm for it," which resulted in the project no longer being given sufficient priority. Obasanjo spoke to his successor, Shagari, about it but did not know whether Shagari ever pushed for completion.*

Although Buhari wanted to stamp out wastage, he did not dare to stop the Ajaokuta Steel Project and the symbol of industrial development and self-sufficiency that it represented (not to mention the destruction of 5000 jobs that it provided). A new agreement for the completion of construction was signed in August 1985, just days before the Buhari regime was overthrown by



Fig. 11.1 Ajaokuta site entrance

the Babangida regime, but the schedule continued to be pushed back under Babangida, in 1988, 1989 and 1990, following the departure of Soviet personnel (Matusevich, 2003: 215).

Whatever the perspectives of the three administrations involved, by 1990 the project had ground to a halt from a lack of both funds and trust (Fig. 11.1). In the words of Matusevich (2003: 189), “The empty concrete blocks of its township (...) and the still rolling mills (...) stand as silent monuments to the failed ambitions of Nigerian rulers to exorcize by fire and steel the demons of the colonial past. They stand as a silent reminder of the lost grandeur of the Soviet empire, which, terminally ill as it was, tried fitfully to plant its peculiar concept of modernization in an African nation, tried and failed.”

### 11.3 The PPP Revival of 2000–2007

When Olusegun Obasanjo came back for his second term as (this time civilian) president in 1999, the project had been stalled for ten years. He still believed in its rationale and wanted to revive it, but the Soviet Union, its previous partner, was no longer in existence. “I thought the project should be completed by the same people who started it, so I went to see the Russian government. But they said no, and it turned out that the original contractor had been Ukrainian anyway, which now was a separate country! So, I went to the Ukraine, but they were not interested either. That was when I decided that we should find a company from the private sector to do it. Against what

people may tell you, a concessionaire was chosen by a public bidding process. The winner of this process was an Indian company, founded by the father but run by the two sons, the younger of whom drove this bid – the company was Mittal Steel. But then the sons competed with each other and fell out.”

In other words, when all avenues for continuing Ajaokuta as a government project had run out, President Obasanjo turned to a public–private partnership (PPP) construct. The Mittal Steel subsidiary, Global Infrastructure Nigeria Ltd (GINL), owned by Pramod Mittal, won a concession, in addition to the right of way on the railway; GINL also bought the now-defunct Delta Steel for \$30M. The process was handled by the Federal Ministry of Mines and Power rather than the Bureau of Public Enterprise (an institution established by an Act of Parliament to sell government assets or agree to the concession of government property).

GINL was given a ten-year concession for the Ajaokuta Steel Company in 2004. This was converted to 60% equity in May 2007 shortly before the exit of the Obasanjo government. However, a local company, BUA Group, had initially been chosen as the preferred bidder for Delta Steel and continued to agitate for its claim; soon material appeared in various newspapers alleging that the entire concession to GINL was illegitimate and was robbing the nation via an undervalued transaction. The Yar’Adua government established an investigation panel in October 2007 and cancelled the concession agreement in June 2008, alleging that GINL had failed to meet its performance targets and to pay concession fees while undertaking asset stripping. GINL, however, proceeded to international arbitration (Olawale, 2013; Okafor, 2016) and won the case at the International Arbitration Court in London in 2016. (This settlement foresaw that GINL should be repaid \$700M and retain the right to operate the Itakpe mine, which gives us an idea of how much they paid for the concession 12 years earlier.) The parties negotiated but had not found a mutually agreed settlement by 2017 (Udo, 2017), although the government claimed that a settlement had been reached, leaving GINL with Itakpe.

Now the government is attempting to get a new concessionaire, who will make the necessary investments. This process is extremely complicated (legally, and in terms of bringing multiple stakeholders on board), and no solution is currently in sight. According to the Bureau of Public Enterprise in an interview, the key challenge is not a business plan for a reconcession but transparency and credibility (including the understanding of any potentially interested investor that an agreement reached with one administration may be challenged again by the next). Before a final settlement, no contemplation of any revival of Ajaokuta will be possible.

## 11.4 The State of the Asset

The authors were able to visit the site of the Ajaokuta Steel Company, which is the size of a small city and employs 3000 people (who live on-site in dedicated housing) to maintain the site and keep it from deteriorating (but no steel is produced) (Fig. 11.2). The plant is clean, but the age of the equipment is evident, not by deterioration but by design, and by the absence of modern IT-based control systems that drive critical productivity. This large organization is managed by a “sole administrator”. The administrator made an official presentation, emphasizing that steel production is required for a country to reach the industrial age (with wording that seemed to have been lifted from Minister Unongo’s presentation in 1980, cited earlier), and the presentation stated that the project was “95.6% completed”. To the question of which measure the 95.6% completion rate was based on, the answer was “by the weight of all the materials that have been installed.”

The completeness measurement is a recurring theme—senior officials in Nigeria seem to like quoting precise-sounding completion figures (which we saw in the Second Niger Bridge and several other projects). However, completion figures are only as good as the underlying measures, and a weight measure is not in any way indicative of how much work and effort will be required for the last 3.6% of “weight” installed. This is illustrated by the estimate of how much money will actually be required to get the plant to production (backed up by an official audit that the sole administrator initiated).

The result was that it would take \$650M to install missing equipment and replace deteriorated equipment. However, in addition, another \$800M, contingent on the earlier \$650M estimate, would also be required to complete the surrounding infrastructure (railway and river port). In sum, actually starting up the plant and producing steel would require an additional two years (that’s the good news, says the sole administrator) and a new investment of \$1.45B! (His successor made a presentation to the federal government in the summer of 2020 requesting this sum, based on the argument that a new concession would bring in more money for a working plant [Mogbede, 2020].) This sum certainly amounts to more than 3.6% of any relevant funds, both the approximate \$6B that the Nigerian government has actually invested in the project so far and the original \$2B (for plant plus infrastructure) that was agreed with TPE in 1979.



Fig. 11.2 Ajaokuta Steel Plant's site in the summer of 2019

## 11.5 Conclusion

What have we seen in this case study? The project started from a reasonable policy stance: using steel to industrialize Nigeria. However, the project was conceived with a mixture of overambition and naivety—the complexity was augmented by political compromises in design and, even more so, by overambition in the total steel programme pursued; this came back to haunt the execution, which took place during a recession, causing the money to run out and the contractors to withdraw. The themes of overambition combined with a lack of solid financial planning are reappearing.

However, financial planning has been exacerbated by the unwillingness of subsequent administrations to ensure continuity, as seen by the handovers from Obasanjo to Shagari, from Shagari to Buhari, and again from Obasanjo to Yar'Adua (in the latter, journalists quipped that although Obasanjo had supported Yar'Adua, he had to watch “his partners being raked by the new administration in multiple cases”). A lack of continuity has destroyed several of the projects in our sample. A lack of continuity is also relevant in the ability of the country to get PPP off the ground, a structure that has helped many



other governments to get infrastructure built with the private sector, helping the government to avoid financial overstretch. If concessionaires cannot rely on the agreements being honoured by subsequent administrations, it will become impossible to find investors (of course, the other side of the coin is that the government needs to build the sophistication to negotiate with hard-nosed and experienced business people who are happy to take advantage of naive negotiation counterparts).

Where does this leave the project? After 40 years and \$6B having been spent, the project requires almost as much remaining investment (this is optimistic) as the original budget, and no solution is in sight to make progress until a new investor trusts the government to honour its agreements. Moreover, simply adding the missing pieces is probably insufficient—the existing equipment is probably obsolete (in design, as well as controllability, and in terms of optimization, as well as automation) and, even if functional, won't be competitive. Thus, the true investment required is probably much higher than \$1.45B. However, the plant is so deeply embedded in the Nigerian rhetoric of industrialization and progress that “over the years, Ajaokuta has been the *most* permanent fixture of the ever-changing Nigeria” (Matusevich, 2003: 189), and no administration has dared to question it.

Olatunji (2018: 344) concluded in his analysis that the Ajaokuta Steel Project “did not deliver its promised potential. It did not fail either.” We disagree. It is time to seriously ask whether Ajaokuta has a future. Remember that the plant has 3000 employees, in addition to site maintenance (and has had for the last 30 years, without producing a single ton of steel). Every year a decision is postponed, the country bleeds.

First, we have made enquiries about how much it costs to build a steel plant. The answer exists as a first “linearized” estimate analogous to the statement with which we are all familiar for residential homes: “A house in central Lagos costs N ‘xxx’ per square meter of habitable space” (and then we adjust this up or down a bit for budget or luxury design). In this spirit, the estimate for an integrated steel plant is \$2000 per ton of annual capacity, which would mean a budget of \$2.6B for the 1.3M-ton-per-year Ajaokuta plant. In fact, it is possible that we need to adjust this upwards slightly because fixed costs may play a role, so perhaps we should estimate \$3B. This is twice as much as the estimated completion cost of the existing Ajaokuta plant, but it would result in a state-of-the-art plant with modern technologies, controls and automation, which would therefore be competitive. Does this suggest that Ajaokuta in its ancient design should be completed?

However, the questioning needs to go deeper. The logic of the need for Ajaokuta, the “modernization symbol”, is rooted in the 1960s. The leading

nations have all lost their steel industries; steel has become a commodity that has undergone extreme price fluctuations over the years. Competitiveness today comes from services (prominently financial services), communication, IT and new developments such as AI, blockchains and intelligent decentralized constructive manufacturing. Nigeria is most competitive in IT and communication services. How damaging is it if steel costs a bit more (probably not much more) than if it were produced domestically? Is the construction of an industrial dinosaur really the path to modernization, or is it a path to the past? And would Nigeria be better off investing the next \$3B in the education of young people, in state-of-the-art technologies (albeit with better planning and commitment than in the current government projects)? One of the authors recently visited Kerala, a poor state in Southern India, and was told that they are investing in educating a critical mass of people skilled in blockchain technologies, in a bid to provide services for remotely controlled supply chains globally. Would something of this spirit not be a more proactive industrial investment for Nigeria than an industrial dinosaur?

These are complicated questions. We have no answers, only questions. Nonetheless, we propose that Nigeria should question the rationale behind the Ajaokuta Steel Project stemming from the 1950s and be willing to throw old notions aside if necessary.

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# 12

## Insights and Recommendations

### 12.1 Summary and Discussion of the Findings

Where do we find ourselves after our econometric analysis of the questionnaires and description of the 11 case studies? Have we obtained a coherent picture that allows us to suggest changes in the management of large Nigerian projects for the benefit of the country?

Before we come to the insights from the analysis, we must admit that projects are complicated beasts, and success and failure, and even stalling and completion, are not always clear cut (e.g. is the Lagos Badagry project stalled forever? Could the Mambilla Dam project, although restarted now, also be called a borderline stalled project?) But in spite of the ambiguities and noise, our data analysis identified four aggregate success variables (or factors), plus one individual variable, (corruption) that statistically explain a significant part of the difference in terms of success of the projects: the clarity and inclusiveness of the project goals, the professionalism of supervision and stakeholder management, the contractor selection, and the availability of resources and professionalism of planning (especially risk planning). Corruption stands on its own as an important success driver—this variable is sensitive, but because of the anonymity assured to the questionnaire respondents, we were able to get at least qualitative assessments of the level of corruption.

The econometric analysis showed the size of the economic levers that the success variables represent—making moderate improvements can (as suggested by the project sample) save hundreds of millions of dollars for a single project. Complementing the econometric analysis, the case studies have demonstrated the success drivers “live”—they have shown us what it looks like on

the ground when project success variables are missing and how the variables interact. Tables 12.1a and 12.1b provide a summary of the most striking observations.

Tables 12.1a and 12.1b show that all five success variables (the four factors and corruption) identified in the econometric analysis appear prominently in the case studies. First contractor selection and management caused problems in four of the six abandoned projects, but only in two of the five completed projects (and after a re-awarding of the contracts, the situation improved and the projects were completed).

Second, project goals were widely accepted in most projects, but characterized as “overambitious” (and thus changing) in five of the six abandoned projects, while they did not pose problems in the completed projects.

Lack of thorough financial planning connected to a lack of budget continuity is observed in all six abandoned projects, in two of them related to unsuccessful public–private partnership (PPP) schemes. Funding was an issue in two of the five completed projects (Lagos-Ibadan expressway and Egbin power plant), but the projects “got away” with delays rather than catastrophic stalling.

None of the abandoned projects was brought down directly by protests or resistance from external stakeholder groups. However, we have seen the completed Zungeru Hydropower Plant temporarily stopped by protests, causing delays and endangering completion. Three abandoned projects were plagued by disagreements among internal stakeholders (multiple government agencies) that did not agree or collaborate. These stakeholder disagreements go along with spotty supervision, which is mentioned for two abandoned projects but none of the completed projects.

Finally, corruption. Although direct evidence of corruption in the narratives of interviewees is uncomfortable and not easily volunteered, five of the six abandoned projects were clearly affected by corruption, and it is highly likely that one (the Delta State Power Plant) was brought down by corruption. Only one of the five completed projects has indications of possible corruption (although this lack of evidence is probably underestimating the issue, given its pervasiveness). We discussed in the econometrics chapter the evidence of corruption not just adding costs to a project but also poisoning the project with bad decisions, which severely reduces its chances of completion. This was illustrated in the Delta State project.

In summary, the qualitative case analysis strongly suggests that the success factors were systematically different between the abandoned and the completed projects (as the regressions in Chap. 5 already suggest).

Table 12.1a Qualitative description of success variables across matched pairs in three sectors (completed projects in green)

Success Variable	Obasanjo Presidential Library	Abuja National Library	Third Mainland Bridge	Second Niger Bridge	Egbin Power Plant	Calabar Powerplant (and NIPP more generally)
Contractor selection	Selection based on relationship, constructive collaboration, and mutual help	Contractor formally selected, but misbehaved (pricing, equipment rental).	The project had been stalled, and the military president went back to the same contractors to complete it.	Contractor agreement was publicly called "ppp", but behind it lay an incomplete plan to involve private financing.	Contractors were formally selected, competent and worked in the interest of the project.	No evidence of inappropriate contractor selection.
Project goals	<ul style="list-style-type: none"> <li>• Ambitious goals (first presidential library in Nigeria, broad scope).</li> <li>• Driven by project owner</li> </ul>	<ul style="list-style-type: none"> <li>• Ambitious goals (prestige of library size).</li> <li>• Goals pushed by one legislative faction.</li> <li>• Design changed twice after change of government.</li> </ul>	<p>[The value of the bridge was widely accepted.]</p> <p>A dear goal of delivering the originally agreed bridge design was articulated.</p>	<p>[Goals were widely accepted.]</p> <p>The political goals of the project were not clear (accusation of being a "campaigning" tool for presidential re-election).</p>	It was widely accepted that Lagos needed a power plant. There was consensus at the top and in the population.	Lack of broader system design (power lines, transformer stations) forced significant scope changes, leading to delays.
Resources and funding	A large portion of the budget fundraised up front, then funding added --- budget was assured.	Budget not assured for many years, and thus funding shortfalls interrupted project.	The military president made this a priority and assured availability of funds.	Project lacked specific financial plans/model. Government succession brought "ppp" plan down and led to funding running out, which interrupted the project.	The project was delayed by two government changes from military coups, but funding resumed. Government funding was earmarked and prioritized.	Funding of whole project was not assured, so funding ran out after government change, disrupting the project.
Supervision and stakeholders	Involvement of the project owner assured collaborative problem solving	Supervision spotty due to multiple changes. No stakeholder issues arose.	Close supervision led by state governor personally charged with project by president. No stakeholder conflicts arose.	Stakeholder conflicts among multiple states benefiting (but this was not decisive).	Resettlement of a town was accepted without protests.	Lack of coordination across various agencies: neither gas supply nor power distribution assured without losses.
Corruption	Evidence suggests that corruption was not present.	No evidence of corruption.	The budget may have been inflated by the contractor having an agreement with the president without negotiation opportunities for the official project owners.	Possible corruption to get support of local tribes.	No evidence of corruption.	Probably corruption (large sums paid up-front).

**Table 12.1b** Qualitative description of success variables across matched pairs in two sectors, plus Ajaokuta Steel (completed projects in green)

Success Variable	Lagos-Ibadan Express Road Reconstruction	Lagos-Badagry Express Road	Zungeru Dam & Power Plant	Delta State Power Plant	Ajaokuta Steel Project
Contractor selection	At first a failed PPP contract, which caused a court case. Contract re-awarded after a government change.	No evidence of inappropriate contractor selection.	Choice of Chinese contractors together with project financing.	Non-registered contractor company belonging to assembly member, who thus had a conflict of interest.	<ul style="list-style-type: none"> <li>Contract award to Russian contractor brought tensions and influenced technology choice.</li> <li>PPP contract led to lawsuit and then hold-ups and blockages.</li> </ul> Privatization of the project was not handled by the Bureau of Public Enterprise, as anticipated by law.
Project goals	Project goals were widely accepted --- a restructuring of the road was "overdue".	Goals very ambitious: 10 lanes driven by federal government, plus integrated light rail in the centre (driven by state government).	Goals were widely accepted.	[Goals were widely accepted.]	Overambitious goals, with too many steel projects in parallel, which overstretched development capacity.  Goals were politically compromised (location, input), but this was not decisive.  Project goals were difficult to measure.
Resources and funding	Government funding was unreliable and resulted in cuts, causing a walkout by contractors and stalling. Funds were then renewed in 2018 with priority.	Government funding ran out, forcing the contractor to abandon the site, which delayed the project.	Funding was stable because of the ringfenced structure of the Chinese loan.	Money ran out (but by then the project had stopped).  Lack of professional skill and project management capacity hindered project success.	Despite initial Russia Exim bank loan, funding ran out because of delays; restart was feasible only with PP contract after 2000.
Supervision and stakeholders	No stakeholder problems arose.	Federal and state agencies did not work together initially due to differences in political affiliations, until the "palliative measures" in 2020.	Supervision was clear and focused. Stakeholder conflicts (displacement of communities by the lake) stalled the project for a year.	Contractor never performed serious work with convincing progress, supervision and prosecution too indecisive	Project became a symbol of Nigerian industrial ambition and became "unkillable"
Corruption	No direct evidence, but corruption possibly involved in stalling in first PPP contract.	Accounting discrepancies led to very large prices paid (probably corruption).	No evidence of corruption.	Very likely corruption: large sum of money paid up-front to contractor.	Probably corruption, as indicated by former president.

We can make this “counting differences among the cases” quantitative by running a statistical test that compares each matched pair of one abandoned and one completed project per sector. We show this “counting differences” analysis in Table 12.2. The table contains the variable values for the five success factors from the questionnaires (averaged for each project over the three respondents), for each of the ten projects in the case study pairs. Running your eyes over these numbers will give you the impression that the variable values are higher (and the corruption values lower) for the completed projects as compared to the abandoned projects. This is measured statistically with the chi-square tests for each matched project pair, which is highly significant: for each pair, the probability that the difference might arise accidentally is lower than 1%. This quantitatively supports the impression from Tables 12.1a and 12.1b, that each completed project had better management assessments on the success factors than its matched abandoned counterpart.

A common theme that runs across the case studies alongside the success factors is centralized decision-making (for which we had not developed a variable because this feature had not been separately pointed out in previous work). Centralized decision-making (by the president or governor, or a small group of people with special interests), with projects emerging from the president or governor’s desk, is connected to the variables that we do measure in the questionnaire, by posing the risk of inconsistent decision-making and responding to current pressures (or special interests) rather than following a thought-through, long-term plan, even if the intention is to help the country. Moreover, “big-man decision-making” encourages a lack of continuity in project goals when the government changes—it seemed to be systematically the case that a new administration would tend to question, “investigate” or cancel project decisions and commitments made by the previous government. Even today, it is critical for a very large project that the president be involved, such that the idea for the project appears to come from the president directly as a directive or executive order. If described like this, the centralized big-man decision-making could be seen as one underlying issue that favours all the problems that we have measured and analysed. This is, of course, an oversimplifying catch-phrase because not all the problems would go away if the “big men” were not to make the decisions alone (although, if the decisions were also made transparently, significant improvements might already result!).

At the project approval point, the project rests in the hands of the president alone. He (so far it has always been a “he”) influences even the choice of contractor and directs the project’s commencement and payment. Even to the present day, the Bureau of Public Procurement does not have a mechanism to change, alter or stop any project undertaken by the president in this fashion.



Table 12.2 Statistical comparison of success factor values across each matched project pair

Project name	Sector	Success*	Absence of corruption	Contractor	Goals	Resources	Supervision
Delta State Power	Power	-	2	2.80	3.90	3.49	2.46
Zungeru Hydropower	Power	+	5	6.73	6.44	6.62	6.63
<i>Chi square test: 45.9, df = 3, p &lt;0.0001</i>							
Calabar Power Station	Power	-	3	3.27	3.41	3.78	2.69
Egbin Power Station Ikorodu	Power	+	5	7.42	6.50	7.61	7.59
<i>Chi square test: 49.0, df=3, p &lt;0.0001</i>							
National Library	Education	-	2	3.30	3.30	3.76	3.66
Obasanjo Library	Education	+	4	7.12	6.96	6.59	6.62
<i>Chi square test (only the 4 factors): 36.7, df=3, p &lt;0.001</i>							
Second Niger Bridge	Bridges	-	4	3.59	3.56	4.49	3.41
Third Mainland Bridge	Bridges	+	5	6.36	5.95	7.41	6.01
<i>Chi square test: 21.3, df=3, p &lt;0.01</i>							
Lagos-Badagry Express	Roads	-	3	2.91	3.35	3.54	2.63
Lagos-Ibadan Express	Roads	+	4	5.90	6.57	6.64	6.83
<i>Chi square test: 35.8, df=3, p &lt;0.001</i>							

\* - refers to abandoned project, + refers to completed project

Conversely, during any subsequent administration, if that president has no interest in the project, it can lay dormant because of a lack of interest and funding, whether it is half done or 99% complete. Processes are not sufficiently mature to produce an irrevocable commitment irrespective of the government that started it.

This lack of continuity was enabled and exacerbated by the fact that project budgets were mostly made available for one or two years only, but rarely for the entire project duration. (This may be justifiable if there are critical milestones and future budgets are made conditional on meeting progress milestones. However, this was not the case here—budgets were not secured for political, or simply a lack of planning, reasons). For some projects, allocated funds were “fictitious” and ultimately evaporated (which led to accusations of using projects as campaign tools with insincere intentions). In any case, the lack of goal continuity and funding instability led to non-payment of contractors and therefore delays.

When the project is badly set up in this way, negative events tend to happen that undermine the trust of the participating parties. There is no evidence that the projects in our sample suffered from incompetent contractors, and yet contractors did behave badly—the evidence suggests that they responded to the context. When the contractor sees opportunistic behaviour on the part of the supervising government parties and struggles to get paid, the contractor can be tempted to “play games” to ensure profitability (and to protect itself from bad behaviour from the other party); this might include pretending services, for example, by renegotiating, billing for unnecessary (or even fake) services or padding out budgets (as we saw in the Abuja National Library project). In the words of one of our anonymous interviewees, “If you repeatedly see that an administration ‘empties the coffers’ before it steps down, so you anticipate that you will not get paid after the change in administration, you are forced to take countermeasures.” Our final conclusion is *not* that Nigeria needs to completely change its existing large project contractors. Actually, there is much experience and expertise in evidence among contractors. The conclusion we have drawn is that the contractors need to be better guided and led by the government, project owners and supervisors.

Part of the problem is weak government oversight during project execution. This did not become apparent in our high-level case summaries, but it emerged clearly in a couple of interviews (the only case study where a *positive* statement was made about governance and oversight was the Zungeru Hydropower Plant project). Our anonymous contractor interviewee commented, “The government overseers on the project get from us cars and computers to do their work, but then we don’t see them anymore, and we certainly

never see the cars and computers ever again. Government officials appear in large numbers when something has gone wrong, and then they demand that the problems are made to go away.” The depth and quality of governance scrutiny is insufficient; in particular, there is little sophisticated risk planning by the overseeing bodies.

## 12.2 Developing Solutions: Inspiration from Other Countries

Before we jump to solution proposals, it is worthwhile looking at what other developing countries have done. We are not attempting any kind of a “benchmarking” exercise—making such an exercise worthwhile would require detailed studies that go beyond the scope of this book. Even more fundamentally, “benchmarking” assumes comparability: it rests on the compared situation being sufficiently similar to the “benchmarked” situation so that decisions made in the other contexts carry over to the context of interest. We discussed in Chap. 2 that there are important local differences, and the nature of the problem, as well as suggested solution approaches, are specific to the structure of government and public sector in Nigeria. We cannot, therefore, see any solutions that one could simply “transport” to Nigeria. However, we can still learn a lot from the challenges faced by the other countries and the solution approaches that they chose. We can take inspiration from the fact that other countries have been able to considerably improve their large government project capabilities.

We conducted interviews with one high-level public project decision-maker from each of three countries, namely, India, Thailand and Indonesia. Again, we are not looking for a precise and “provable” benchmarking here; we are merely looking for ideas that might arise from a broad look at what other countries have broadly done. It turns out that all three countries faced challenges of large public project success in the past, and they have developed improvements over the last 20–30 years. The insights from the interviews are summarized in Table 12.3.

All three countries initiated and led major projects through government entities up until 20–30 years ago, facing similar problems to Nigeria, such as a lack of continuity, slow decision-making and corruption, causing delays and budget overruns (although a smaller fraction of projects seemed to be abandoned than in Nigeria). However, the three countries did not all choose the same remedies.

**Table 12.3** Large government project management approaches in three developing countries

Country	Former approach	Weaknesses of former project management approach	Changed project management approach
<b>India</b> (senior former government member, now senior executive, mostly with experience of major airport projects)	Projects set up and managed with contractors, led by ministries.	<ul style="list-style-type: none"> <li>• Weak accountability of owners.</li> <li>• Delayed decisions.</li> <li>• Insufficient budgets for ensuring project progress.</li> <li>• Projects delayed.</li> <li>• Poor infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Public–private partnerships (PPP): private-sector injects capital in joint ventures (JVs).</li> <li>• JV also gets concession for operation of asset.</li> <li>• Project with PM (contractor) as member; oversight by committee of regulatory agencies.</li> <li>• Operations: government has minority stake with representation board.</li> <li>• Informal reporting to airport economic regulation authority: no formal power but transparency and raising of issues.</li> </ul>

*(continued)*

Table 12.3 (continued)

Country	Former approach	Weaknesses of former project management approach	Changed project management approach
<b>Thailand</b> (former member of government who was involved in major public projects)	Projects owned and run by government institutions (such as ministries).	<ul style="list-style-type: none"> <li>• Lack of continuity: ministers change over the course of a major project; new ministers want to change the project according to their priorities (and dislike “finishing the previous guy’s job”).</li> <li>• A law forced officials to finish projects that had already started; in one (rare) abandoned project, multiple officials went to jail.</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction of PPP: private-sector companies put up the required capital and get a concession (for, say, 30–50 years, for a highway, a high-speed train or an airport).</li> <li>• The government guarantees a minimum return (e.g. to reduce the market risk stemming from fewer than projected passengers).</li> <li>• Conditions and limits are imposed in order to achieve alignment, for example, a maximum on tolls or ticket fees with defined increases over time.</li> <li>• Government articulates long-term investment plans, with public hearings and explicit benefit analysis. Thus, individual projects become harder to set up for “partisan reasons”.</li> <li>• Ministry of budget executes disciplining of projects requested by ministries (budget limits reduce requests by two-thirds).</li> </ul>

(continued)

Table 12.3 (continued)

Country	Former approach	Weaknesses of former project management approach	Changed project management approach
<b>Indonesia</b> (former government minister)	Projects initiated and carried out by government institutions, some at federal and some at local level.	<ul style="list-style-type: none"> <li>• Weak planning.</li> <li>• Contractors “bid low” to get work and then stall to extract more.</li> <li>• Low execution discipline caused delays and cost overruns.</li> <li>• Sometimes incorrect technology choice.</li> <li>• Sometimes conflicts between federal and local government (e.g. long delays on bullet train and airport projects; local constraints reduced traffic at a new airport to a non-viable level; local lack of investment in surrounding infrastructure made another airport non-viable).</li> </ul>	<p>Creation of state-owned enterprises (SOEs) with five roles:</p> <ul style="list-style-type: none"> <li>• Be profitable.</li> <li>• Contribute to state budget with taxes.</li> <li>• Enter sectors that are not viable for private companies, thus improving the stability of the economy.</li> <li>• Enable nationwide service offerings (where not viable, receive a subsidy).</li> <li>• Distribution of wealth by supporting SMEs in procurement.</li> </ul> <p>SOEs can access private capital (e.g. bonds, loans).</p> <p>SOEs become policy vehicles covering commercial projects while the government still covers “public goods” (e.g. a dam in East Indonesia).</p> <p>If an SOE is asked to carry out a commercially non-viable project, it is also given a lucrative project that enables aggregate profitability through cross-subsidization.</p>

Two of the countries (India and Thailand) heavily emphasized public–private partnerships (PPP), essentially outsourcing the capital provision and the associated risk–reward equation to the private sector, which gained 30–50-year profitable concessions from their investments.

In both cases the government needed to enact reforms that accompanied and enabled the PPP: for example, an explicit long-term investment plan with robust priorities was achieved through debate and consultation, which reduced the possibility of projects being created in order to “line specific pockets”. This also required the development of a competent, accountable and business-savvy cadre of (civil servant) representatives who could negotiate with private partners, to achieve fair deals on concessions and oversee project completion in a way that prevented the partner from demanding extras later, and could represent the state’s interests during operation of the asset. Moreover, side conditions that aligned the asset’s operation with the public interest (rather than running them for profit only) also required a high degree of sophistication and planning on the government’s part.

Indonesia chose a different approach to India and Thailand, creating state-owned enterprises (SOEs) that bridged a commercial outlook (and access to private capital) with the safeguarding of public goals. SOEs pursued profitable commercial projects and obtained subsidies for, or they cross-subsidized, “public goods” projects that were not viable on a purely for-profit basis. In other words, Indonesia struck a different balance of commercial discipline versus alignment with public goals. This approach tapped into the skills of the existing pool of professional managers of large enterprises, who could move over and run SOEs that were similar in their management challenges, especially as the SOEs were under commercial pressure to not only pursue public goals but also earn returns for the government via the commercial opportunities of the projects. The commercial nature of the SOEs also came with public scrutiny of account—and therefore a degree of transparency. This approach was also successful, in terms of achieving project execution speed and success and improving public outcomes for commercial projects.

Both the discipline and commercial oversight of the private sector in PPP agreements and the professional SOE management significantly improved project outcomes. However, both approaches created their own new challenges—there is no panacea or perfect solution. Very large government projects inherently contain temptations to engage in selfish behaviour, especially in the context of a complex management challenge that always offers some ambiguity to hide behind. This is also visible in the qualified success of the new project management approaches in the three countries (see Table 12.4—this needs, of course, to be taken merely as a first “hypothesis” given that this comparison is based on a small number of interviews so that biases cannot be excluded).

The advantages of the PPP approach were bought with the challenge of aligning the running of concessions with the profit goal, which was not always

**Table 12.4** Strengths and weaknesses of the three countries' new project management approaches

Country	Strength/weaknesses of the new approach
<b>India</b>	<ul style="list-style-type: none"> <li>+ Fast decisions with fast approval.</li> <li>+ Economically oriented decisions.</li> <li>+ Better project completion, notable improvement of airports over 30 years.</li> <li>+ Public consideration added as constraints (e.g. procurement from SMEs, service provision).</li> <li>- Loss of operational control: strategic direction may not follow what is publicly desirable.</li> <li>- Corruption still present.</li> </ul>
<b>Thailand</b>	<ul style="list-style-type: none"> <li>+ Limits government budgetary needs.</li> <li>+ Limits government risk.</li> <li>+ Finished project has an operator.</li> <li>+ Project reverts to government in the long run.</li> <li>+ Contracts protect private partner from government changes.</li> <li>- Fraud and corruption are still present: continued need for a government "watchdog", which has also become more sophisticated as the operators refine their methods. But secret deals are very hard to suppress completely, so corruption is still estimated to run at 20–30% of project budgets.</li> </ul>
<b>Indonesia</b>	<ul style="list-style-type: none"> <li>+ SOEs achieve progress faster: get permission, get capital from investors, respond quickly to changes.</li> </ul> <p>There are two key limitations (in addition to corruption):</p> <ul style="list-style-type: none"> <li>- The lack of alignment between federal and local government has not been addressed and continues to cause problems.</li> <li>- The need for cross-subsidization has prompted SOEs to widen their businesses; the widening activities threaten to become "unchecked". The government has increased the pressure on business cases and the financial structure in SOEs, including all projects, in order to reduce cross-subsidization. (As of 2020, a privatization of SOEs was discussed but not decided.)</li> <li>- Corruption, or at least misdirection of funds, is probably still present.</li> </ul>

pointing in the same direction as the public interest that triggered the projects in the first place. Moreover, the PPP construct did not eliminate corruption—opaque deals continued to exist (indeed, a second interviewee who had promised to speak with us in India was unable to attend because he had to appear in court in relation to a corruption charge against his company). The indicated direct costs of corruption are consistent with what we were told in Nigeria.

A different challenge arose from the SOE structure in Indonesia: the cross-subsidization option (of being assigned a lucrative commercial project in order to finance a "public-good" project that achieved a public benefit but could not make money) created an incentive for SOEs to "widen their



empires". The resulting opacity of complex activities with non-trivial (but officially sanctioned) cross-subsidies gradually eroded transparency over time and made them hard to control. This, in turn, created its own sources of corruption (or internal misappropriation of funds), also leading to a deviation of resources and project objectives from public goals. Moreover, success still depended on the competence and alignment among government entities themselves (several examples indicated how conflict between federal and local government damaged projects). This reminds us that very large government projects are so vital and complex that they can never simply be "outsourced" (even to SOEs); government must still live up to its accountability in terms of initiating, overseeing and supporting the success of large public projects. A debate about the future privatization of SOEs in Indonesia is underway.

An observation common to all three countries is that corruption has not been fully eliminated. This is disappointing, of course, but certainly not unique to these countries. In the complexity of large government initiatives with multiple goals, there is always ambiguity within which corruption can hide. Eradicating it is extremely difficult, which all countries have found, including the most developed leaders. Reducing corruption must be a constant priority everywhere, because of its deeply corrosive effects, which we have seen in our econometric chapter and in the case example. The level of corruption that we have seen in Nigeria must be reduced, but eradicating corruption is rarely achieved.

We have now seen from the discussion of the developments in three other countries that there is no universal and uniform answer to the challenging problem of large public-sector project management. The three countries chose different solutions, reflecting differing situations in their local conditions and posing slightly different trade-offs in each country. Therefore, there is no "right solution" that we can derive from these countries. However, there is some hope, because the three countries have been able to make significant improvements. Therefore, the goal for Nigeria must be to find its own solutions to its devastating large-project problem, while respecting the local Nigerian strengths, weaknesses and challenges.

## 12.3 Recommendations

While we have seen weaknesses across all measured variables, the root of the project completion problem has been centralized decision-making in the creation of the projects. While this has been a weakness, it could also offer a strength. The weakness has been that presidential egos have been too involved,

and competition among presidents about who did what has ultimately not been constructive. The emphasis should be on a project succeeding, rather than it being successful because a certain president did it; the money spent on the project is Nigerian public money, not the president's money. On the other hand, the president is respected and has power—and therefore he can ensure execution. This power needs to be harnessed in the direction of a widely accepted plan. If presidential thinking were to change from “I created projects A, B and C”, to “I made sure that projects A, B and C from a consensus priority list actually came to fruition”, or to “*We* created projects A, B, C”, the effect of the president's power could help large public projects.

There is certainly some awareness of the problems of decision centralization. In one interview the authors asked (former) President Obasanjo what he thought should be changed. In response, he referred to a former German chancellor: “I asked my friend Helmut Schmidt what he discusses in cabinet meetings. He said, ‘We discuss policies and budgets and outcomes, but not individual initiatives.’ So, take the individual projects away from the government!”

The conclusion is that the Nigerian government must step up and play a more decisive, long-term and reliable role in leading very large projects, which includes de-emphasizing the politics of very large projects and instead putting the emphasis on competent management by civil service institutions. This implies long-term changes in government processes. However, long before the government bureaucracy can be changed systematically, a number of measures should be taken to rescue some of the huge projects that are in trouble, at great cost to the Nigerian citizen. Therefore, our recommendations have two parts, which we will develop in turn:

1. Short-term measures to rescue or revive troubled or stalled projects
2. Long-term measures of changed processes and governance

### **12.3.1 Recommendations Part 1: Short-Term Changes**

#### **12.3.1.1 Diagnostic Review of Abandoned or Stalled Projects**

The Nigerian government could consider, as a pilot project, currently abandoned or stalled projects (from our list, or beyond) for review and change the aims and objectives of the project to reflect the new reality. For instance, the Abuja National Library might be reassessed to identify a clear and

agreed-upon purpose, and its design modified; for example, it could be repurposed as a new formats and technology library, in an age where book collections are migrating online everywhere.

Once diagnosed and endowed with a clear purpose and design, such a project could become a priority for funding in a pilot scheme; for instance, we may take three nationally important projects every five years. The pilot scheme would be led by a ministry with the required expertise and put together the funding (based on a business plan), adjust the design and, where necessary, reactivate stakeholders' buy-in. One example is the Ajaokuta Steel Project, where the nation has spent over \$6B and 40 years on the project site, resulting in abandonment (although no one will admit it). It would be appropriate to ask for the price of an alternative, for instance, the cost of a similarly sized modern greenfield site (which we have already alluded to in Chap. 11). This would need to be benchmarked against the cost of completion of the old project. This needs to be accompanied by carefully balancing political interest, as it seems late in the day to say that we have left Ajaokuta for Lagos to start the same project.

Restarting makes sense for many of the stalled projects that do not really have an alternative, such as the Lagos-Badagry Express Road, which needs to be accomplished one way or another. There should be a clear focus and clean specifications, in addition to resources and accountability, for these projects so that they can fulfil their missions, rather than inventing new ones.

### 12.3.1.2 Resolving Funding Challenges

One basic argument made by the government is that there is no funding for the completion of abandoned projects. This may be true given the many challenges of government projects and demands for increased security funding. However, we have found that many of the abandoned projects have reasonable business cases that can attract private-sector funding in a partnership between the government and the private sector. In other words, we ask whether it is really (as it seemed from the case studies) impossible to start using private–public partnerships (PPP) in appropriate cases?

A key challenge is the lack of continuity of government attitudes towards PPP, which has blocked PPP agreements that had already been signed (such as the Lagos-Ibadan Express Road or the Second Niger Bridge); moreover, corruption and a lack of stakeholder engagement may scare investors away from participating.

We recommend PPP in the section on long-term measures below, as one of a portfolio of available and mastered funding schemes, subject to an enabling environment and assurances that investors will be able to pursue the agreed-upon goals without government interference. However, in the face of scarce funds, maybe even in the short term, a few projects can be jumpstarted using PPP (and the associated private-sector investment). This might be feasible with the help of experienced outside advisors who have the capability to negotiate good and robust agreements for the government, as well as making it clear to the government where its responsibilities in the success of PPP funding lie.

### **12.3.1.3 World Bank/IMF Assistance**

Financing may well be available in reviving abandoned or stalled projects. The Nigerian government can make the case for funding to international bodies, to complete abandoned projects, particularly projects that significantly affect the standard of living, or projects that can accelerate technology development in the country, for example, the Lagos-Badagry Express Road and the Second Niger Bridge. The special package for Nigeria's abandoned projects can comprise project invoice financing of 70%, and 30% cash disbursement to a reputed international contractor appointed to complete the project. Bridge finance can be put in place once there is an indication of funding from the IMF. The World Bank may be able to make a new loan subject to a percentage of completion of the abandoned project (and to putting in place functioning governance for the project). This will encourage the government to complete a new project rather than pressing for a new loan for a new project, which will once again pose the risk of abandonment if no changes to project management are made.

### **12.3.2 Recommendations Part 2: Longer-Term Structural Changes**

In order to step up in its role in the longer term, the government must make several institutional changes and develop a number of procedures. Producing the required changes and issuing operational regulations and plans will be complex and involved. Therefore, the authors of this study cannot give detailed prescriptions here, which would go far beyond the scope of this book. However, the results of this study enable the authors to suggest a number of

principles that the government may want to consider. Our suggestions consist of six elements.

### 12.3.2.1 Element 1: High-Level Political Priorities

Rather than initiating specific projects, the president (the executive) should articulate a strategic plan of broad areas of major initiatives with defined priorities (such as power, roads and educational institutions). This would come with a broad budget envelope, not detailed by project but dedicating a certain fraction of the total annual government budget to such infrastructure initiatives (say 15%). The strategic priorities and budget envelope should be debated and approved annually for possible modifications of broad priorities (but in the spirit of adjusting future directions, not touching the specific projects already underway). This forces the legislature and the executive to be disciplined—not every pet project can be fitted into a limited budget. An explicit limit implied by this is that the president and legislative would not propose specific projects but only set broad priorities. The actual projects would be proposed by a ministry (see below). This, again, enforces discipline and, at least somewhat, limits the leeway for political patronage projects (“pork” in US-American language). The equivalent should happen at state level for state-level projects.

### 12.3.2.2 Element 2: Portfolio Planning and Budgeting

We propose that an agency be created to own and oversee the portfolio of projects, which makes progress towards the strategic planning of major initiatives. For now, let us start with the working title of *Large Government Project Strategy and Budgets Office*.

This agency has an important role to play by being given the authority, on the one hand, to enforce budget discipline, while, on the other hand, ensuring budget continuity for projects already on the way. Parliaments may sometimes feel non-bound by budget constraints; a ministry of finance that enforces a politically determined maximum budget can ensure that the above-mentioned trade-offs are not ignored.

The Large Government Project Strategy and Budgets Office would generate an actual portfolio of specific projects and be responsible for presenting it to the assembly for their approval in order to make progress towards the assembly’s strategic plan of initiatives, within the given budget limits. Thus,

the agency would be responsible for developing competent business plans for all projects that are submitted (including public benefit, economic viability, reasonable cost and time estimates, and funding strategies) and for presenting this portfolio of project summaries to parliament.

The reason for this structure is that we know from the experience of many large companies (and from the public sector) that project portfolios that are articulated without recognition of capacity and budget limits are prone to lead to an overextension of resources and inevitable stalling of projects, which are then underfunded (as we saw in the Ajaokuta case).

The Large Government Project Strategy and Budgets Office would consider multiple approaches for project-delivery “channels”: projects overseen directly by the government; projects “rented out” in PPP agreements with concessionaires; and possibly also the creation of specialized SOEs for the execution of niche projects that require special expertise and have a public good element to them, meaning they cannot be handled by general commercial markets. The negotiation of project contracts and PPP agreements can happen within the agency, but the creation of an SOE for public-good-type projects requires special policy expertise that may necessitate consultation and agreement with other agencies (e.g. the Bureau of Public Enterprise, but this would have to be defined). In both cases, this requires the hiring and retention of highly qualified professional personnel.

### 12.3.2.3 Element 3: Institutional Changes

The Large Government Project Strategy and Budgets Office could, in principle, be part of the Ministry of Works and Housing (which is the result of the 2019 split into two of the former Ministry of Power, Works and Housing). However, the missions of these two ministries are to “provide social amenities such as power across the country” and, respectively, to “provide adequate and affordable housing for all Nigerians”. (Similar briefs hold for other relevant ministries.) These wider remits are mostly concerned with policy issues and wider budget and legislative priorities, and not with project execution. The ministries do not have the focus and resources to build the specialized expertise for executing large projects, across the fields of general infrastructure—including power stations, dams, roads, housing projects, IT infrastructure projects and social development projects. Since we have seen that the project problems have the same recurring themes across all of these fields, it makes sense to create a “project management and execution specialist” ministry, which would serve the policy priorities that are guided by the various field

ministries; it would also be responsible for coordinating project design with them and delivering the projects to the legislative and the president. The field ministries would guide policy, and thus the priorities set in the strategic plans by the executive and the legislative, but it would be the specialist project management ministry to design the projects (in order to contribute to the strategic plans) and deliver them.

Thus, because of the project execution requirement, we suggest creating a ministry of its own: rather than the above-mentioned Large Government Project Strategy and Budgets Office, our proposed new agency would be the *Ministry of Large Government Projects*. Its focus on competent project initiation and execution is important given the number of abandoned projects and their economic value, both in monetary terms and in their wider contribution to the economy. This ministry would have to play the role of budget holder (within the assembly-determined envelope), project owner and project supervisor, to work with contractors on projects that are executed as government projects; it would also have to build knowledge and training, as we describe in Element 4.

The proposal that project owner and supervisor sit in one ministry (that the other ministries, such as power or housing, do not serve as owners) is important. If the execution happened outside the owning ministry in a separate government entity, the problem would arise of one agency making plans and the other having to execute them, which is a recipe for mutual finger pointing, with one side claiming that the other side did not deliver, and the other side accusing the first side of having produced unworkable plans. Accountability would be split and therefore compromised.

This institutional reform would tangibly demonstrate an acknowledgement of the huge economic impact of delivering large government infrastructure projects for the development of Nigeria. The Ministry of Large Government Projects would have the responsibility to improve the design and delivery of projects, and it could also be the starting point for returning some of the abandoned projects to completion and success. Where this was not possible, the ministry would turn over the (partial) assets of a stopped project to an appropriate government department responsible for the sale of such assets (e.g. the Bureau of Public Enterprise). The funds realized from such deals could be directed towards completing other projects.

However, the Nigerian president has significant institutional power and may not consent to simply reducing his (maybe in the future, her?) power to have input in a strategic plan and to disengaging from the awarding of large government projects. Therefore, we also recommend that an office of special advisor to the president on large government projects be established, which

has a dotted line reporting to the Ministry of Large Government Projects. This advisory office would establish a line of communication between the president and the ministry, with the two complementing each other.

#### **12.3.2.4 Element 4: Project Execution in the New Ministry**

The Ministry of Large Government Projects would own and oversee the execution of projects that make up the (legislative) approved portfolio. It would be responsible for the execution of any government project above a certain budget size (perhaps in the order of \$500M). The Ministry of Large Government Projects would have the following responsibilities, each of which would need to be supported by matching capabilities:

- Right from the start, the ministry should make a decisive attempt to rescue abandoned projects and lead them to completion, after a general diagnosis of the list of abandoned projects (i.e. after identifying which ones can be rescued). It may be easier to borrow money to complete an abandoned project than to start a new one. It may even be advisable to pass a temporary law that legally requires abandoned projects to be revived if certain economic and technical conditions (of feasibility) are fulfilled.
- Detailed project planning and budgeting (not just at the aggregate level, as for the portfolio agreement with parliament). This includes setting up the project team and infrastructure, detailed and comprehensive risk planning and monitoring, and regular reporting on milestones.
- This includes the negotiation, agreement and monitoring of project contracts with major contractor firms. It also includes the negotiation of concession agreements with PPP partners, as it is probably advisable for the Nigerian government to consider PPP agreements (at least somewhat) more widely than has been done in the past (see the discussion about the apparent dislike of PPP in the Lagos-Ibadan Express Road case). For both types of agreement, the agency should have experienced professionals who can be negotiation counterparts for commercial organizations with great expertise, with whom constructive win-win agreements should be sought (rather than being “pulled over the table” or being overly cautious so as not to be caught making mistakes).
- The ministry needs to build project supervision and monitoring capabilities for projects that are executed as government-owned initiatives through contractors. Professionals who are capable of supervising large projects must have significant project experience and will therefore generally be



highly qualified and need to be paid and treated sufficiently well so that they stay.

- We have emphasized the need to retain highly qualified personnel. The entire Ministry of Project Strategy and Budgets, and the Agency of Projects, would need to be given a sufficient budget to employ well-qualified people and pay them enough so they would not be influenced by interested third parties to alter project decisions in the direction of those parties. The ministry would have to be headed by a credible public figure with a track record, who can explain its activities to parliament and the public. If the reader remembers the staggering sums of money at stake from bad project definition and execution (which we demonstrated in Chap. 5), an investment in attracting and retaining qualified personnel, who can raise the standard of project management, would seem to be able to pay itself back several times over.
- In addition to recruiting qualified personnel, the ministry would need to encourage and support knowledge investment in training and retraining. Large government projects do not require the same knowledge that we acquire from handling ordinary (smaller and less political) projects.
- The ministry would need to provide transparent figures on progress and challenges to the audit authority and parliament (and thus the public) every year. Transparency would serve as a first disciplinary device on parliament not to change projects influenced by lobbyists (but additional safeguards against short-term changes may have to be added).

There are more than enough very large government projects in Nigeria to warrant the creation of an Agency of Projects (and its larger ministry). The ministry should be accountable to parliament.

### 12.3.2.5 Element 5: Audit Bureau

Even government ministries (in all countries) succumb to the ever-present temptations of graft and corruption over time if they are not regularly held accountable, not only by reports to parliament but also by deeper audits. Therefore, this element of our suggestions concerns the creation of an (or use of an existing) *Audit Bureau*. The Audit Bureau should sit in a separate ministry (to avoid conflicts of interest) and have (or build) sufficient specialized expertise on project reporting to be able to examine the accuracy of the Agency of Project's reports. The Audit Bureau should issue an annual report that summarizes the state of projects underway to the public, from an external perspective. Transparency creates its own dynamic of discipline.

### 12.3.2.6 Element 6: Fraud Prosecution

The fact that no one was charged after the Delta State Power Plant project disaster should alarm the entire country. We therefore suggest the creation of a *Serious Fraud Office*, which could be part of the Ministry of Large Government Projects (it could also be part of the Ministry of Justice, in order to achieve independence and impartiality). The Serious Fraud Office should have the power to take cases to court after investigation and to demand criminal inquiries and the start of proceedings in a criminal court. The Federal High Court may decide to create a Special Judicial Division (a set of dedicated judges), who have at their disposal special procedures for crimes relating to fraud in large government projects.

This will, again, require that the Serious Fraud Office be given a budget to hire an (initially small and focused) cadre of highly qualified investigators specialized in white collar crime in a large project environment. Whenever one asks for a budget, discussions become difficult (everywhere in the world), but we repeat that the sums of money recuperable for the government are so large that hiring a few well-paid specialist professionals seems to be a small price to pay.

In creating the Serious Fraud Office, the Ministry of Large Government Projects could ask for assistance from Nigeria's Inspector General of Police—the Serious Fraud Office will need well-trained, experienced and senior police officers who are capable of conducting thorough and impartial investigations. The figure of 60% of 11,886 federal government projects having been abandoned over the last 50 years represents a high number of potential cases, and this number does not include any large government projects abandoned in the 36 states and 776 local governments of the Federation of Nigeria.

As long as perpetrators can hope with some realism that they may get away unscathed with the theft of tens of millions of dollars in the chaos of a large government project, the battle for transparent project management will remain arduous.

We conclude this chapter by repeating that our six elements are merely suggestions—although we have taken the Nigerian context into account, we are not sufficiently knowledgeable about the specific pressures in the Nigerian government that would influence the decisions on a management system such as the one that we propose to set up. Our six elements represent “principles” of large project management, the installation of which is well justified by the evidence that we have presented about the failure of large government projects in Nigeria. We believe it is the responsibility of the Nigerian government to put a management system in place, not necessarily verbatim, following our suggestions, but addressing the principles that we have pointed out.

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# 13

## Conclusion: The Government Responsibility

This is the first book about Nigerian very large government (“mega”) project management. It is, of course, not the first book on very large project management—we demonstrate that, in principle, the same 1000 things can go wrong in very large government projects in Nigeria as anywhere. From existing professional knowledge, we explicitly identify 80 success drivers, which are aggregated variables, each of which easily has 10 sub-dimensions—very large projects are complex beasts. Importantly, we are able to identify *which* of the many success drivers are failing in Nigeria, and why—in other words, how the context influences where changes must be made.

In short, the track record of very large government projects in Nigeria is lamentable. A total of 66% of very large projects since 1960 not only failed but abandoned (according to the government’s own analysis) is worse than the track record in other countries; and not only has it wasted billions (not naira but dollars) of national wealth, but it has also failed to deliver the infrastructure services that the Nigerian citizens so desperately need.

With a population of over 200 million people and an annual population growth of approximately 5%, Nigeria needs infrastructure and services, enabled by large government projects, for sustainable growth. Unfortunately, with so many abandoned projects at federal government level, it is increasingly challenging to provide economic growth that will meet the global agenda of eradicating poverty in 2030 (just the four largest of the projects we have considered account for over 30% of the national debt). Slow-in-coming government services and increasing external debt increase the complexities of national governance.

We are making the case for change to the government. Therefore, we have resisted the temptation to write captivating stories—our case studies demonstrate that we could have written a book with “juicy” stories. However, we decided to forego excitement for good reason: if we are to dare to ask civil servants—who are cautious all over the world because they are under public scrutiny to not waste taxpayers’ money—for significant change, we must provide a well-argued rationale backed by solid evidence. This is what we have attempted to do.

We have assembled a unique data set, which has not been assembled before in Nigeria, because no reliable data was available at all. The respondents to our questionnaires gave their answers only because we promised anonymity and because they trusted the authors—academics and a well-known businessman with an honourable reputation. We are upholding that promise. Moreover, we obtained *three* responses per project (from a representative of the project-owning organization, a representative of the supervising organization, and from the contractor), in order to make sure that we did not get one biased view but multiple views from different perspectives.

What we found is very clear and robust. We have not seen sufficient preparation on the part of the Nigerian government to develop the considerable leadership and bureaucracy competence in addressing the problems created by troubled public projects. Nor have we seen the desire to change the causes of the problems. This would constitute a challenge even if Nigeria had sufficient funding to rescue the abandoned projects.

From econometric analysis of the questionnaire, we identified five key success drivers: the clarity and inclusiveness of the project goals; the professionalism of supervision and stakeholder management; the professionalism of contractor selection; and the availability of resources and professionalism of planning (especially risk planning). In addition, corruption stands out as a corrosive force that not only bloats budgets but also distorts decisions and can bring down a project all on its own (as one of the case studies clearly illustrates). The econometric (data-analysis-based) findings are clearly corroborated and illustrated in the 11 detailed case studies.

What we find is not comfortable—the core of the project problems lies in the way the government has initiated, designed, financed and overseen (with stable goals) projects. Chapter 12 has laid out these problems in detail: projects are initiated by one person (the president or governor) or a small group of people. These projects may well incorporate the best intentions (although not always, as they sometimes represent “political campaigning tools”), but as they lack broad discussion and commitment across political institutions, they are vulnerable to discontinuity in goals, as well as resourcing (by the next

administration, who has no interest in supporting the previous administration). This is exacerbated by a lack of rigorous financial planning for the entire course of the project.

A key challenge with decisions revolving around one person (or a very small group of people) lies in the fundamental limits of rationality and knowledge that any one person can possess. Although the president understands, of course, the vision and strategic context of where the country can and should go, the president has limited understanding at the time of decision-making about feasibilities, trade-offs, risks and requirements that affect the outcome. One person simply cannot make such decisions. And yet, we have seen systematic exclusion of the Federal Bureau of Statistics in decision-making on large government projects. And even in selling troubled government assets, we have seen established institutions being pushed aside, such as the Bureau of Public Enterprise (BPE) (for instance, in the Ajaokuta case). Arbitrary “power grabs” in decision-making not only compromise the quality of the decisions but also damage institutions’ legitimacy and stakeholders’ buy-in. Then, political power-brokering creeps in, which exacerbates opportunistic decision-making and opens the door even wider to corruption or hijacking by pressure groups.

The Nigerian government’s compromise over many domestic factors in the decision to site projects such as the Ajaokuta Steel Project and the Abuja National Library, to mention just a few, is regrettable. The president’s one-person decision on matters relating to what large project to build, and where and when, compromises the domestic environment, such as the impact of pressure groups, social interactions, stakeholder engagement and national interest. In such an environment, any good intentions by the president will become compromised by political manoeuvring that undermines the project’s success.

It is not the case that contractors were incompetent (yes, they have often taken advantage of the ambiguity caused by poor management by the government, but on the other hand, they were sometimes left little other choice because they had to defend themselves against capricious changes and unreliable payments by the project owners), or that project management execution knowledge was missing. Alongside unstable resourcing and goals (on one occasion, a former president admitted there was no financial plan for a project running into billions of dollars), the project supervision has also sometimes lacked effort and depth. In short, what was missing were direction and stability by the owners—the government.

Corruption creeps in anywhere, as we mentioned earlier. Whenever processes are not transparent and rigorous, with clear principles and criteria, and whenever projects are decided by small groups of people, the temptation

becomes irresistible for cronyism and secret influencing by interested parties to creep in. This leads to goals being compromised or distorted, contractor choice and contract design being influenced by criteria that are not necessarily in the interest of the project, and, during execution, the project becoming vulnerable to mistakes, resistance and discontinuity. (This temptation is, of course, present not only in Nigeria but in all countries. Even in the most advanced economies, corruption creeps back in as soon as vigilance against it weakens.)

Our econometric analysis has been able to estimate the economic levers of making improvements—for instance, a one-point improvement in corruption (out of seven “quality points”, in the estimation of our respondents) can reduce the abandonment risk of a \$1B project from 50% to 20% (based on the data in the projects in our sample). That represents an expected value of \$300M for one very large project alone! Even for the projects that were completed, the success drivers represent huge economic leverage: a one-point improvement (again out of seven “quality points”, in the estimation of our respondents) in contractor selection and contracting can reduce budget overruns from an average of 700%(!!) to 250%—again, on a \$1B project, a value of several billion dollars. The value of improving the identified problems is literally staggering and can make a significant difference to government budgets and to prosperity in Nigeria.

Readers who are familiar with project management methods may notice with some surprise that this book is not about the usual project management *methods*, such as strategy cascading, work breakdown structures, design structure matrix to handle interactions and complexity, critical path planning, risk management, stakeholder planning and management, earned value analysis, financing methods, contracting methods, milestone definition, agile methods, and so on. We are, of course, not implying that these methods of project planning and execution are not important—they are the basis of the “trade” (or “profession”) of project management. The emphasis that we end up with in this book reflects our finding that the Nigerian project problem is, ultimately, about governance and not competence of execution—the bottleneck in Nigeria has been how projects were set up, funded and monitored. This contextual challenge is likely to be present in other African countries too.

The party that needs to make changes to address project performance in Nigeria is the government. From our diagnosis, we have made actionable recommendations in Chap. 12. First, there are short-term measures of identifying large troubled projects that are still recoverable, sharpening their mission, finding funding and executing them with appropriate oversight and accountability. Beyond these short-term measures, we propose six structural changes

that may help the government to address the root causes of mega-project problems:

1. Projects should not be created based on single decisions by individuals, but the executive should provide high-level priorities and a stable framework budget (e.g. in the form of a percentage of the annual government budget) approved by the legislative.
2. The actual portfolio of projects should be developed by a Ministry of Large Government Projects, consistent with the priorities and within the framework budget approved by the legislative. The ministry would also consider execution modes, such as government-owned execution, in public–private partnerships (PPP) or through state-owned enterprises (SOEs).
3. The ministry would be responsible for detailed project goals and business plans, and it would own and supervise the projects. Ownership and supervision should be in the hands of one party in order to have integrated decision-making. The ministry would be accountable to the president and the legislative.
4. The ministry would also be responsible for training a cadre of competent project managers and developing them in their careers, and for developing and applying methods appropriate for large government projects in Nigeria.
5. An Audit Bureau would ensure that all project figures are transparent and shared with the public in an appropriate form.
6. An office of serious fraud would have the power to investigate inappropriate behaviour and bring it to the courts.

The government has the responsibility to set up a professional system that delivers the crucial value from major infrastructure development for its citizens.

Although we are highlighting huge problems in this book, considerable strengths and competencies are also clearly visible—we do not consider the situation to be hopeless, particularly when we consider the role of Nigeria in Africa and the possibility of a prosperous Nigeria supporting a prosperous African continent. We believe that our (high-level) recommendations are eminently feasible for implementation (and leave considerable flexibility in the details of implementation within the spirit that we propose), and their implementation can establish a roadmap towards wealth creation (rooted in infrastructure development in a broad sense) for the country. In the face of a national calamity in the form of 66% of large government projects having been abandoned since 1960, worth probably hundreds of billions of dollars, we suggest that every stakeholder in the federal state should offer legitimacy



of acceptance and support for the government's new direction in implementing these recommendations. The current book lays out a feasible and realistic path to achieve this. Then the government has the responsibility to act.

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